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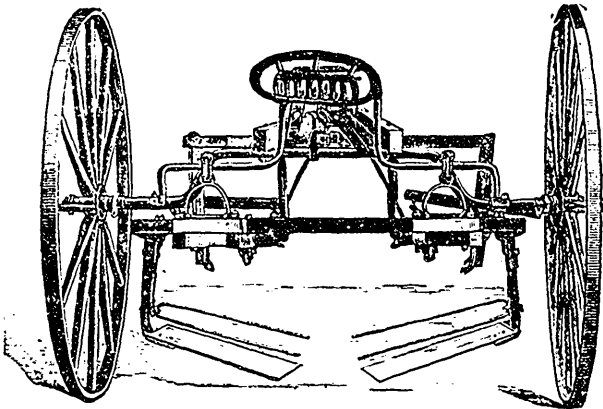


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 And two good machines for wide-awake farmers

New American Bean Harvester



KNIVES PERFECTLY
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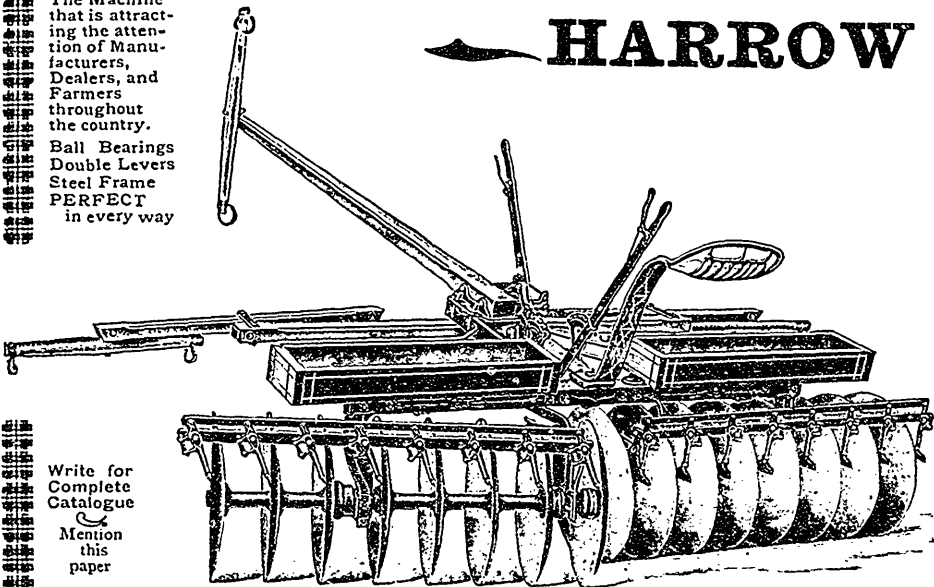


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August, 1897

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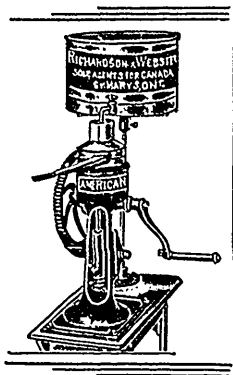
Every Farmer who is "up to date" will invest in anything that will help him increase the yield per acre, and thereby increase his profit and put money in his pocket—money is what we are all after.

We are Leaders in Fall Wheats

And have a number of new and choice varieties that will be **leaders** for the next two or three years. You will consult your own interest and buy a few bushels of one or more of these varieties of Wheats. Send for Catalogue, now ready.

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With the **“AMERICAN”** They all Experience the Same.

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The American Cream Separator purchased off you a few weeks since gives perfect satisfaction. It does even better than you claimed for it. We consider it a perfect machine in every respect.

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Mr. Van Horn supplied one of the largest restaurants in the "Maple City" with cream for the "Meet" on July 1st, and had a machine sent on to him on trial. He made up his mind as above stated in a couple of days and paid for it. If you wish the best machine be sure and give at least the "AMERICAN" a trial. Burden us with your enquiries, it is only a pleasure to answer them. We also are dealers in large power Separators, Churns, Butter Workers, Cheese Presses, and everything pertaining to dairying. Correspondence solicited. Catalogues sent on application to

Richardson & Webster
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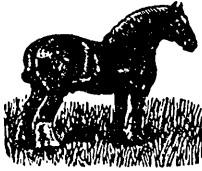
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I have on hand the best young **Clydesdale Horses and Mares** on this continent. Bred from the well-known sires, Prince of Wales, Darnley, Macgregor, Energy, Lord Montrose, The Ruler, Carruchan Stamp, Knight Errant, and other celebrities.



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

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

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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Shorthorns of all ages bred from the best, and raised under the most favorable circumstances. No person who does not intend business need apply by letter. Visitors are welcome. Also young thoroughbred roadsters for sale.

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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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CLINTON,
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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. Also a number of Clydesdale stallions and mares sired by such famous stockgetters as Sir Walter and Eastfield Laddie.

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SUPERIOR SADDLE HORSES

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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.

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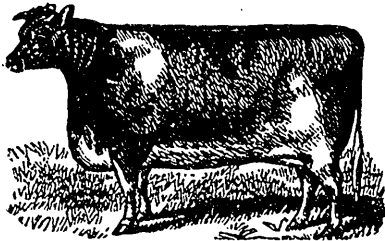
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Ayrshires, imported and homebred; herd headed by Imported **Tam Glen 2nd**, No. 1310 D. A. H. B. Jerseys all of the celebrated St. Lambert family; herd headed by **Lisgar Pogs of St. Anne's 35704**, A. J. C. C. Berkshire Pigs. Young stock of all the 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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SHORTHORNS**SIX BULLS
FOR SALE**

fit for service, at reasonable prices.

Write for particulars.

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**FOR SALE Shorthorns, Berkshires,
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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.

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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 Strathallans, 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

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Good young cows, two years old; yearlings and heifer calves, out of Imported and Homebred 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.

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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 of Ayrshires and Guerneys 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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Young Stock of both sexes for sale from the best milking strains. For pedigrees and full information address

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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.

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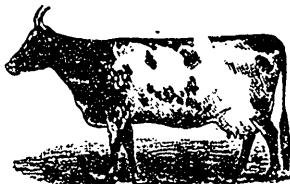
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Noted prize-winners. Choice quality and heavy milking families. Extra fine young animals of both sexes for sale.

Also Leicester Sheep and Berkshire Swine.



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I now offer for sale the celebrated stock bull
"DOMINION CHIEF,"

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

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NOTED PRIZE WINNERS, And heavy milking families. Choice Young Stock.

For sale at prices to suit the times.

Apply to

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FOR SALE—Three Ayrshire Bulls, fit for service. We are now booking orders for young pigs of both Tamworth and Berkshire breeds from fall litters.

See us at Ottawa Exhibition

R. REID & CO.,

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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 Meadows, sweepstake bull at Ottawa.

Berkshire pigs and Shropshire Sheep always on hand.

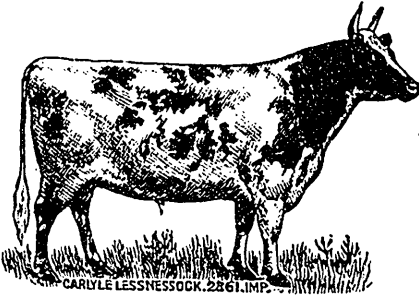
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J. YUILL & SONS,



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MAPLE GROVE AYRSHIRE STOCK FARM

IMPROVE YOUR STOCK.
INCREASE YOUR WEALTH.

Imported from Scotland from the most noted milk, butter and prize record Ayrshires, Champions of Scotland. The Stock Bull, Carlyle of Lessnessock, heads the herd. His grand dam was never defeated in milk and butter contests in England and Scotland, competing against all dairy herds for years in succession, and awarded more gold medals, cups and money prizes than any Ayrshire ever exhibited. With the large importation of females of noted individual records places me in possession of the choicest herd of Ayrshires in America. Live dairy farmers will consult their best interests by improving their Dairy Stock at reasonable prices. Stock always for sale.

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Wooler Stock Farm.



Domnion Lad, No. 1802.

First prize at Toronto, 1895; second, Toronto, and first at six other leading fairs in 1896.

Prize Winning Ayrshires.

Oxford Downs and Berkshires.

My Ayrshires are very strong in young stock and are all in fine shape. At the Toronto Fair last year I won first for herd of four calves under one year, also second and third on Bull calves under one year, and second and third on Heifer calves under six months. My Ayrshires are all of the best milking strains.

YOUNG STOCK FOR SALE.

Satisfaction Guaranteed.

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One two and three-year-old. All prize winners at Ottawa Exhibition in 1896.

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BERKSHIRE PIGS

FOR SALE

6 Fine Young Bulls ^{4 Yearling} and 4 Heifers
_{2 Two-year-olds}

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FOR SALE one two-year-old Bull and two Yearlings. All guaranteed of the best quality and breeding. Also three Bull Calves sired by Douglas of Loudoun 1384, bred by D. Morton & Sons, of Hamilton. Prices to suit. Write at once for particulars.



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T. BROOKS & SONS, Breeders of Ayrshire Cattle, Imported Chester White and Tamworth Pigs.

Herd headed by the grand bull Beautys Style of Anchenbraun (2758) imported by the Hon. Thos. Ballantyne. A pair of 10 months' old heifers and two younger heifers for sale. Chester boars and sows and Tamworth pigs second to none. Prices reasonable. See them or write to

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—OF THE—

RICHEST MILKING STRAINS

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CHOICEST BREEDING

ARE KEPT AT THE GLEN FARM.

YOUNG BULLS AND HEIFERS FOR SALE

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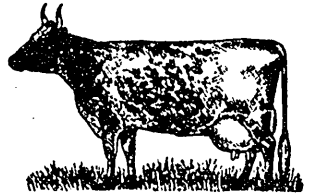
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Bull Calves, Cows, and Heifers, all of the choicest breeding and individual excellence. Early spring Sows, younger Heifers. A lot about a month old, and more in a few days, we offer cheap. For prices or anything in Ayrshires or Yorkshires, write us.

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Importers and Breeders.

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AYRSHIRES

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

John Sandilands, Williamstown, Ont. 852

8
Ayrshire
Bulls

six to eighteen months and a fine lot of in-calf cows and heifers that we will sell cheap.

Have still a few good Red Tamworths, and a grand lot of sows in farrow for spring, also some good Berkshires. Write us now.

CALDWELL BROS.,

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HOWICK, QUEBEC.
FOR SALE—
Lord Sterling,
1st Prize and Diploma at Sherbrooke, and 1st at Montreal.
Dainty Lad,
1st at Sherbrooke and winner at Montreal, and other choice animals from prize winners. For pedigrees, etc., write

WM. WYLLIE,
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FOR SALE

Ayrshires of the finest quality, all Tuberculin tested by Dr. McEachran, Government Inspector, and certified free from Tuberculosis. **DANIEL DRUMMOND**
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Two young Ayrshire bulls for sale. One out of Dandy = 223 = the first prize in milk test at Guelph, 1896; the other out of Briery Bank Susie = 2847 =. Write or come and see.

NAAMAN DYMENT,

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The well-known Clydesdale stallions, "Lawrence Again" and "Life Guard," and a number of highly-bred fillies of all ages. Also the French coach stallion "Kordofaw," a highly-bred, well-built horse, and a very stylish traveller, with great knee and back action.

Young Ayrshire Stock for Sale.

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Established over twenty-five years. Herd now headed by Uncle Sam 6974, Dam Nellie Osborne 5358. Young stock for sale. Speciality in bull calves. Write for prices. **W. F. STEPHEN,**
G.T.R., Carrs Crossing Station, Trout River, Que.

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Portable Engines

In Good Running Order FOR SALE at

LOW PRICES

The John Abell Engine & Machine Works Co.

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TORONTO, - CANADA.

TREDONNOCK STOCK FARM, ST. ANNE DE BELLEVUE, QUEBEC.

Pure Bred Ayrshire Cattle

Selected, Imported, and Bred for Usefulness.

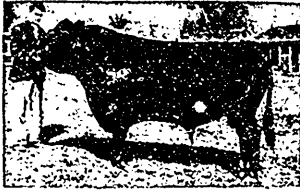
Special attention given to constitution, size, and milking qualities. Four young Bulls fit for service now for sale. Prices reasonable. All communications regarding stock should be addressed to

ROBERT REFORD,
Proprietor.

JAMES BODEN,
Manager.

POLLED ANGUS AND HOLSTEINS.

"RAPIDS FARM" MACHINE RAPIDS, ... QUEBEC ...



Royal Blackbird of Craigston.

POLLED ANGUS AND Ayrshire CATTLE

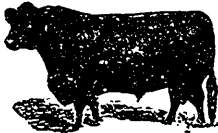
THIS successful and present head of the herd is now for sale; also two young Bulls fit for service. Prices to suit the times.

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ROBERT HUNTER, Manager.

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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,

Lambton Co.

Lucasville, Ont.

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GEM HOLSTEIN HERD.

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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
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ELLIS BROS.,
Bedford Park, Ont.

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.

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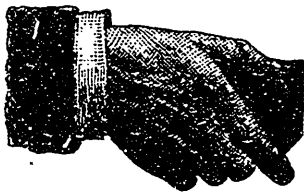
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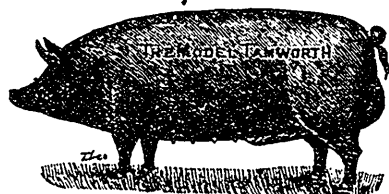
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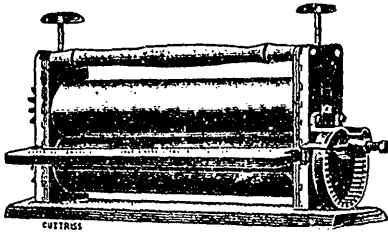
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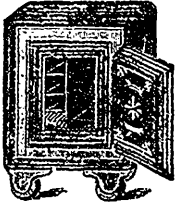
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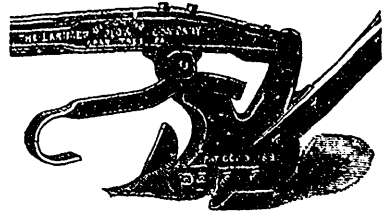
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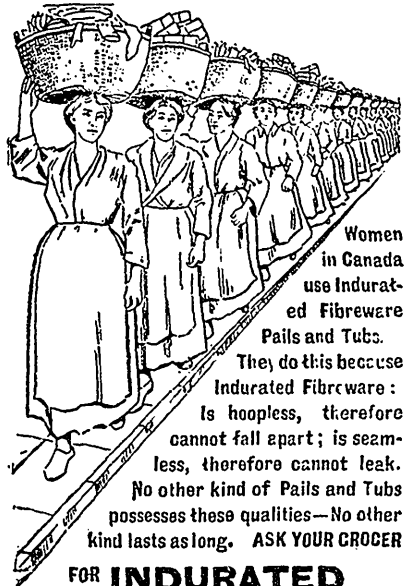
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COLLIE DOGS, Tamworth Swine, Duroc-Jersey Swine, Oxford Sheep, Bronze Turkeys, Toulouse Geese, Pekin Ducks, and Buff Leghorns. A. ELLIOTT, Pond Mills, Ont. 618

M. E. STRATFORD, Brantford, Ontario, has twenty very fine thoroughbred Tamworth and Improved Chester sows, just now ready for service. Prices right. 802

I. O. FRASER & SON, Fellows, Ont., registered Duroc-Jersey swine, bred, and for sale. 856

SHEEP.

JAS. P. PHIN, The Grange, Hespeler, Ont., breeding and importing Shropshire Sheep a specialty. 736

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JNO. A. MCGILLIVRAY, Q.C., Jerseyville Farm, Uxbridge, Ont., Breeder and Importer of Dorset Horned Sheep, Jersey Cattle, and Tamworth Pigs. 494

JOSEPH STRATFORD, Brantford, Ontario, has twenty beautiful thoroughbred Dorset rams, one, two, and three shear. Prices right. 803

D. A. CAMPBELL, Mayfair, Ont., Breeder of registered Lincoln Sheep. 600

W. H. BEATTIE, Wilton Grove, Ont., Breeder and Importer of Shropshire Down Sheep, Collie Dogs, and B. and W. Turkeys. 607

JOHN JACKSON & SONS, Abingdon, Ont. Southdown Sheep. Champion stock at World's Fair. Awarded 20 prizes—10 firsts.

POLLED ANGUS.

WALTER HALL, Washington, Ont., Breeder of registered Polled Angus Cattle of the choicest strains. 562

JAMES BUCHANAN, Napier, Ont., breeder of registered Aberdeen-Angus Cattle. Choice young stock by Lord Forest for sale.

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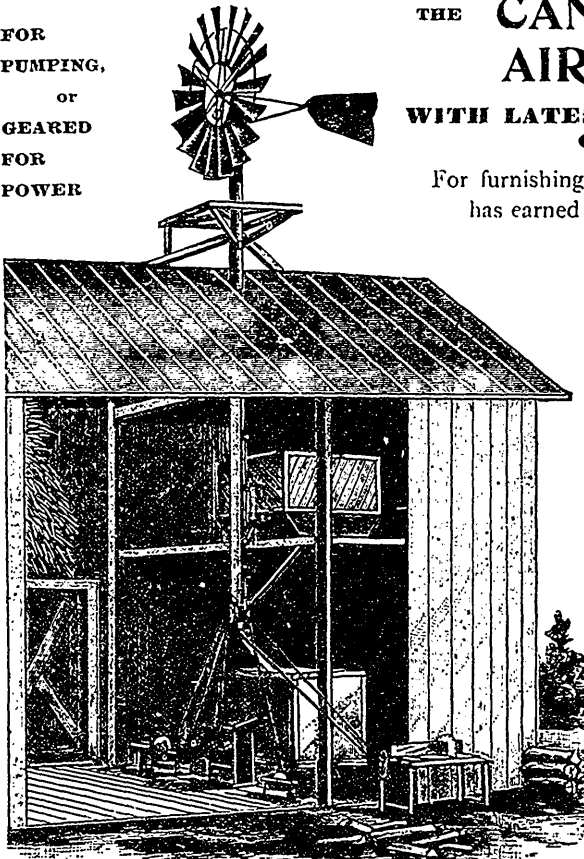
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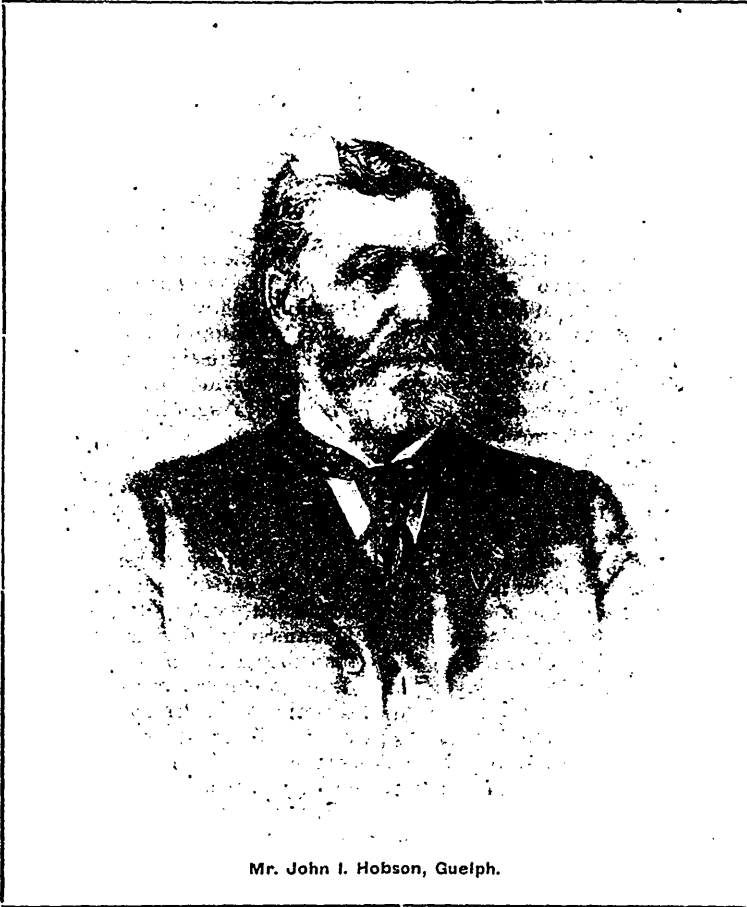
Vol. XIV.

AUGUST, 1897.

No. 12.

THE PRESIDENT OF THE DOMINION CATTLE BREEDERS' ASSOCIATION.

MR. JOHN I. HOBSON, late of Mosboro', now of Guelph, the President of the Dominion Cattle Breeders' Association, industry, and his ability. He has been a farmer all his life, having been born on the farm at Mosboro', which he has only



Mr. John I. Hobson, Guelph.

is one of the most successful and best-known farmers in Canada. He has won this eminence by his energy, his in-

recently retired from. He is one of a family of two. His brother, Mr. Joseph Hobson, is the well-known Chief En-

gineer of the Grand Trunk Railway, and the builder of that magnificent triumph of engineering science, the railway tunnel under the St. Clair River, at Sarnia.

Mr. Hobson's father was one of our earliest pioneers. He came to this country when he was but a young man, and settled on the farm at Mosboro' lately occupied by Mr. Hobson, when it was but a wilderness. He was a man of strong character and sterling worth, qualities which have descended to his sons.

Mr. Hobson's formal education was only that of the common school, and this was acquired in a little log school-house, which is still standing, situated near his old home. But ever since he left school he has been a diligent reader and student. He attributes no small share of his success to the fact that he has never thought his education completed; that he has always been anxious to acquire more information, to find out newer and better methods, and to extend his knowledge in every direction that would lead to practical results.

Another element contributing to his success Mr. Hobson considers to be the fact that he has always had a real fondness for his calling, and that he has always had an intense desire to excel in it. This led him from the first to be quick in adopting methods that promised success, when others would be slow in doing so. For example, he was one of our most successful Shorthorn breeders, having gone into the business as soon as he saw that stock-raising was destined to play an important part in Canadian agricultural industry.

Mr. Hobson has now to some extent retired from farming, because of the death of his only son, not very long ago. However, he still keeps in his own hands a farm of 150 acres; but he has disposed of the old homestead. He is now enjoying, in a quiet way, the fruits of his years of industry and enterprise. He has just returned from a two months' trip to the Northwest and British Columbia; and before this notice will be read by our readers he will be away on a tour of some months in Britain. Mrs. Hobson is his companion on these journeys.

Mr. Hobson has always taken a warm interest in public affairs, especially in municipal matters. He has occupied almost every municipal office that it was possible for his fellow citizens to bestow

upon him, and he retired from municipal life only in 1893, after having occupied the Warden's chair for the county of Wellington for that year.

Mr. Hobson has taken a special interest in agricultural insurance. He was one of the earliest promoters of farmers' local insurance companies in this country, and has been president of the Guelph Township Mutual Insurance Company for over twenty years. He is also vice-president of the Wellington Mutual Insurance Company. As an instance of the esteem in which he is held in insurance circles, it may be stated that last year he was elected president of the Provincial Mutual Underwriters' Association, which position he now holds.

Mr. Hobson's interest in the organized efforts made by our agricultural industry is well known. For many years he has been chairman of the Advisory Board of the Ontario Agricultural College and Experimental Farm. He has been president of the Dominion Cattle Breeders' Association for some time, and has been its vice-president. He is now the president of the Provincial Winter Show Association, and vice-president of the Dominion Shorthorn Association.

Mr. Hobson has just contributed a series of interesting letters to the *Guelph Mercury*, giving his impressions of the prospects of agriculture in the provinces and territories of our great Northwest. He thinks that farmers in the Northwest, and in Manitoba especially, are destined very shortly to be exceedingly prosperous. He predicts that stock-raising and fattening will be a leading feature in the development of the country, and he believes that, even to-day, in no part of the Dominion are farmers more prosperous than they are in these new districts. The development of our mines in Western Ontario and in British Columbia is already having a great effect on the agricultural interests of the interlying districts. He mentions, as an evidence of the truth of this statement, the fact that on the ranches the price of fat cattle has gone up \$5.00 a head. He mentions another interesting fact, namely, that so great is the demand for beef in the western mining country that one dealer has contracted to have delivered to him for the next twelve months no less than 800 fat cattle per month.

TOPICS OF INTEREST FOR THE MONTH.

Canadian Beef in England.

Just now the British farmer is agitated over a bill in Parliament called the Agricultural Produce Marks Bill. The leading object of this bill is to ensure that imported "dead meat," as it is called in England, shall be marked and sold in shops specially licensed for the purpose. The purpose of the bill, of course, is to secure a certain amount of protection (under a plausible excuse) for the meat product of the British farmer. We admit at once that the British farmer is perfectly justified in securing protection for his meat product in this way, or in any other way that is at his command. But the promoters of the bill, so it is said, have overlooked one point: the bill provides that the meat of imported cattle or sheep that have been slaughtered at the port of import (Deptford, Liverpool, or Glasgow, for example) "shall be specifically declared identical with home-fed meat." This clause, it is contended, and rightfully enough it seems to us, has been inserted not in the interests of the British farmer, but of the British middleman or butcher. A difference of 2d. a lb. is generally the fine which the Canadian exporter has to pay the British middleman or butcher because his meat is Canadian and not British. It is plausibly alleged that simply because it is Canadian and not British it cannot obtain the market price for English-fed beef by that much a lb., the fine on each beef animal exported from Canada amounting to about \$30. And yet if this meat is by the new bill specifically declared to be identical with English-fed beef the English consumer does not get the benefit of this cheapened price. The only man who does benefit by it is the butcher or middleman who imposes it. It seems then that the interests of the Canadian producer and of the English consumer are identical in this matter; and we sincerely hope that this clause in the bill will be expunged. If so, Canadian beef will then be sold in the English market on its merits. When that is done we trust that our Government will see that by a proper system of inspection, classification, advertising, etc., our beef does really get before the English consumer not only under its own name, but

in the very best and choicest condition possible. When that advantage is secured for us we ought to be able to get the highest price that the meat is worth. The middleman will then lose his unlawful profit, and the English consumer and the Canadian producer will share it between them. We confess, however, that what we should rather see accomplished is the development of our export trade of meat *slaughtered in Canada*. We believe that only by this latter system can our cattle producers get the highest possible percentage of the price ultimately paid by the English consumer.

Canadian Bacon in England.

It is satisfactory to note that the good reputation Canadian bacon has won for itself in England has of late been standing it in good stead. Even Danish and Irish bacon varies so much in quality that prices therefor range greatly, and the poorer qualities destroy the profits on the better ones. But in the language of the market "Canadians are always the same." According to the latest quotations, Canadian sides, "No. 1 lean sizeable," have been finding ready buyers at 55 to 56 shillings per cwt. for *the run*, while the *pick* of the continental market were quoted only from 62s. to 68s. These figures show the reputation our bacon has got for itself. The moral is that nothing must be allowed to lower the quality of the pork we produce. Some of our packers fear that the removal of the duty on corn will have a tendency to make our bacon too fat, and, therefore, unsuited to the English market. Our bacon feeders must look out for that. Corn is all right in its place; but if it becomes the substantive part of the ration of fattening pigs our bacon reputation will be ruined. There is still, however, a market in Canada for fat pork which it is right for some one to cater to. Surely the Canadian packer can discriminate in the hogs he buys between what will suit his trade and what will not suit it. If his trade is in bacon for England let him buy only the well fed bacon hog and his reputation will be secure. Let the fat porker be bought only by the cutter who caters to our lumber trade. In this way each man will

make his due share of profit without interfering with the chances of the other.

Our Egg Trade.

Last year Great Britain imported 132,440,000 dozen of eggs. Of this vast number Canada contributed 5,900,000 dozen. That is our expert of eggs to Britain is only one in twenty-two of her whole import. What a vast room for expansion here! Just now there is a good enquiry in England for Canadian eggs. But only good eggs, of good size and weight, should be sent. The minimum weight should be not less than 15 lbs. to the "long hundred," of ten dozen; that is, a dozen eggs should weigh at least $1\frac{1}{2}$ lbs. A better grade is $16\frac{1}{2}$ lbs. to the long hundred. It is expected that a large export of Canadian eggs will go forward to England in August and September. The Government has provided ocean cold storage facilities for 100 to 110 carloads during these months. It is to be hoped that farmers, merchants and shippers will all co-operate to make these trial shipments a success. The Dingley bill makes it impossible to send our eggs into the States. We must sell them in England if we sell them at all. And the market there, as the above figures show, is practically unlimited. But the Englishman is as particular about his eggs as he is about his butter and cheese and meat. He won't buy them unless they are clean, meaty, and of good size. We trust that our Dominion Government will keep a good look out that everything possible to be done will be done to make our egg trade with England a glorious success. It has begun well, but there is much yet to be done. The principal use of a government is to do for the people what the people individually cannot do for themselves. A government can in no way carry this rule out better than by promoting the trade of the people; not merely by passing laws permitting the trade, but by actually watching over it and assisting it till it has become established. Our export trade of eggs is one that just now specially needs this watching and assistance. We have faith in our government doing its duty.

Are Good Times Coming?

We have been having hard times now for six or seven years. Is a change coming?

Many people think so. They are also thinking so on the other side. Farmers in the western United States, especially stock-raisers, have been making more money during the past nine months than ever before since the panic of 1893. When grain and forage can be profitably converted into beef, pork and mutton there is hope for nearly all other industries. This is what has happened there; hence the cause of their good spirits. The great demand which the Americans have made for our young beef cattle also shows that things have been picking up there wonderfully. In Canada too, we are beginning to feel the benefit of the improvement. The trouble is that so many of our young things have been sold that our supply is now run short. This supply must be made good as speedily as possible. The breeders of beef cattle at any rate should have confidence that better things are in store for them.

Let Beef Cattle Men Take Courage.

For some five or six years in Canada as well as in the United States the whole trend of cattle-raising has been towards the production of the dairy cow. For men who have planned to follow dairying to the exclusion of all else, that tendency has been beneficial enough. But, unfortunately, there has been so decided a set towards dairying that the raising and fattening of steers for beef has been almost abandoned. The result is that now the scarcity of beef cattle is so pronounced that there is a danger that the reaction will set in the other way and carry too many people back again into beef production. Let due caution now be exercised. Let the man who has acquired a fondness and developed a skill in his dairy work stick to his dairying. The present depression in dairy goods cannot long continue. On the other hand, let the man whose predilections are for the breeding and preparing of cattle for the block go in for that branch of the work and leave dairying alone. For some years at least good times are in store for him; and when a turn in the tide again comes round he will by that time be prepared to meet it.

Canadian Stockers in the U.S.

As everyone knows, there has not been for years such a large exportation of

Canadian stockers into the United States as has been made this spring and summer. These stockers were oftentimes of good breeding, but in poor condition when sold. They were bought by American breeders who were short of cattle but had plenty of feed. It is somewhat curious to learn that in many instances the purchase of these Canadian cattle has proved a disappointment. On enquiry it is found that the American fatteners used a ration (an all-corn ration) on

tion-very unjust to farmers. For example, he says that the railway rate for stock in carloads on the G. T. R. to Portland or Boston is graduated from 28 cents per hundredweight at Chicago to 22 cents at Port Huron. But at Sarnia, three miles nearer the seaboard than Port Huron, the rate jumps up to 28 cents. And the same rate of 28 cents is continued all the way from Sarnia to Glengarry. From stations in Glengarry to Portland the distance is about 350 miles. From Port



The famous Hackney, "Leader the Scotchman".

Mr. John Arthur, of New York, driving his magnificent heavy-harness horse, that won so many ribbons and made such a popular impression at the late Boston and Philadelphia Horse Shows. See *FARMING* for July, page 695. Our engraving is reproduced from a fine photogravure published in *The Rider and Driver* of Philadelphia.

which the Canadian cattle did not thrive. When fed on roots, grain, or a mixed diet generally, the stockers did very well. It seems that in many cases they were given an all-corn ration so suddenly that they did not take to it.

Unjust Railway Discrimination.

Mr. J. Lockie Wilson of Alexandria has been giving in *The Weekly Sun* some startling instances of railway discrimina-

Huron the distance is over 800 miles. And yet the rate is 6 cents a hundred weight less for the longer distance than for the shorter!

Mr. Wilson justly asks: "If the Grand Trunk grades the rate in the United States according to distance, why does it not do so in Canada?"

Mr. Wilson also points out another unjust discrimination. Shippers from Chicago pay only the 28 cent rate, which includes no terminal charge. Canadian

shippers from Sarnia, Guelph, Toronto, Port Hope, Kingston, etc., pay the same rate of 28 cents and also have to pay an additional $3\frac{1}{2}$ cents per hundredweight terminal charge for transshipment!

A third injustice is pointed out by Mr. Wilson. American shippers of stock are charged a minimum weight of 20,000 lbs. per car; but *the weights of the carloads are averaged*. For example, an American shipper used two cars, one of 18,000 lbs. and one of 22,000 lbs.; his carloads are averaged and he has to pay for two cars only. But if a Canadian shipper used these same two cars he would have to pay (1) full price for the first car and (2) full price for the second car and for 2,000 lbs. besides.

Mr. Wilson further calls attention to the way in which the weights for single cattle are estimated. He wished to send an Ayrshire cow, weighing 675 lbs., and an Ayrshire calf, weighing 125 lbs. actual weight, from Alexandria to Galetta, a distance of 80 miles. He found out not only that the rate was 34 cents but that by the rules of the railway the cow would be reckoned at 2,000 lbs. and the calf at 500 lbs.! In other words he would be charged 34 cents on 2,500 lbs. or \$8.50 instead of 34 cents on 800 lbs. or \$2.72. As he himself expressed it, he refused "to pay 34 cents a hundredweight on 1,700 lbs. of humbug." He sent the cattle on a baggage car on a passenger train and was actually charged \$2.50 less than the freight rate would have been.

Mr. Wilson thinks, and FARMING quite agrees with him, that these are matters of sufficiently grave importance to be taken up vigorously by the railway committee of the Privy Council. It is all very well to subsidize new railways, but it is quite as important to see that justice is done the people by the railways already built.

United States Efforts at Imitation.

Last month we called attention particularly to the efforts being made by the United States authorities to secure the English market for their butter. We do not believe that this effort will be generally successful, owing to the indisposition of the American butter producer to suit any taste other than his own. The English flavor, the English degree of saltiness,

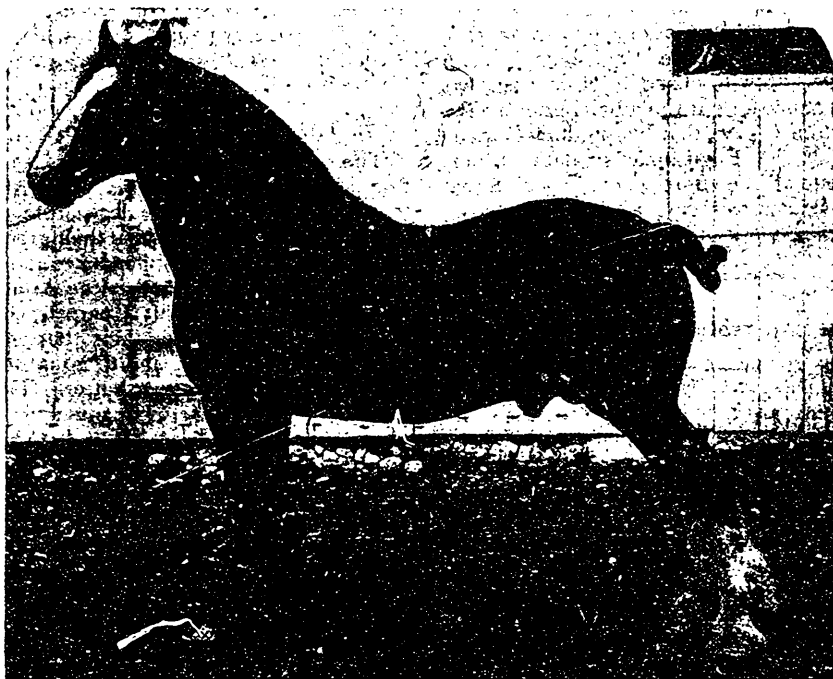
the English color, even the English standard weight and standard package are points that he does not "see any use for," and so will not try to satisfy. This, we say, will be the general tendency, and therefore we do not fear any far-reaching effect from American competition provided our creamery men are alive to their chances. But in the meantime some ground is being gained by the Americans at our expense. We learn that owing to the fact that Canadian butter-makers understand the English market and tastes better than American butter-makers, creamery owners in both the Eastern and Western States are employing practical men from Canada to assist them. The *Montreal Trade Bulletin* also informs us that empty Canadian butter-boxes are being bought by makers in the Western States for the purpose of using them as models whereupon to make butter packages for the English market similar to ours.

Are Our Creamerymen Lagging?

Despite the efforts made by the Dominion to provide cold storage facilities on our rail and ocean transportation service, it is to be regretted that the export of Canadian creamery butter to England has not been as large as it was anticipated it would be. The refrigerated space which Canadians have not used has, however, been used by American shippers. American butter from northern New York, Michigan, Illinois and Wisconsin, has been carried to England in great quantities in the cold storage which the enterprise of our Dominion Government provided for the use of our own creamerymen. This deficiency of Canadian butter for our ocean cold storage service is due partly to the fact that creamery production in Canada is not yet as great as it will be in the near future. It is partly due to the fact that some Canadian creamerymen and shippers are unwilling to pay the extra 10 shillings a ton charged for the ocean refrigeration. This is a very foolish economy and one that we trust will shortly cure itself. But whatever the cause of the deficiency is the result is lamentable. Canadian creamery butter has won a good reputation for itself in England. All this season Canadian creamery butter has averaged 2 cents a pound higher than the same grade of butter made in the Western States. The latest

London quotations show a difference of 6 to 8 shillings a hundredweight. But English buyers are finding out the good qualities of the American butter and are placing orders with American shippers that should naturally come to us. A London firm has recently contracted to take the entire daily product of the Iowa agricultural college, amounting to 800 lbs. a day. Readers of FARMING for last month will remember that it was the butter made in this college that met with

to England in tubs instead of boxes. Six hundred tubs from Montreal entered the London market in one week. The policy that FARMING would urge is this: Let every farmer who supplies butter to a creamery insist on these things: (1) the best product the creamery can turn out; (2) the best and most up-to-date package the creamery can use—this in every case should be a square package; and (3) the use of the cold storage system on every foot of the route to England possible.



Mr Robert Davie's Clydesdale Stallion, "Prince of Quality".

A magnificent black, with ratch on face and hind legs white. Aged stallion at the Canadian Horse Show, Toronto, 1897.

Bred by R. Holloway, Alexis, Illinois, U. S. A. First prize. Engraving made from photograph taken by FARMING.

the highest success in Secretary Wilson's first trial shipment of American butter. In the meantime United States shippers do not enjoy so good an ocean cold storage service as we have got, and if our creamery product were sufficiently large and sufficiently good we should have nothing to fear from the competition of our neighbors. But it does seem unfortunate that now we have got a good ocean transport service it is our competitors rather than ourselves who are reaping the advantage of it. Another point is that we are still sending butter

A Point to Creamery Men.

The great object of the butter-maker who wishes to capture the English butter market is to produce a uniform product. This cannot be done except in creameries, and only in creameries where every advantage is taken of scientific methods of making. The Danish makers have found this out, and pasteurize their cream always. They know that from sour cream perfect uniformity is impossible. Mr. J. H. Monrad is urging the American creamery men to adopt pasteurizing, and

thus secure uniformity also, and he says that not until they have done this should they try to get possession of the English market. But the American creamery men are averse to pasteurizing: first because of the trouble it takes, and second, because they say the American market wants only butter which has the flavor which can be had only from raw cream. They say that Englishmen will like their butter made from raw cream a great deal better than Danish butter made from pasteurized cream, when once they get used to it. People who are acquainted with the English market do not think this. They know that the Englishman's tastes are very slow to change. Here, then, lies the chance for our Canadian butter-maker. Let him *be sure* that his product is made to suit the Englishman's palate. Then, despite all the efforts made by Mr. Secretary Wilson to secure the English market for the American creamery man, the position of the Canadian butter-maker will be secure.

The Australian Butter Package.

Do we appear to be always harping on dairy matters? If so, our excuse is, that dairying just now is a very progressive industry; that three farmers out of every four are directly concerned in it; and that the fourth man is also indirectly concerned in it. Besides, we have made a good start with our dairy products, but owing to somewhat similar good starts made by other countries the competition is very keen, and if we don't keep at the head of the procession we might as well drop out of it altogether, for all the profit or honor it will be to us. It is a burning shame that we have allowed our American competitors to come in and take advantage of our ocean cold storage transportation facilities. But that is not the whole of our remissness. We are using tubs of varying size; whereas the English retailer wants a square package holding just 56 lbs., so that he can easily open it out and show to his customers a clean, clear block of butter, always of uniform size and always attractive by its solidity and by the rich granular appearance of its surface. Now the Australians have not only adopted the square package, but they have gone one better and have improved it. They put a 3-inch square, quarter-inch high, projection on every

corner of their package. This secures a half-inch air space between every two boxes no matter how closely they are packed. The result is that the butter can be more easily chilled before it is shipped, and that it can be more easily kept cool when once it is chilled, both on the cars and on board ship. Besides in this way the stencil marks that are used are never obliterated or defaced by rubbing. In short the device is a good one every way, and we should like to hear of some similar device being used by Canadians. We believe the Australians have protected their device by patent, and intend that it shall be used only on packages coming from Australia.

The Butterine Question.

The butterine, or oleomargarine, question is not settled in Illinois yet. After their recent victory in the legislature the friends of butter thought that their ground was secure. They were still more confident when it was announced that the Armour Company and the Swift Company had determined to change their butterine plant to a butter plant, and to go into the manufacture of genuine butter. Then also, when other butterine manufacturers, endeavoring to comply with the law, turned out a product that, while it resembled light-colored butter very closely, was still so white that its sale was impossible, the friends of butter were properly enough in high spirits, for they said that this was proof positive that the previous success of the butterine manufacturers was based on deception. "Its very lightness of color betrayed its identity, and no sale was found for it. Purchasers (hotel keepers, boarding-house keepers, etc.) endeavored to use it upon the table, but found the fact of its being known as butterine worked against the appetites of consumers, and the effort was a failure." But there is yet considerable work ahead of the friends of pure dairy products. The makers of butterine have determined to test the validity of the anti-butterine law. They have discovered some technical informality in the passing of the law, and they hope thereby to upset it. If they succeed in doing so they are confident that the law will not go through a second time. They have got the labor people opposed to it. The "Chicago Federation of Labor" was at

first in favor of the law, but is now against it. The reason of this is that the butterine boxes were all made by union labor, and great care was taken to prevent the boxes being used a second time. Butter boxes are not so made, and the butter package is often used a second time. Hence arises the opposition of the labor men to the late advantage gained by the dairy industry.

A Good Law Really Protects.

They have just passed a law in Minnesota providing that all "full cream" cheese shall contain 45 per cent. of fat in total solids. Some fraudulent makers of skim-milk cheese have been selling their goods without branding them as "skim-milk" cheese, and have thus violated not only the United States law, which requires that all skim-milk cheese shall be branded as such, but also the new State law above mentioned. Of course the purchaser, relying on these laws when he buys the unbranded skim-milk cheese, thinks, first, that he is getting full cream cheese; and second, that he is getting it with 45 per cent. of fat to total solids. If what he gets is skim-milk cheese with a fat percentage of only 15 or 16, he is badly deceived. But the State Dairy and Food Commission of Minnesota is determined that no such deception shall be allowed to pass. Recently some cheese in a local store in Minneapolis was suspected of being of fraudulent character. It was tested by the chemist of the commission, and found to score only 16 per cent. The owner of the store was arrested and fined \$25. We are glad that in Canada cases of fraudulent sale of skim-milk cheese are rare.

Australasia versus Canada.

In a bulletin recently issued by the New Zealand Department of Agriculture some interesting facts are given showing the growth of dairying in the colonies during the past few years. Some interesting comparisons are made between Canada and Australasia in this respect. In 1891 the estimated number of cows in the colonies of Australasia, which includes New Zealand, was 945,575, and in Canada 1,857,112, and the quantity of butter produced was 23,000 tons and

51,700 tons respectively. The amount of cheese produced was 6,700 tons in Australasia, and 51,000 tons in Canada. In 1895 these figures had grown to 1,100,000 cows in Australasia, and 1,950,000 in Canada. The butter made in Australasia reached 36,000 tons, and in Canada 52,000 tons, and the production of cheese in Australasia reached 11,500 tons, and in Canada 68,000 tons. These figures are interesting as showing the comparative progress these countries have made in regard to these items.

Another interesting comparison is made as to the productiveness of the cows in the various colonies and in Great Britain. In New South Wales the average yield per cow is estimated to be 274 gallons; in Victoria, 291 gallons; in New Zealand, 330 gallons; and in Canada, 340 gallons; while the average yield per cow in the United Kingdom is given as 454 gallons. It is gratifying to note that Canada stands ahead of the other colonies as regards the yield per cow, but she is still far below what she ought to be. Measure these figures with what ought to be the standard of every cow, or 600 gallons per annum, and even the average cow of Great Britain is away below. If the average in Canada is only 340 gallons per cow, there must be some very poor cows roaming around "sponging" their board on the unsophisticated dairyman. If the figures respecting the average yield per cow given by our Antipodean friends are correct, and we have no reason to doubt them, the dairymen of this country have a long distance to cover before they reach the top, and have ample opportunity to exert their energies in developing the milking qualities of their cows.

Laws Against Deception.

The anti-butterine law passed by the Legislature of the State of Illinois was merely a law making deception punishable. But why should deception be prohibited in one business and be permitted in others? This was a question recently asked by the legislators of Illinois, and in response they passed a law making it a criminal offence for any one to advertise falsely. That was a right sort of law to pass. We would like to see a similar law put in operation in Canada.

SUGAR FROM BEETS.

In FARMING for July we called attention to the importance of a due consideration being given to the possibilities in Canada of manufacturing sugar from beets. We believe that this question is of the greatest moment to the Canadian farmer in all southern and eastern parts of the Dominion. *We are spending nearly ten millions of dollars annually in the importation of a product which could be manufactured at our very doors from raw material which our farms can and ought to produce.*

The people in the United States are thoroughly in earnest about the introduction of the sugar beet industry into their territory. During the past sixteen years they have imported 22,509,649 tons of sugar. Their importation for 1896 was 1,739,313 tons. During the past sixteen years they have paid out for imported sugar about \$1,500,000,000. Their average outlay for imported sugar is now over \$100,000,000 a year. Of the sugar they import over one-fourth is raw beet sugar made in Germany. A very considerable portion of the remainder of the importation is raw beet sugar from other countries. Now, every dollar's worth of this imported sugar whether from cane or beet could be just as economically manufactured at home. All that is needed is for the industry to be introduced. This, however, calls for both capital and experience.

Every argument that would lead the Americans to establish beet sugar manufacture applies with equal force to Canada. Our consumption of sugar *per capita* is greater than theirs. The sugar beet zone of cultivation takes in southern Ontario, southern Quebec, southern New Brunswick, Nova Scotia, and Prince Edward Island. And there is at least one good reason why the sugar beet industry would be much more likely to succeed in Canada than in the United States. Our Canadian farmers are trained expert root raisers; the American farmers are not. A few years since Sir Henry Gilbert, of the Rothamstead Experiment Station of England, was riding through a fine agricultural district in the United States, which at that time he was visiting. Noticing an utter absence of turnip fields and mangel fields, etc., he asked of his guide :

"What is the matter with American agriculture? Where are your roots?" The answer was: "We haven't any. No American farmer will bend his back to the hoe!" Of course root culture is now getting more common in the States than it used to be, but a field of good roots is still scarce and wonderful there. It is not so in Canada. Root culture here is what many of our farmers most excel in. There is no reason in the world why sugar beet culture in Canada should not be exceedingly successful.

In the Chino Valley, California, in 1891 a beet root sugar factory was begun with 1800 acres of beets under cultivation. Since that time its operations have steadily increased until in 1896 it required 7,528 acres of beets to keep it running. During the same time the yield of beets per acre increased from 7.26 tons to the acre to 11.03 tons to the acre. The price received for the beets increased from \$28.37 per acre in 1891 to \$47.98 per acre in 1896. The cost of raising the beets is almost wholly due to labor, which in 1896, was found to be \$30.00 per acre. The profit per acre therefore was \$18.00.

One matter also must not be overlooked. The bye product of the beet sugar factory is beet pulp. This is simply the original beet root with the saccharine matter extracted. This beet pulp is a valuable product for stock-feeding. Professor Curtiss, of the Iowa Agricultural College, states that one of the best bunches of cattle marketed at Chicago last winter had been fed on a ration of which beet pulp constituted a principal constituent. The feeder who prepared this particular bunch of cattle said that the beet pulp cost him 75 cents per ton and that it was worth it. He has used beet pulp both in Germany and in his present home and he emphatically declares it to be a profitable feed when used with grain.

Most people suppose that the sugar we daily use comes mainly from the sugar cane. As a matter of fact, 60 per cent. of the world's whole supply of sugar is now made from beet roots. No one knows or can tell the difference between refined beet root sugar and refined cane sugar. Most of us consume beet root sugar every day of our lives and do not know it.

The great difficulty in the way of introducing the manufacture of beet sugar into a new district is the uncertainty of obtaining the beet root of sufficiently good quality. The percentage of sugar that the roots contain depends almost wholly on their cultivation. In the Chino Valley district, above referred to, the percentage of sugar on the beets used increased from 13 to 15 per cent. in four years. Varieties of beets which now produce under careful cultivation from 15 to 18 per cent. some time ago produced only 6 per cent. Of course the manufacture of the sugar

Mr. Mackenzie, of the above mentioned Company, in writing to *FARMING* last month, stated that it would require fifty factories of moderate size (such as his company was intending to build), to supply the sugar now used in Canada. What a tremendous benefit it would be to our agriculture, if these factories were in operation. Each one would be the centre of a large group of farms, say 600, each of which would have its beet root field of say 5 acres. The care necessary for the successful cultivation of the beet root land would result in improved methods of



Champion Scotch and English Ayrshire Cow.

Ayrshire Cow, Judy of Knockdon 8059. Bred and owned by Alex. Cross, of Knockdon, Scotland. Champion of the Ayrshire Breed at the Perth "Highland" and the Manchester "Royal," 1897. Engraving made from photogravure in a recent supplement to *The North British Agriculturist*.

can be profitably carried on in these days of keen competition only when the percentage is tolerably good. We are informed by the Sugar Beet Manufacturing Company of Owen Sound, Ontario, that samples of sugar beets grown under their auspices have tested 17½ per cent. This is a remarkably high percentage, and if that percentage could be reached in general practice, it would make the cultivation of the sugar beet in Ontario a practicable and an exceedingly profitable industry.

cultivation generally. This again would result in a more extensive following of stock raising. In other words, we should be following industries which require skill and care, and in which competition is naturally small, instead of giving our attention so much to grain growing, in which industry indeed we have to compete with half civilized and even barbarous countries all over the world.

Once more we repeat that we think it the bounden duty of our government to enquire very thoroughly into the possi-

bilities of beet sugar manufacture for Canada. If we *can* economically manufacture beet sugar here, then every day

we do not do so is the occasion of a great loss to our national wealth. We *should* have 30,000 farmers raising sugar beets.

TUBERCULOSIS IN CATTLE.

The Department of Agriculture for Ontario is acting very commendably respecting tuberculosis. It has taken measures to assist farmers and others in freeing the country from the disease. Its measures are practical and thorough, and are such as will ensure the good-will of stockmen and their practical co-operation. It has published a bulletin giving a general account of the disease, and showing the importance of eradicating it, and showing also the practicability of eradication. In this bulletin it has also given full directions respecting the use of tuberculin for the purpose of detecting the presence of the disease. Moreover, it is furnishing the necessary tuberculin to those requiring it free of cost. It is encouraging Farmers' Institutes to take up the matter, and has arranged for practical demonstra-

tions to be given to meetings of farmers whenever these are desired, for the purpose of giving the fullest possible instruction respecting the use of the tuberculin, the care of the cattle treated by it, the action to be taken when the disease is indicated, and everything else connected with the subject. We have pleasure in printing herewith a condensation of the first part of the bulletin, and would refer our readers who wish further information to the bulletin itself. Copies of it may be had by addressing the Minister of Agriculture, Parliament Buildings, Toronto. The duty of making all arrangements respecting the work of practical instruction referred to above devolves upon Mr. F. W. Hodson, Superintendent of Farmers' Institutes, to whom all requests for instruction should be addressed.

SUMMARY OF THE DEPARTMENT BULLETIN.

Prevalence of the Disease.

Tuberculosis is one of the diseases of animals which in many countries inflicts great loss on those engaged in agriculture. The United States and Canada are not so seriously affected as the older countries of Europe, but occasional examinations show that the disease has obtained a foothold here and is now causing considerable loss.

So gradually has the disease progressed in Europe, and so widespread has it become, that it has come to be looked upon as a necessary or at least an unavoidable condition against which there is no use struggling. During the past ten years, however, a more correct knowledge of the disease and its manner of spreading has been obtained, and now it is generally conceded that the disease can be completely wiped out, and healthy herds obtained and kept for the future. It is to help the Canadian farmers to keep their herds free from this disease that this bulletin is issued. Those who will carefully study what is presented in it will acquire a clear knowledge of tuberculosis, the manner in which it afflicts the individuals of a herd, and how its ravages may be successfully prevented. By proper management, as herein directed, cattle owners may succeed in keeping healthy herds without the great loss entailed by the indiscriminate slaughter of all animals showing traces of tuberculosis.

Dr. Leonard Pearson, State Veterinarian for Pennsylvania, says: "It is my opinion that the disease will eventually be thoroughly eradicated. The fact that this has already been done on some

farms, and even in some larger districts, indicates that it is not impossible for states to achieve the same results."

Tuberculosis a Germ Disease, and not Hereditary.

The disease, as discovered by Koch, is due to a germ or bacillus which enters the stomach with the food, and finds its way eventually into the circulation, or enters the lungs with the air, and lodging in the tissue begins its work. Thus it is seen that the disease is contagious, and not hereditary; that is, it is acquired, and not transmitted directly from the parents to the offspring, except in very rare instances.

Mr. H. L. Russell, Bacteriologist to the Agricultural College, University of Wisconsin, Madison, Wis., says: "Tuberculosis is rarely hereditary. It is contracted, in almost all cases, after birth, by breathing contaminated air, or consuming diseased food. If the source of contagion be removed the young stock will remain healthy."

Prof. Nocard, of the State Veterinary School, Alfort, France, says: "The agency of heredity in spreading the disease is insignificant and may practically be disregarded. Thousands of cases may be quoted, both with respect to man and beast, where the offspring of parents, either or both of which were tuberculous, have lived without having presented the least symptoms of tuberculosis."

The Disease Spread by Contagion.

It is thus against contagion that all efforts to

stamp out the disease should be directed. The spread of the bacillus is largely caused by animals being put together in the same stable. The discharge from the lungs of an affected animal is spread around it in the bedding and mangers, during its fits of coughing, and becoming dry it is reduced to powder and floats in the air, and is then inhaled by the animals in adjacent stalls, and even animals in the same stable, although some distance removed, are not free from danger. When it is remembered that millions of these small germs are coughed out with a small quantity of the secretion it may be seen how easily a whole stable may be affected from one animal.

A source of very great danger is putting healthy animals into stalls once occupied by diseased ones, as the mangers are usually contaminated unless a thorough disinfecting process has been carried on. Animals drinking from the same trough, particularly a trough running in front of stalls from which they all drink, are subjected to a great source of infection.

Transmission of the disease from one animal to another is not very frequent in the pasture.

Now since contagion is the principal cause of the spreading and keeping alive of the disease, it is necessary, in order to put an end to it, that all the healthy animals should be separated from the unhealthy. Up to this time this has been a very difficult undertaking, as it was almost impossible to say with certainty which animals were affected and which not, as some may be considerably diseased (enough to spread the contagion), and yet not show any signs of sickness—in fact, look to be in almost perfect health.

The Use of Tuberculin as a Test.

To-day, by the use of tuberculin, it is possible to tell a diseased animal even if it is in the earliest stages and the parts affected very insignificant. The efficiency of the tuberculin test in recognizing the disease, both in its incipient and well developed stages, is now unquestioned. It detects a diseased condition long before any physical symptoms are apparent. A re-acting animal of this sort, though tuberculous, might remain in the herd for considerable time and still be regarded as perfectly healthy, but in a great many cases it is a centre of contagion, and from such an one the seeds of the disease are sown throughout the remainder of the herd. Herein lies the great advantage of the tuberculin test, as it permits of a recognition of the disease sufficiently early to prevent further spread if proper measures are at once instituted.

If a small quantity of the tuberculin is injected under the skin of a suspected animal, and the animal shows no elevation of temperature, that is, has no fever afterward, then the animal is not tuberculous. On the other hand, if the animal is ever so slightly tuberculous the injection is attended in a few hours with fever, an elevation of $2\frac{1}{2}$, $3\frac{1}{2}$, $4\frac{1}{2}$, or more, degrees Fahrenheit.

The tuberculin does not give any indication of the extent of the disease, as an animal with a very small lesion will often react more markedly than one which is largely affected.

No Harm to be Feared from the Use of Tuberculin.

Some will naturally be afraid of doing some harm to their cattle by the injection. The injection

presents absolutely no danger, and the reaction passes off completely in a short time. If milch cows are injected the quantity or quality of the milk is in no way affected; it brings no trouble to cows carrying calves or about to calve.

An acute development of tuberculosis as a result of tuberculin injection is to be feared only exceptionally, and then in cases of advanced tuberculosis. The testimony of many owners of large herds of cattle which have long been injected is to the same effect.

Tuberculin has been employed on a large scale in Denmark for years, and still the demand from farmers constantly increases. This could certainly not be the case if the injections were generally followed by bad results.

The Importance of Using the Test.

Now that we have found out that in tuberculin we have an admirable means of recognizing tuberculosis, and its application is not attended with any particular danger, the question remains as to how best to use it against tuberculosis. First, every herd in the country should be inoculated, and every cattle owner should see to it that his herd is tested, as in this way only can he expect to be freed from the losses which are constantly taking place on account of this disease, and thus help to put a stop to one source of tuberculosis in man.

Treatment of Cattle when Tested.

After inoculation there must be a separation of those animals which react, that is, those which show some amount of fever after injection and are clearly tuberculous, from those which do not react and are healthy.

The healthy ones should be put in a new stable if possible, or if not, in a stable which has been thoroughly disinfected, separate from the diseased ones, and great care exercised that they are not allowed to come in contact in any way. As an example, you may separate your herd and take the utmost care to keep them from infecting one another, and then allow them to drink at the same trough, although at different times. This will entirely undo all the good you can do in months of careful handling.

The stables should be clean and well ventilated, and cattle allowed a large air space to each animal. In hospitals and army barracks men are allowed 1,500 to 2,000 cubic feet of air space, and as cattle have the same relative amount of lung tissue in proportion to their size as man, they should have considerably more air space than this, yet everyone knows how common it is to see cattle in stables so close together that they have just barely room to lie down. The ceilings are low and the space behind small. The drainage is poor and the light and window space small, and no provision made for ventilation. Of course this process tends to warmth, but it is at the expense of the health of the animal. Statistics show that there is a much larger proportion of cattle tuberculous among those that are constantly housed, as is the case very largely with extensive city dairies, than among those which spend much of their time out of doors or in open sheds.

In the same way fancy herds have a larger amount of tuberculosis on account of their close housing. So it may be stated that to prevent

diseases of this kind ventilation and sanitary conditions of buildings should be well looked after.

Treatment of the Tuberculous Animals.

After the herd has been separated care should be exercised on the part of attendants who care for the two divisions. If possible separate men should care for each, so as to prevent contagion being carried on their clothes and shoes.

Then all the calves from the diseased division of the herd should be removed as soon as born, for it has been proven beyond dispute that the calves of diseased cows are, in ninety-nine per

cent, and thus cannot infect the calves, yet it is better to be on the safe side and heat all such milk up to 175 degrees for ten or fifteen minutes, which will destroy all germs, if there are any, and thus preserve the calves from contagion from this source.

If at the time of testing any animal shows symptoms of advanced tuberculosis—that is, if any are clearly sick, coughing, and losing flesh—they should be slaughtered at once and the flesh destroyed.

It is advisable also to attend quickly the animals that give a reaction with tuberculin, but are



Applying the Tuberculin Test.

Professor J. H. Reed, Provincial Veterinarian, making an injection of tuberculin at the Ontario Agricultural College, Guelph.

cent. of cases, healthy when born, and do not inherit the disease. If they are removed at once and fed on healthy milk, and prevented from living with the diseased mother and thus becoming infected by inhaling the disease germs, they will grow up to be healthy cattle.

They should be fed on milk from the healthy cows, or if the milk of the diseased cattle is used it should be heated to a temperature of 175 degrees Fahrenheit for ten or fifteen minutes before feeding. Although it is claimed by experts that the milk from an affected cow, if the udder is not diseased, will not contain the germs of the dis-

apparently healthy, and sell them to the butcher, making calculations to get rid of all reacting animals in the course of eighteen months or two years. The healthy division and the calves should be injected at least every six months, and if any show signs of tuberculosis they should be removed to the other division and the stalls thoroughly disinfected. The best way to disinfect the stable is to clean it out thoroughly, sweep down walls, ceilings, and mangers, and then spray with hose or force-pump a five per cent. solution of carbolic acid (made as described in bulletin) all around walls, ceilings, stalls, mangers, etc. Scrub out

mangers with the same solution, and afterwards whitewash walls, ceilings, and sides of stalls. It can be readily seen that if this process of injection and separation of the herd, with proper care to protect healthy division and calves, is carefully and faithfully carried out, one can stamp out this disease in a whole herd in about two or three years at a very small cost.

Summary of Directions.

Summarized, the above is as follows :

First, test the herd with tuberculin. *Second*, separate the reacting animals, as far as possible, from the healthy. *Third*, carefully disinfect the stable. *Fourth*, kill the evidently sick animals (as above stated), either at once or after rapid fattening. *Fifth*, rear the calves of the cows which react, but otherwise appear healthy, or at least only slightly attacked. *Sixth*, remove the same immediately after birth from the infected stable, place them in a healthy division and protect them from further infection, especially from feeding suspected milk. *Seventh*, inoculate with tuberculin the animals of the healthy division once or twice yearly.

The last precaution is taken to permit the quick removal from this division of animals which, in spite of previous precautions, appear to be infected.

This method rests upon the assumption, first, that infection is the single cause of tuberculosis; and, second, that the germs are not present everywhere, but that infection is caused by the continued living together through a long period of time of tuberculous cattle, and further by the rearing of calves on raw milk from tuberculous cows.

Precautions that Should be faken.

With regard to use of a bull in the herd it is almost certain that the bull, if diseased, cannot transmit the disease directly to the offspring, but in some cases it may be transmitted to the cow. It is therefore wise to have a healthy, that is, a non-reacting, animal as sire. The short time in which he comes in contact with a cow, even if she is diseased, will not in many instances infect him. The bull, of course, should be inoculated with tuberculin two or three times yearly in order that he may be isolated quickly if at any time he shows signs of tuberculosis.

Another point where great care should be exercised is in the purchase of bulls or breeding animals. After your herd is clear of disease you can readily infect the whole herd again by bringing in an animal suffering from tuberculosis. So one should not purchase an animal without first submitting it to tuberculin test and proving it free from tuberculosis, or else demand a certificate that such animal has been so tested recently and found free from disease.

On the other hand, no one should try to sell an animal, except to the butcher, which has at any time reacted to the test.

Any Stockman May Test His Own Herd.

Up to the present time these tests for tuberculosis by means of tuberculin have been carried on by experts, veterinary surgeons, etc., but there is no reason why any intelligent man, who makes an effort to post himself as to the methods of keeping clean and using the various instruments, should not test his own herd from time to time. With this in view, a complete description of all instruments used in the testing are given in the bulletin, with instructions as to the way to keep them clean or sterilized, and the method of preparing the animal—inoculating the tuberculin and taking temperature. With this information each stock owner may either test his own cattle or employ a veterinarian, as many men who are favorably situated will do, and in the latter case he will be able to know if approved methods are used and correct deductions drawn from results obtained.

Course to be Pursued by Those Who Wish to Test Their Cattle.

This description is especially written for those owners who wish, either from choice or compulsion, to test their own cattle.

The tuberculin will be supplied free of cost to any cattle owners who desire it, by making application to the Agricultural College, Guelph; but only in limited quantity and for the sole purpose of testing their own herds, and under such regulations as the Minister may enact.

Lieut.-Col. David McCrae, of Guelph, has been employed to give demonstrated instructions concerning the detection and treatment of the tuberculous animals to those who require his services. He will attend meetings called by officers of Farmers' Institutes and deliver addresses on this subject, and give full instructions concerning the use of the instruments, fluids, etc., that are used. He will at all times be prepared to properly test the animals.

The secretaries and officers of Farmers' Institutes are particularly requested to give this matter their immediate attention, and do all in their power to awaken and instruct farmers in their respective districts. One or more of such meetings should be held in each Institute district during the coming year.

Compulsory legislation will, no doubt, be pressed in the Commons at an early day, and farmers will act wisely in their own interest by taking immediate advantage of the instruction offered by the Department as outlined above.

For further particulars as to practical instruction address F. W. Hodson, Superintendent Farmers' Institutes, Parliament Buildings, Toronto.

DUTCH BELTED CATTLE.

Mr. Orson D. Munn, one of the founders of *The Scientific American*, of New York, with which publication he has been connected for over half a century, takes great delight in his old age in breeding a breed of cattle that is very famous in Europe, but of which few representatives are to be seen on this continent. This is the breed known as the "Dutch Belted Cattle," sometimes called, from their marking, the "blanket breed." They are not to be confounded with the Holstein-

they are very productive as milkers. They have been most highly thought of in Holland for three centuries. The historian, Motley, in his history, has said of them: "They are the most wonderful cattle in the world."

Mr. Munn, whose residence is at Llewellyn Park, Orange, New Jersey, has probably the largest herd of these fine cattle to be found in America. He breeds them for the pleasure of the thing, and because he has a love for beautiful



Dutch Belted Cattle. A Typical Animal.

Typical Bull of the Dutch Belted Cattle, or Blanket Breed. Owned by Mr. Orson D. Munn, Llewellyn Park, Orange, N. J., one of the founders of *The Scientific American*, New York.

Friesians, for their white marking consists solely of a broad band of white that surrounds their back and barrel like a blanket. They are indigenous to Holland, and in that country are owned and bred exclusively by the nobility, so that they have never been much made the subject of trade and commerce. In the rich pasture lands of their native country they constitute a beautiful feature of the landscape, as their form is noble and attractive, and their colors are absolutely pure—snow white and jet black. Their constitutions are hardy and vigorous, and

stock. That he breeds them well may be inferred from the fact that his herd has won numerous prizes wherever exhibited. At the Madison Square Exhibition held last November thirteen prizes were awarded to his herd. At the great Inter-State Fair held at Trenton, New Jersey, last October, seven head from the herd won seven prizes. At the New Jersey and other State fairs he has been equally successful. For a further description of these beautiful cattle we would refer our readers to *FARMING* for April, 1896, pages 465-7.

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 III.—THE CARE AND HANDLING OF THE DAIRY HERD.

Selection of Stock for the Dairy Farm.

I mean to speak here only of the selection of dairy cattle, and in my next part I will treat of the keeping of swine in connection with dairying. We must take the farmer as he is, and not as he ought to be, when we give him some advice about the selection of his dairy cattle. If a farmer has a bad stable, poor food to give to his cows in winter, and bad pasture in summer, you must not advise him to buy a high bred cow, which surely will be a failure in his hands. If he chooses to buy an Ayrshire, a Guernsey, or a Jersey, he should understand that he should choose them from a herd which has lived for many generations in our province, because they will be more hardy than those newly imported. It is a well-known fact that many breeders who have imported into our province some of the far-famed cows from the Island of Jersey have had great difficulty in keeping them in good health in our cold climate. The very best farmer only can keep them in good condition, provided he gives them the greatest care, which an ordinary farmer cannot afford to give.

I know very well the condition of what we call the ordinary class of farmers. To that class must first be shown the necessity of having better stables for their cattle and better food to give them. Then we must make them understand that they must improve their common cows by infusing new blood by means of a pure bred bull of a good dairy breed. The common cow is generally very hardy. This is a first-class quality in our climate, and a quality we must try to keep in our cattle. The offspring of a good bull crossed with those common cows, will retain the hardiness of the mother, and get some of the good milking qualities of the breed to which the bull belongs.

Without saying much more on this subject, I will state here that, in the eastern part of the Province of Quebec where

I live, we have the very best dairy breed a dairyman can dream of. I mean the "French-Canadian cow," sometimes inaccurately called the "Quebec Jersey." This cow was imported from France by the first French settlers, and has been kept pure from foreign blood in many parts of the country. It is a small cow, very hardy and frugal and a good milker, giving as rich milk as the Jersey. In fact, she will give, under good care, from thirty to forty pounds of milk a day, and a pound of butter is easily made from twenty pounds of that milk. She gives milk from calf to calf. The principal characteristics or points of the French-Canadian cow may be described as follows: Head short and broad; horns generally turned inward and slightly upward, with dark tips; muzzle surrounded by silver gray or yellowish circle; ears medium size and covered with short hairs, and inside orange colored; tongue black; neck thin; black almost straight to tail head; chest deep, forming an almost straight line with the belly; loin broad and long; barrel well hooped and deep at the flanks; thighs long and wide apart; tail thin and reaching below the hocks, legs short and fine; skin, thin, mellow, and covered with an abundance of soft hair; color black, brindle, fawn, or red dun (the dark colors often have a fawn stripe down the back, round the muzzle, inside of thighs, and lining of ears); udder free from hair and fleshiness, running well up behind and extending well forward; teats long, well apart, and squarely placed; milk veins large and tortuous, entering large orifices; general appearance rather bony than fleshy; average weight, seven hundred pounds.

To show the value of the French-Canadian cow as a butter cow I will give here the result of a test made in 1896 of the milk of four of these cows owned by Messrs. Charles Colburn & Sons, of Portlandville, N.Y.:

NOTE.—Part I. of Mr. Chapais' article entitled "The Established System of the Rotation of Crops" will be found in our June number. Part II., entitled "General Rules to Follow to Obtain Satisfactory Results," will be found in our July number. Part IV., entitled "Swine-Raising in Connection with the Dairy," appears in this number, following Part III.

Name of cows.	Date of test, 1896.	Pounds of milk per day.	Pounds of butter per 100 pounds of milk by Babcock test.
Trixie, No. 923...	Aug. 6	28	9.6
Loo, No. 728....	"	29½	8.6
Countess, No. 551	"	31¼	8.2
José, No. 193....	"	34	8.2

Let us see, now, the profit there is for an ordinary farmer in keeping a herd of these cows, with the common food found on all farms, and what a good revenue is obtained with very little expense. Here is the record for one year of a herd of 24 French-Canadian cows, all registered, owned by one of my neighbors, this record having been taken very accurately, to my knowledge :

Expenses.

Hay, 67,200 lbs., at \$8 per ton.....	\$268 80
Straw, 33,600 lbs., at \$4 per ton.....	67 20
Bran, 4,800 lbs., \$16.80 per ton.....	40 32
Pasture, at \$5 per head	120 00

Total amount of expenses\$496 32

Receipts.

63,193 lbs. of milk in cheese.....	\$531 19
1,616 lbs. of butter, 20 cts. a lb....	323 20
9,125 gals. milk, sold at 12 cts. a gallon	109 50
3 calves fattened on milk.....	12 00
6 calves partly raised on milk.....	18 00

Total amount of receipts.....\$993 89

Total amount of expenses..... 496 32

Net profit.....\$497 57

To produce the above, the twenty-four cows yielded 112,718 lbs. of milk in one year, or a yield of 4,697 lbs. of milk per cow. This, however, is nothing extraordinary. But these cows have had nothing but pasture during summer, and dry hay and straw, with 200 lbs. of wheat bran per head, during winter. The daily cost of the winter ration of these cows has been only 7½ cents for 210 days. That of summer daily ration has been only 3½ cents for 150 days. The average cost of the daily ration for the whole year has been only 5½ cents, producing the 112,718 lbs. of milk above stated, at a cost of 44 cents per hundred pounds, which is very cheap. The average weight of these cows is 700 lbs. Nothing is

charged in the expenses for the work of keeping the cows, because it is calculated that their manure, together with the skimmed milk and the whey, will pay amply for that work.

Care of Milch Cow.

The milch cow must receive the best of care to give the greatest yield she can, and this greatest yield is what the farmer must always look for, if he understands his business. In summer this care consists in the following: *First*, give the cow a first-class pasture, on which she will be sent to graze only when the grass has a good start on the field and when fine days have come; *second*, give to the grazing cow an abundance of good, clear water and shade against the scalding sun; *third*, always have a ready supply of green fodder—peas, oats, tares, vetches, rye, etc.—to give to the cow, at the end of July, when, even in the best pastures, grass becomes hard and is no more fit for the production of milk, which is the cause why cows always begin to give less milk at that season; *fourth*, take good care that the cows are never annoyed by dogs or children, who oblige them to run when they drive them from the pasture to be milked, and by flies, specially that terrible horn fly,* which plays so much havoc in the herds now-a-days; *fifth*, never let the cows suffer, either during the day or during the night, from exposure to the sudden changes of temperature which bring the thermometer down to forty degrees Fah., or to the cold rains of spring or fall, or to early or late frost. So much for the summer care.

Production of Milk and Butter in Winter.

While speaking of the winter care to give to cows, I will, at the same time, dwell upon the important question of the production of milk and butter in winter. Three things are required if we wish to make good, first class butter in winter, such as does Denmark, and if we want to be able to put it and sell it on the English

*One of the best remedies against the horn fly is prepared thus: Half a pound of home-made soap is dissolved in one gallon of boiling water, mixed with two gallons of kerosene and then well beaten up with the kerosene till it makes an emulsion looking like milk; this emulsion is diluted with nine times its volume of water; three or four ounces of carbolic acid are mixed with the whole, and this is applied twice a week (or oftener if there are some strong showery washings from the cows) with a hand pump having a spraying nozzle, or a rag with which the cow is well rubbed all over, if no pump is at hand.

market: *First*, reform in the fitting-up and care of the cow-house; *second*, reform in the care, feeding, and time of calving of cows; *third*, reform in the handling and care of milk. A word on each of these:

Reform in the Fitting Up and Care of the Cow-House.

Most of the cow-houses of our farmers are wanting in ventilation, not only the old ones where no ventilation was ever provided for, but even many newly built cow-houses that are provided with ventilators. The fact is that many of these ventilators, made under a bad principle, do not work well, and sometimes they are of absolutely no use. They are generally too small. As a rule, in a cow-house of ordinary size, if there is only one ventilator, its opening in the cow-house ought not to measure less than fifteen inches inside. It must rise to the top of the roof in as straight a line as possible, and be divided in two by a partition in the direction of its length. If one wants to see if a ventilator draws well, let him light a match and put it on one side of the partition first; under the other side after. If it works well, on one side the flame of the match will be drawn up, under the other side it will be drawn down. Another fault found in most cow-houses is that the liquid manure remains on the floor, soaks into it, rots in the wood, emits a foul smell, and infects the air. Not only the solid manure must be drawn from the floor, but the liquid also, by means of a gutter.

Reform in the Care, Feeding, and Time of Calving of the Cows.

The cows must be kept with the strictest cleanliness in their cow-houses. They must breathe pure air. If they don't, however cleanly they may be kept in every other respect, their milk will always taste of manure. They never should have manure sticking to their sides or rump. To prevent that, they must be curry-combed, carded and brushed every day. At milking time the udder must be brushed, and even washed, if necessary. They must lie on clean litter, drink nothing but pure, clear, and not too cold water from clean troughs, and eat their food from clean mangers. As to their food, care must be taken not to give them any such substances as are liable to give

milk a bad flavor, such as decayed hay, our ensilage, turnips, cabbages, too old rancid cottonseed meal or oil cake, too much fermented grain or fodder, rotten roots or sprouted potatoes, mouldy straw. Here are two good rations for cows of the Jersey type or the French-Canadian type, weighing about 700 lbs., which enable them to give 20 lbs. of milk a day as an average, in a cow-house with a temperature of 60° Fahr.

First ration with ensilage.

Ensilage.....	13	lbs.
Chopped hay.....	10	"
Chopped straw.....	2	"
Cottonseed meal.....	1 2/3	"
Wheat bran.....	1 2/3	"

Second ration without ensilage.

Hay chopped, and macerated for 48 hours.....	10	lbs.
Straw chopped, and macerated for 48 hours.....	10	"
Cottonseed meal.....	3	"
Wheat bran.....	5	"

Add to these rations 20 per cent. if you give them to animals weighing 1,000 lbs.

These rations may be varied by giving potatoes, mangels, etc.

As to the calving season, cows must come in calf in such a manner as to have some of them to calve in November, some in January, some in March, and some in May; for it is well known by all expert buttermakers that without a good proportion of milk from newly calved cows it is impossible to make butter with a nutty flavor.

Reform in the Handling and Care of the Milk.

I have said before that the cow's udder must be clean at milking time. If it is not, dirt, and even particles of manure, will certainly fall in the milk and spoil its flavor. Milk should be drawn in tin pails, scrupulously cleaned every day, and washed once a week with soda. Milk must be carried from the cow-house immediately after milking is done, and this is most important. Then strain it at once; pass it through an aerator, and, if you keep it at home sometime before you take it to the factory, put it where it can be kept cool and away from bad smells of any kind. This is somewhat difficult to do on some farms in winter, but if it is neglected success will be impossible. Nobody ought to think of making winter butter for exportation in a private dairy.

It must be manufactured in a factory, the only place where cream can be kept so as to get the right degree of maturation for the making of first class butter. The right degree of maturation of the cream and its

correct temperature at the moment of churning are more difficult to obtain in winter than in summer, and can be obtained only in a creamery where they are the object of close attention.

PART IV. SWINE RAISING IN CONNECTION WITH THE DAIRY.

Importance of Swine Raising as a Complement to Dairying.

Swine raising and feeding is one of the accessory industries of dairying which every farmer who wishes to draw from the dairy industry all it can yield in profit, must follow up. In fact, of all the animals of the farm, the hog is the one who turns to good account in the most profitable way the residues of butter and cheese factories.

This accessory industry of swine raising still is profitable only if the farmers who follow it know perfectly well the openings we have for pork, and the needs of the market about it. For instance, in the districts where lumbering is the principal industry, in the new centres of colonization of our Province, farmers find it to their interest to make fat salt pork for the feeding of lumbermen, while farmers living in the old rural districts of the Province, which are deprived of that opening, should rather aim at the production of bacon or smoked sides of pork, fit for exportation to the English market. Now, fattening for the production of fat salt pork and feeding for bacon are two different things. For the first case you must fatten chiefly with plenty of grain early maturing hogs of small breeds making thick fat pork. For the second case, you must have a thin, interlarded meat obtained from hogs of large breeds, having long sides, and slaughtered when they weigh only, on the maximum, two hundred pounds.

Breeds For the Production of Fat Pork.

Amongst the numerous breeds of swine, there are three of those most commonly found in our province which are better than all others for the production of fat pork. They are the *Berkshire*, the *Chester White*, and the *Poland China*.

Breeds For the Production of Bacon.

The large *Improved Yorkshire* and the *Tamworth* are the two best breeds for

bacon. A cross between the one or the other of these two breeds with the *Poland China*, or even with the common large razor-back racer pig, gives very good hogs for the production of bacon.

Composition and Feeding Value of Skimmed-milk, Buttermilk, and Whey, Compared with Pure Milk.

Before speaking in a special way of hog feeding, I will first give some information on the value of pure milk, skimmed-milk, buttermilk, and whey.

Table of Constituents.

	Solids.	Fat.	Casein and albumen.	Milk Sugar	Salt or ashes.
Whole milk.....	13.00	4.00	3.30	4.95	0.75
Skimmed-milk.....	9.75	0.30	3.50	5.15	0.80
Buttermilk.....	9.50	0.50	3.00	5.30	0.70
Whey.....	7.03	0.50	0.93	5.00	0.60

Now it has been found from many experiments that 5 lbs. of skimmed-milk or 10 lbs. of whey have about the value of a pound of grain; and that 4½ lbs. of mixed grain eaten by a pig weighing 100 lbs. will produce a pound of meat. Then it is considered that 10 lbs. of turnips, 6 lbs. of mangels, and 4½ lbs. of potatoes are each worth a pound of grain. This being known, it is easy for the farmer to plan his ration in order to use milk and roots as much as possible with his grain in order to make cheap meat. But the cheapest meat will, no doubt, be that obtained in the following way for bacon:

Feeding for Bacon.

If bacon is wanted, it will be more profitable to produce it in summer when there are plenty of residues at hand. I will therefore limit my advice on the subject to that season only. When the young pigs are 2½ or three months old, turn them in a clover field and give them

every day 12 lbs. of skimmed milk or 16 lbs. of whey, both warm and as fresh as possible. Half of this should be fed in the morning and half in the afternoon. Keep your pigs in that way till about the 15th of September. Then at this time when vegetables, roots and tubers, such as cabbages, turnips, mangels, potatoes are plentiful on the farm, shut the pigs in a lot where they can take a little exercise, and where they have access to a sheltering pen, and give them a ration of cooked vegetables and roots with which you mix every day about two pounds of ground grain, and milk refuse as usual. Give of roots all they can eat at each meal, three times a day, without waste. When cold weather sets in house them in a closed pen and continue the same ration. In this way, you will have pork neither too lean nor too fat, an interlarded meat not too thick, such as is required for bacon. A hog for bacon should not weigh more than 200 lbs., and this is generally the weight of an eight months old pig of the breeds mentioned for bacon, when fed in this way.

Remarks on the Cost of Production of Pork.

All experiments in hog feeding tend to prove that the older the pig, the more it costs to fatten it. In most cases, when the pig weighs 30 lbs., a pound of increase will cost 2 cents; at 50 lbs. it will cost 2½ cents; at 100 lbs. it will cost 3 cents; at 150 lbs. 3½ cents; at 200 lbs. 4 cents. Beyond that weight, unless you have food of a very low value on the market, or you can get a high price for

your meat, profits are scarce. On the other hand, it is proved that a hog for bacon, killed in the condition above mentioned, gives meat costing hardly 3 cents for production. All this tends to show that, keeping, as a great number of farmers do, pigs eating a maintenance ration during one year and even more, to make from them thick salt pork, is not a profitable business.

Conclusion.

Before closing this rather lengthy paper, I beg leave to make one remark about it. I am sure that many readers of *FARMING* will entertain the idea that I seem to have written it for farmers who have much to learn about dairy farming, and that it will prove useless for most farmers who are at the top of the ladder of progress in agriculture. To this I answer that the Ontario farmer who reads my paper has to consider that it is the summary of lectures prepared for a province where there are still many new districts recently settled, in which dairying is yet in its infancy. Moreover, many things will sound strange to Ontario ears, on account of the wide difference there is between the climate of the provinces, Ontario and Quebec. With Spring a full month later, and Fall a full month earlier, on an average, we Quebec farmers have to manage our farming business on principles sometimes quite different from those followed in Ontario. This does not, however, prevent us from being, now, about on a level with our sister province in the field of the dairy industry.

BUTTER-MAKING ON THE FARM.*

By C. P. GOODRICH, Dairy Instructor Farmers' Institute Department, University of Wisconsin.

PART II.

Ripening Cream.

When shallow setting has been used the cream is already ripened, or partially so, when taken off. It has been kept cool, stirred up when each skimming was added, and is ready to churn at any time when brought to the proper temperature.

A correct dairy thermometer is indispensable in butter-making. Temperature

plays an important part all the way through. It is necessary to know the temperature of the dairy room, the water, the milk, the cream when ripening, and, above all, the temperature of the cream at time of churning. No person can guess at temperature correctly every time; therefore, no person can make a uniform quality of butter without using a ther-

*From a bulletin recently issued by the United States Department of Agriculture. Part I. of Mr. Goodrich's article appeared in *FARMING* for July.

mometer at almost every stage of the work. Yet a cheap, unreliable thermometer is worse than none.

Cream from deep cold-setting is cold and sweet when taken off. If it is kept in a room where the temperature is about 60° F. for twenty-four to thirty-six hours it will begin to sour. Each skimming when put in the cream-can should be well mixed with what was in before. No fresh cream should be put in the can for twelve to sixteen hours before churning, for if this is done the fresh cream will not be ripened and the butter will not all churn out.

Cream from the separator is warm when it is separated right after milking and has the "animal heat" still in it. It must be aerated and cooled immediately. When the cream is run into "shot-gun" cans the aeration and partial cooling may be done by pouring several times in a small stream from one can to another. A better way is to have a cream cooler, made something like a large colander, placed high above the cream can. The bottom of this cooler has a great number of very small holes through which the cream runs in tiny streams into the cream can, and in that way is thoroughly aired and partially cooled. Setting in cold water will complete the cooling. Afterwards it can be handled the same as described for cold-setting cream, except that, being fresher, this cream needs about twelve hours more time to ripen.

Use of the Starter.

The way just described is practiced by a great many with excellent results; but there is a better way if one has the facilities for doing it. Keep the cream by setting in small cans in cold water, or otherwise, at a temperature of 50° F. till twelve hours before the time of churning. Then mix it altogether in a vat or can and warm it up to 70° F. Then put in a "starter" and keep it nearly, if not quite, up to 70° for twelve hours, and when it is afterwards cooled to the right temperature it will be ready for churning. The starter may be some good skim-milk, which has been kept at a temperature of 85° or 90° F. till it is sour and thick, or it may be some cream already ripened, or some buttermilk from the last churning. Use of the starter an amount equal to about two per cent. in bulk of the cream; in other words, one quart of the starter

to twelve gallons of cream. Another form of home-made "starter" that has been highly recommended is made as follows: Take fresh milk, secured in a perfectly clean way, from a healthy, well-fed, fresh milch cow. Set this milk in ice-water and expose only to pure air for twelve hours, or pass it through a separator, and keep the skim-milk at a temperature of 85° F., long enough to lopper. Do not disturb the coagulum until ready for use. Then skim off the top, stir it carefully, and strain through a fine mesh into the cream, in the proportion already stated.

Testing the Cream for Churning.

One of the most difficult things to determine is when the cream has the proper ripeness to be churned, so that uniform results can be obtained and one churning be like another. For aid in this respect acid tests have been invented for testing the acidity of cream during ripening "to trace the progress of its souring and show whether the fermentation should be hastened or checked in order to have the cream in a certain acid condition and ready for churning at a given time." These acid tests require experience and skill for their successful use. A skillful and experienced butter-maker is able to judge closely as to the right condition of cream for churning by its appearance. But this is a matter which it is impossible to exactly describe in words.

The Churn.

The best churns are those with no inside fixtures and which revolve, like the barrel churn, square-box churn, rectangular churn, etc. These "bring" the butter by the concussion of the cream in falling from one side to the other as the churn is revolved. A quite common mistake is to get too small a churn. It should never be filled more than half full of cream. One-third full is better, because the cream has a better chance to fall. Before putting in the cream the churn should be scalded with hot water and then rinsed with cold water.

Churning.

The cream should be brought to the right temperature for churning before being put in the churn by having it surrounded by cold water if the temperature needs to be lowered, and hot water if it needs to be raised. The churning should be done a

as low a temperature as possible and have the "butter come" in a reasonable time, say from thirty to sixty minutes. The colder it is churned the less butter-fat will be left in the buttermilk and the more perfect will be the granules of butter. It is impossible to lay down any exact rule as to the right temperature; that will have to be determined by trial, each butter-maker for himself. Ordinarily from 58° to 62° F. is right, but sometimes it needs to be much lower and sometimes, possibly, a little higher. At the dairy tests at the World's Fair, in 1893, where expert butter-makers made every effort possible to do exhaustive work, the Guernsey cream was churned at times as low as 43°, while the cream from the other herds was churned 8° to 10° F. higher. The temperature at which cream should be churned depends in some degree on the breed of cows, the individuality of certain cows or of certain families of cows, the period of lactation, the feed of the cows, and, more than anything else, the thickness or richness of the cream. The temperature of churning needs to be higher when cows are in an advanced stage of lactation; also when they have dry feed in winter, and when cotton-seed meal is being fed to any extent. When cream is rich in butter-fat, such as can and ought to be obtained with the separator, containing from thirty to thirty-five per cent. of fat, the temperature of churning can be low, usually from 52° to 55°. This is the way to get the most exhaustive churning; the amount of buttermilk and the per cent. of butter-fat in it will be small at these low temperatures. With deep cold-setting the cream will be much thinner, containing considerable milk, and therefore the per cent. of butter-fat low, and it will be useless to try to churn at a low temperature. In such cases from 60° to 62° will be necessary.

Cream from shallow setting, if it is skimmed pretty clear of milk, can be churned at a somewhat lower temperature than that from deep setting. Sometimes the cream from shallow setting, especially if the process of heating and cooling has been resorted to in raising the cream, is so thick that it will not fall when the churn is revolved. In that case it must be diluted. Water is better than milk to dilute it with.

The churn should be revolved at a

speed that will produce the best concussion. With a 40-gallon box or barrel churn this will be about 50 revolutions per minute; with a smaller churn somewhat more speed is required. One can soon learn to tell by the sound when the cream begins to break. Then close watching is needed, so as not to churn it too much. The churn should be stopped when the granules of butter are somewhat smaller than wheat kernels. To make the butter float well, so that the buttermilk can be drawn off, throw in some salt say one pint to each 20 gallons in the churn. Then revolve the churn a few times. Draw off the buttermilk through a hair sieve, so as to catch the granules of butter that escape from the churn. Then wash the butter with pure water at a temperature of 50° or below. This will harden the granules so they will not so quickly mass together. Wash it twice, each time using ten or twelve quarts of water to every 20 pounds of butter, and revolve the churn a few times. Do not wash it more, nor let the water stay on a great while at a time, for this will be likely to wash out the flavor and aroma, for which fine butter is prized.

The writer is well aware that this is contrary to the instructions given by many teachers on this subject. They advise washing more, saying that it should be washed till the water runs clear. But numerous experiments, where the butter has been submitted to the judgment of experts, seem to prove conclusively that the market yet demands some of the flavor that is found in butter which has not been excessively washed.

White Specks in Butter.

Mottles in butter and "white specks" are sometimes confounded, and by some are considered the same, but there is a difference. Mottled or streaky butter has been explained as being caused by an unequal distribution of the salt; but "white specks" have a different cause or causes. Sometimes, when the milk is set in shallow pans, they result from the cream drying on top, so there are small portions that are so hard they do not churn into butter. These particles do not take the color like the rest of the butter, and the "specks" are thus caused. This may be remedied by care-

fully straining the cream when it is put into the churn.

Another cause of "white specks" is this: When some milk is skimmed off with the cream, as is usually done in the case of deep cold-setting, this milk settles to the bottom, gets over-ripe, and forms a curd, which will be so hard as not to break up in churning, and will not run off with the buttermilk, but will remain with the butter as "white specks," or "flecks," as they are sometimes called. This can be remedied by not letting the cream stand so long before churning, or by frequent and thorough stirring of the cream during the process of ripening. These hard, white particles can also be taken out by straining the cream.

Mottled, streaked, or speckled butter will not sell well in market; therefore it is the part of wisdom to guard against such conditions.

Coloring Butter.

Butter should be colored to suit the person for whom it is intended. The general market demands that butter should have a color, the year round, about like that of grass butter in June. Doubtless any of the standard butter colors are good. The coloring matter should be put in the cream after it is all ready for the churn. When the butter would be nearly white if not colored, as is often the case in the winter, about a teaspoonful of color is usually needed for eight pounds of butter. In summer in times of drought, and in the fall, when cows are partly on dry feed, some coloring may be needed, but very little. One will soon learn by experience how much to use. It is well to be cautious, as it is better to have too little color than too much.

Salting and Working Butter.

Good, fine dairy salt should be used, and never the common coarse barrel salt that is used by many. The salting may be done in the churn when the butter is in the granular form, if it is a box or barrel churn. The salt can be sifted on the butter by putting on a part, then revolving the churn half way over, thus making the butter fall with the salted side down, then sifting on the rest of the salt. Then revolve the churn a few times, after which the butter can be taken out and worked

on a butter worker. This is the way most commonly done, but it has its difficulties. The trouble is to have just the right amount of salt in the butter when it is finished, so as to have the product perfectly uniform as to saltiness. The exact weight of the butter in the churn is not known, though this can be closely estimated, but it is impossible to tell how much water the butter contains, while in its granular state. This water must be all salted, and a portion of it will run off in the form of brine when the butter is worked. The finished butter should contain about three-fifths of an ounce of salt to the pound. To insure that amount, at least an ounce and a half of salt must be put in for each pound of butter in the churn, and yet, do the best we can, it will be found that two successive churnings are seldom salted just alike.

The writer has found that a better way to insure uniform salting is to take the butter out of the churn, drain and press out a part of the water on the worker, then weigh the butter, and salt one ounce to the pound and work enough to get the salt evenly incorporated. Some more water or brine will run off in the working and leave the butter salted about right. In this way it will be found that one churning will be salted very nearly like every other churning.

There are several different kinds of butter workers used by dairymen, but in the opinion of the writer none are better for home use than the common lever pattern.

Shall Butter be Worked Once or Twice?

The object of working butter is to get the salt evenly distributed and to expel a portion of the brine. When it is worked but once, the butter-maker thinks he has worked the butter enough and packs it immediately. There is, at that time, no way to tell whether the salt has been evenly distributed or not. A few hours afterwards he draws out some of the butter with a trier, or cuts it with a ladle, and finds it mottled, which will seriously affect the selling price. He knows the cause is unequal salting; that the portions which have salt have changed to a deeper yellow, and the unsalted portions have remained of a lighter color. With the next churning he is determined to remedy this and be sure to work enough.

The chances are that this time it is worked too much, so that the grain is injured and the butter has a greasy appearance. But after much practice and the exercise of good judgment and care, these errors can be avoided to a great extent, and a fairly uniform and even product produced.

In the opinion of the writer it is better to work butter twice instead of only once. The first time it should be worked just enough to mix in the salt. Then for four or six hours it should be left on the work-er, or in some other place, where the temperature is from 60° to 65° F., so that the butter will remain in the right condition as to hardness to work well. This will give time for the salt to dissolve and also time for it to change the color of the butter that it comes in contact with. Then it should be worked just enough to obliterate the streaks and mottles. This second working expels some more of the water, for the salt has had time to draw the moisture together in drops, and it is worked out, thus making a drier butter containing from 85 to 87 per cent. of butter-fat. Such butter will be firmer and better and more satisfactory to the consumer than it usually is when worked but once. Immediately after the butter is worked it should be packed in neat, clean packages, or put up in such form as is required by the market to which it is to be sent. If tubs are to be used, ash or spruce is to be preferred, and they should be well soaked before packing the butter. If other wooden packages are used they should be lined with parchment paper. This prevents the butter tasting of the wood.

Make Butter to Suit the Consumer.

One thing should always be borne in mind by the person who is making butter to sell. The butter is for somebody else

to eat, and it is for your interest to make it to suit them, whether it just suits your taste or not. Habit has a great deal to do with our likes and dislikes. You may have been accustomed to sweet-cream butter; if so, you probably like that best. Or, you may have got used to eating butter made from very ripe cream, and the butter not washed to expel the buttermilk, causing it to have a very decided flavor and taste, and so you look upon fine, delicate-flavored butter as insipid. Or you may like little or no salting or high salting; light color or high color. But all this is of no consequence. It is no matter what you like. You want to make it to suit your customer, and you want your customers to be those who are able and willing to pay a good price for what suits them. If the customer wants sweet-cream butter, make it; if unsalted, make it so; if he desires it high salted, salt it high, and so on. Always make it the same for the same customers. They are getting tastes formed which you can make it profitable to gratify. It is not the province of the maker of dairy butter to try and educate the tastes of people who buy butter, but rather to cater to their tastes when he finds out what they are. If one is making butter to put on the general market, he wants to make what that market demands and will pay the best price for. The best way to learn the market demand is to have the butter inspected by an expert judge who is a dealer and knows what takes best in the market. Ask him to criticize it and tell you just what he thinks of it; and don't get angry at what he tells you, but try and profit by what he says. The object of this article is to help farmers to make such butter as the best paying customers in the general market demand.

THE DAIRY COW.

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

PART II.—THE SELECTION OF THE DAIRY COW.*

I wish now to refer briefly to the subject of selection of dairy cows—selection within one breed and among all breeds.

I say briefly, because this subject is of such importance as to merit an extended discussion.

*NOTE.—Part I of Professor Curtiss' Article, entitled "Historical Origin and Varieties," will be found in FARMING for July, beginning page 705.

The Dairy Cow is fairly definite in type, but not absolutely so.

I have learned that there is a very wide diversity of opinion about what constitutes a good cow. About a year ago I wished to revise the score card or standard of excellence that I was using in my class work on this subject, and I took occasion to submit an outline of my proposed standard to some of the leading dairy authorities, and invited their criticism and suggestions. There was far less uniformity of opinion than I had anticipated. In fact, I know of no question pertaining to animal husbandry that admits of so wide a range of judgment. This and other evidence furnishes conclusive proof to me of one fact, that is, that the prevailing ideas of what constitutes a good dairy cow are very much broader than they formerly were. This is as it should be. It is well to recognize a good cow, from any source, no matter what her color, form, character, size or breed. The tendency is to pay less attention to the points of fancy and theory and simply look for utility and a good cow, leaving all speculation aside. The lessons of recent investigation have taught that there is no narrow, inflexible type of dairy cow, as has sometimes been claimed. The only way to be absolutely certain of the capacity of a dairy cow is to make careful use of the feed measure, the milk scales, and the Babcock test. There are, however, certain varying but reasonably certain indications of dairy merit. In other words there is a well-defined, broad, general dairy type. This type should be familiar to the dairyman. It should be cultivated to the highest degree, and perpetuated in the herd.

A Score Card for Dairy Cattle.

Herewith is given a copy of the score card, or standard of excellence, that my class are now using in studying dairy cattle. Many of the characteristics are of minor importance and need only to be considered in a general way. I will here discuss only some of the more important characteristics of a dairy cow without going into details:

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

(a) GENERAL APPEARANCE: 20.	Possible score.
Weight—estimated.....lbs.; actual.....lbs.	
Form, wedge-shaped as viewed from front, side and top	7

Quality, hair fine, soft; skin mellow, loose, medium thickness, secretion yellow; bones clean	9
Temperament, nervous, indicated by lean appearance.....	4
Objections, thick, fleshy form, coarse coat, or hard handling.....	
(b) HEAD AND NECK: 10.	
Muzzle, clean cut; mouth large; nostrils open...	1
Eyes, full, mild and bright	3
Forehead, broad, face lean.....	2
Ears, medium size, yellow inside, fine texture...	1
Neck, fine, lean, medium length; throat clean...	2
Horns, small at base, fine texture	1
Objections, masculine or meaty head, coarse horns or dull eyes	
(c) FOREQUARTERS: 5.	
Withers, lean, thin	2
Shoulders, light, lean, oblique.....	2
Legs, straight, short; shank fine	1
(d) BODY: 25.	
Chest, deep, low, wide	8
Ribs, broad, long, wide apart; large barrel.....	6
Back, lean, nearly straight, open jointed.....	4
Loin, broad and strong	5
Navel, large and firm	2
Objections, narrow chest, close ribs, fleshy back or weak loin.....	
(e) HINDQUARTERS: 40.	
Hips, wide apart, strong.....	2
Rump, long, wide, giving roomy pelvic arch.....	2
Tail, long, slim, fine switch.....	1
Thighs, thin, spare, long.....	5
Escutcheon, spreading over thighs; high and wide	2
Udder, long, flat under surface, attached high, full behind, quarters large and even, but not fleshy	15
Teats, large evenly placed, and of good form.....	4
Milk Veins, large, tortuous.....	4
Milk Wells, large and open.....	2
Legs, straight and far apart, shank fine	3
Objections, narrow hips and rump, small escutcheon, deep or contracted udder, teats close together or uneven; milk veins and wells small, legs coarse or close together.....	
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.

General points of excellence in Dairy Cows.

In the first place it will be noticed that a good cow always has the same general form, known as the wedge shape. This form is the result of milking capacity rather than milking capacity being the result of form. In other words, the cow that milks well must necessarily take on the wedge form, but not all cows of this form are good milkers. There are occasional and not very rare exceptions in which cows have sprung from good dairy ancestry and inherited dairy capacity; consequently form is not infallible evidence of dairy excellence. It is, however, an almost unvarying accompaniment of dairy excellence, regardless of breed. This is true by reason of the fact that the demands on the highest type of dairy cow are such that development of udder, depth and capacity of barrel,

width of pelvis and loin, and spring of hind ribs are a necessity. These are the digestive and milk forming organs, and their development and expansion is essential to the highest development of the milking function of the cow. The operation of this principle is plainly apparent in the representatives of breeds that are of entirely distinct type, such as the Jersey, Holstein and Shorthorn. The depth, expansion, and capacity of the vital dairy organs, together with a good udder and milk veins, and a maximum digestive capacity, are the prime essentials of a good dairy cow. They indicate the two principal factors that are of greater significance in determining dairy merit than all others put together; first, that the cow is capable of converting her feed into milk, and second, that she is capable of making use of a large quantity of feed. These are points upon which practical utility and profit turn. I have enumerated a number of other characteristics in the score card presented, all of which are deserving of more or less attention, but they are merely contributory to the same ultimate end,—that of the highest practical return for a generous ration. For instance, I regard a thin spare thigh as of vital importance, but this is only a necessary accompaniment of a good udder, for it is impossible to have a good development of udder with a full, round meaty thigh. The one precludes the other. As a further indication I like to see a richly colored mellow skin, a clear, prominent eye, a thin neck, a clean head, lean shoulders, prominent spinal column, and strong nervous organization, together with good respiratory and circulatory organs and other minor marks of dairy capacity, but these are all subordinate to the tangible and practical evidence furnished in the first named qualifications.

The "Combination Cow."

The Shorthorn illustration represents a cow that combines beef and dairy qualities in a profitable degree. I prefer to use the term "combination cow." General purpose is too vague and misleading. By "combination" I mean just two things—beef and milk. I do not claim that it is possible to obtain the highest degree of excellence of each in the same animal, but it is possible under given conditions to obtain a profitable

degree of excellence in both. I want also to state that I regard it more difficult to breed and maintain a herd of this character than one of the special breeds. It will require closer study and attention, and a higher degree of skill. One reason for this is that comparatively few herds have been intelligently and systematically developed for the combination purpose, and the combination traits are not yet well established.

A typical "Combination" Dairy Cow.

The Short-horn cow here illustrated is a good average representative of the combination cow. She is capable of taking on flesh readily when dry, and her male calves, when finished for the block, are capable of topping the market. She has the dairy form to a fair degree, though she is not deep enough from loin to udder to indicate the highest dairy capacity.



Combination Dairy Cow, Belle of Squaw Creek.

Milk record in 77-day test, 31.4 lbs. a day. Average per centage of butter-fat in 77-day test, 3.71. Butter record in 77-day test, 1.35 lbs. per day. Belle of Squaw Creek is a registered Shorthorn.

Other cows in the college herd excel her in this respect. This illustration, however, was made from a photograph taken when the cow had been in milk seven months, and when the udder was only about half filled. While she is broad at the loin and hind quarter she is thin and sharp at the crops and top of shoulder, and has a lean neck and spare flat thighs, giving room for udder development and elaboration of milk. Her head and eye indicate good vigor and character, and her chest capacity and vital organs are good. She presents rather too much flesh to be in the best dairy form but was photographed, as stated, when well along in her period of lactation. When a cow of this breed, though, for that matter, of any breed, presents that thick, blocky, well-rounded form, full and deep at the

thighs and flanks and broad and meaty over the crops, shoulder and neck, it will be useless to look for milk in that animal. These are the characteristics of the

capacity for beef-making to the exclusion of all others. All breeds and all herds require careful selection, the combination cow as much as any.

FALL WHEAT IN ONTARIO.

THE PRACTICE OF SOME OF THE BEST FALL-WHEAT GROWERS IN THE PROVINCE DESCRIBED AND EXPLAINED; WITH DESCRIPTIONS ALSO OF MODERN METHODS IN TIMOTHY AND CLOVER CULTIVATION.

In Ontario fifteen years ago, the acreage of fall-wheat sown was much larger than it is at the present time. At that time prices were good, and wheat growing paid well. In fact so well did it pay that there was in many sections a serious danger of the land losing its fertility altogether owing to the growing of the same crop year after year. Wheat growing was the mainstay of the country, and many farmers grew practically nothing else, and depended upon the returns from their wheat crop to enable them to purchase other grains required on the farm for feed. The consequence was that farms in many sections became so unproductive that only half a crop could be secured. Land was sown to fall wheat that was totally unfit for it; and where one farmer would till his land properly and prepare it as it should be for wheat growing, ten would half prepare it, merely plowing the ground, and sometimes not getting it sown till October.

This condition of things could not help having a serious effect upon the fertility of the land and upon the productiveness of many of our farms, and when a few years later prices for wheat struck rock-bottom it was really a blessing in disguise to many sections of the Province. In order to make their business at all profitable, farmers were compelled to turn their attention to some other line of farming. Dairying, the swine industry, and the keeping of cattle and sheep became more profitable than wheat growing, and our farmers, turning their attention more to these particular lines, were enabled to restore somewhat the lost fertility of their farms. Wheat growing has, however, always been carried on to a greater or less extent; but as prices have been low, it has been necessary to increase the returns per acre in order to make it

profitable; and to do so the farmer has been compelled to prepare the ground thoroughly before sowing, and to sow wheat only on land from which he would be pretty sure of having a good crop.

During the past year prices for wheat have revived somewhat, and the present outlook is fairly bright. Only the other day two vessels left San Francisco for Brazil loaded with wheat, a thing that is very unusual in the trade relations between North and South America, indicating a scarcity of this important cereal in the Southern continent. Prices are not sufficiently high, however, at the present time, to warrant our farmers going back to the old slipshod methods of growing fall wheat. To make fall wheat at all profitable, only such land should be sown as is in a fit condition and can be properly prepared. Therefore, only the latest and most successful methods of fall wheat growing should be adopted.

With the view of giving our readers the latest information as to the practices of some of our most successful wheat growers we sent out early in July a circular to a number of the leading wheat growers of the Province, asking a series of questions on this important subject, and we are now much pleased to be able to give our readers a summary of the practical information which we have received. We should like very much to be able to publish each letter received in full, but as so many replies were received this would take up too much space. The replies were from nearly every county in the Province, so that the information obtained will be as general in its character as it is possible to be.

The following is a summary of the information received, arranged in headings according to the questions asked, with remarks from some of our correspondents:

Varieties of Wheat Grown.

The varieties of wheat grown are chiefly the Early Red Clawson, White Clawson, Dawson's Golden Chaff, Manchester, Michigan Amber, Democrat, and Genesee Giant. Other varieties of not so general cultivation, but grown largely in some sections, are: the Scott, Egyptian, Velvet Chaff, Seneca, and Mediterranean. The Higgins, Silver Chaff, Jones' Winter Fife, Golden Cross, Pride of Genesee, Canada Velvet Chaff, Jones' Square Head, Treadwell, Surprise, Native Amber, Garfield, Golden Chaff, Reliable, Roger's Early Genesee, American Bronze, Imperial Amber, Turkish Red, White Star, Red Russian, White Leader, and Red Lion. are other varieties of occasional mention. The larger number of the varieties named are sown pretty generally over the whole Province, very few being confined to any particular section.

Which Varieties stood the Winter best.

The varieties mentioned as having stood the winter well are the Red Lion, Red and White Clawson, Dawson's Golden Chaff, Niger, Golden Cross, Democrat, Genesee Giant, Jones' Winter Fife, Canada Velvet Chaff, Volunteer, Golden Cross, Surprise, Red Egyptian, Scott, and Michigan Amber. Of these varieties the Red Clawson is mentioned more frequently than any of the others as having stood the winter best, and as a rule the red wheats have given more satisfaction in this particular than the white varieties, and they seem to stand rougher treatment in the way of badly prepared land than the latter are able to do. We are of the opinion, however, that where the lands on which the different varieties are sown are given similar treatment, and are in the same condition as regards drainage, etc., there will not be much variation in the winter-killing qualities of varieties that have been acclimatized. Very often, a new variety brought in from some milder climate will winter-kill very much at first, whereas after it has been sown a few years it will do better. Frequently a variety that has winter-killed in one district has stood the winter well in another section. Mr. Thos. A. Good, Brantford (Brant County) in replying to this question says:

As a rule, we find the red wheats stand the winter best, and also stand rougher, poorer soil

and rougher weather better than the white varieties, although for the last two or three seasons the Dawson (Golden Chaff) has wintered as well as any other sort. In fact, on our soil we had very little winter-killed for the last four years.

Mr. Robert Vance, Ida P.O. (Durham county), says:

Fall wheat almost a failure here owing to the ice in the spring. One-half was plowed up and re-sown with spring grain; remainder light. Red Clawson probably the best here.

Mr. J. C. Hanley, Read P.O. (Hastings), speaks of the White Clawson as having stood the winter best in his section.

What Varieties Have Given the Best General Satisfaction.

The varieties mentioned as giving the best results are here set down in the order of importance as follows: Red Clawson, Manchester, Dawson's Golden Chaff, White Clawson, Democrat, Michigan Amber, Genesee Giant, Niger, Velvet Chaff, Seneca, Egyptian, Surprise, Red Lion, Volunteer, Golden Cross, Early Genesee, and Red Russian. The most important varieties of this list are the first four, which stand out prominently ahead of the others. In this connection it is well to note that a new variety would not be spoken of as frequently as an older one which was sown more generally. All the varieties that are named above have given practically good results in some sections. In replying to this question, Mr. J. C. Shepley, Kingsville (Essex), gives the following detailed description of some of the varieties mentioned above:

Red Russian. Has given good results; has red chaff; bald wheat; strong straws; is a good yielder. Classed as Red Wheat.

Red Clawson. Is a good wheat on heavy clay soil; red chaff, somewhat liable to rust on low, swampy land. Also is a red wheat. Yields well.

American Bronze. One of the best varieties we have. Large full heads; grain very close; bright golden chaff; nice bright straw; grain full and plump; amber in color. One of the best yielders we have.

Hybrid Mediterranean. Short straw, red chaff, short plump heads. Yields from twenty-five to thirty-five bushels per acre. Is not adapted to low or wet land; does well on high gravelly land.

Michigan Amber. A white chaff bearded wheat, rather weak straw. Does better than most other varieties on low black or swampy land; a good flouring wheat. Yields from twenty to twenty-five bushels per acre. Is not liable to rust, which is one of its best qualities, and is almost sure to give a good average yield.

Manchester. In some sections this variety takes the lead. Is a red wheat, bald head, light chaff. I have not grown it, but have learned that it does well on high land. I cannot say how it would do on low or clay soil.

Dawson's Golden Drop. This seems to be the best wheat we have; has stood the past winter well; is a new wheat with us; has only been grown for one or two seasons, but with very satisfactory results.

Mr. F. Birdsall, Birdsall P.O. (Peterborough), says :

Surprise has given very good satisfaction; stands winter fairly well; is a good yielder, and seems to adapt itself to almost all the different kinds of soil. It also has a good length of straw.

(Some speak of the Surprise wheat as being really the old Fulze wheat, introduced into this country some years ago.—EDITOR.)

Mr. James B. Muir, North Bruce (Bruce), in the northern part of Ontario, answers our question on this point as follows :

Early Clawson has given splendid returns during the past three years. It is a coarse straw; stands up well; straw brownish white; chaff red; grain large, brown in color, and seldom weighing more than sixty pounds to the bushel.

New Varieties Introduced.

In this connection it must be remembered that a variety new in one section might be comparatively old in another. Dawson's Golden Chaff and Genesee Giant are the varieties most frequently mentioned as being new. Others that are new in some sections are the Red Clawson, Surprise, and Velvet Chaff. Among the new varieties lately introduced are the American Bronze, Pride of Genesee, Jones' Square Red, Silver Chaff, Pedigree Giant, Bulgarian Jones, and Long Amber. Those mentioned as giving particularly good results where tried are the Red Clawson, Dawson's Golden Chaff, and Genesee Giant. Mr. J. W. Symington, Camlachie (Lambton), says :

The Genesee Giant has been introduced this season. It has stood the winter well. I have seven acres of it extra good, and looking as if it would be above the average yield. It is a white wheat, with straw a good length, and with heads rather short but very compact.

Mr. Wm. Bailie, Nile P.O. (Huron), writes :

There are several new varieties, but the only one I have much experience with is Dawson's Golden Chaff. It is good and has come to stay. It makes a strong growth; is free from rust or blight, and stands up well.

Mr. John A. Holgate, Foxboro (Hastings), says :

The Red Clawson was introduced two or three years ago. It seems to be a good wheat; is hardy, and stands the winter very well. It has a short, plump head.

Varieties Giving the Poorest Results.

It is well to note that under this heading varieties which give very poor results in some sections may do very well in others. For example, Mr. Robert C. Tye, Haysville (Waterloo), writes of the Michigan Amber as follows :

Long in straw, bearded, white chaff, red wheat.

Mr. Goldie, Ayr, (Waterloo), one of the largest millers in his section, likes the Michigan Amber better than any other wheat that comes to his mill. The Democrat, he says, looks a good deal like the Michigan Amber, but the wheat is white and does not weigh as well as the Michigan Amber. While Mr. J. F. Dix, Little Britain (Victoria), speaks of the Michigan Amber as having done very poorly in his section.

The varieties mentioned most frequently as doing very poorly are the Velvet Chaff, Golden Cross, Surprise, Silver Chaff, White Clawson, and Democrat. Others mentioned occasionally are the Red Clawson, Dawson's White Chaff, Volunteer, Morrell, Indiana, Jones' Winter Fife, Garfield, and Mediterranean. With the exception of the first two the varieties contained in this last list are not in general cultivation and, consequently, would not be mentioned frequently. Mr. G. A. Munroe, Embro (Oxford), mentions the Red Clawson and Dawson's Golden Chaff as doing very poorly in his section, while these two varieties are mentioned more frequently than any others as those that give the best results. A variety, therefore, that is reported as giving good general satisfaction may give very poor results in some particular sections. Mr. J. C. Hanley Read (Hastings) says :

The Surprise has given the worst and the best results. I sowed four varieties in one field to test them, same soil and cultivation. American Bronze, Red Clawson, and White Clawson were each a fair crop; Surprise was almost a total failure. The same year I sold some of the same Surprise seed to a Mr. Ross, who had a choice piece of land, well prepared. His crop was really a *surprise*, producing, if I recollect rightly, over forty bushels to the acre.

Modes of Cultivation Usually Practised.

According to the replies received, the modes of cultivation usually practised are (1) to plow the land in the fall, sow peas in the spring, and after the peas are harvested plow and cultivate well, and sow wheat about the first of September; (2) to plow under clover sod with or without manure, and, where no manure is used, to plow under the second crop of clover; (3) to sow after corn or roots; and (4) to summer fallow. The summer fallow for fall wheat is not now so generally used as it was some years ago. In the good old wheat days it was the common thing for every farmer to summer fallow a piece of land for fall wheat, and the results were invariably good. To-day more economical methods of farming obtain, and the summer fallow is considered too expensive for wheat. Its place is being largely taken by the practice of sowing wheat after a crop of corn or roots. The cultivation required on the land in order to produce a good crop of roots or corn gives it the same treatment that a summer fallow would, and there is this advantage, that the land is not lying idle during one season.

Sowing wheat after peas and clover seems to be more largely practised than any other method. We give below some replies to our question on this head, which are very practical, and describe the methods used by many good wheat-growers:

Mr. W. A. Christy, Bloomfield (Prince Edward county), says:

Fall plow the land, sow in the spring with early peas, then plow lightly. About September 1st plow again, deeper, harrow, and sow. Occasionally a piece is summer fallowed and manured. This, of course, gives better results; but most farmers cannot afford to lose getting the pea crop.

Mr. R. H. Lindsay, Copenhagen (Elgin), writes:

Clover sod, well manured, thoroughly rolled, and well worked. Where the manure cannot be obtained, many plow the second crop of clover down, rolling thoroughly with a heavy roller, and keeping well cultivated about two or three inches deep, rolling after each cultivation, then harrowing. Others plow down timothy sod, but the results are not usually as good as with clover.

Mr. E. S. Hunt, Scottsville (Middlesex), writes:

Many apply manure on hay stubble and plow under, and keep the land worked until sowing

time. Others manure the ground early in the spring for corn, and sow immediately after removing the corn.

Mr. J. F. Dix, Little Britain (Victoria), writes:

The bare summer fallow has always given the largest yield of straw and grain per acre, and the best protection from winter frosts; but there is only a small acreage put in in this way, the summer fallow having gone out of date. The general way now is to use either pea land, barley land, or clover sod for fall wheat. I would much prefer the latter as being next to the summer fallow, but I would recommend early sowing, say the last week in August, never getting into September. I would also recommend plowing the sod light right after haying, doing most of the cultivation with a cultivator and harrow, keeping plant food all on top, and sowing with spout drill.

Mr. Valentine Ficht, Oriel (Oxford), says:

We get the best results after plowing clover sod. Give it about ten loads of manure to the acre. Plow about six inches deep the last of July or first of August. Roll the ground as fast as it is plowed, then work up well with a disc harrow or cultivator before sowing.

Mr. F. Van DeBogart, Napanee (Lennox), says:

Plowing once after peas or barley: though one of my neighbors has a good crop this year on pea ground which was just harrowed in without plowing.

Mr. John Fulton, jr., Brownsville (Oxford), writes:

It is a common practice to plow up a clover or sod field after a half crop, or after pasturing for some time. Work well by harrowing and cultivating to keep grass under. Some manure before plowing, but I have seen better results by manuring after, and working manure in before wheat is sown. A bare summer fallow is almost a thing of the past in this section. Pea ground is often sown to wheat, and one of my neighbors has a good piece of wheat on a piece of pea ground, just cultivated without plowing, and top dressed with manure after wheat was sown.

Mr. Arch. McColl, Aldboro (Elgin), says in reference to this:

To prepare the land for fall wheat in the eastern part of this district the usual practice is to summer fallow it; in the western part, where a great many beans have been grown the past few years, the usual practice has been to take off the beans, put on the disc harrow and cultivator, and then sow the wheat. Where the beans have been properly cultivated and kept clean, a good seed bed is left for the wheat. In summer fallowing, the usual practice is to plow in June and then keep the harrow and cultivator going whenever possible until the 4th or 5th of September, and then drill in the wheat.

Harrowing the Ground after the Wheat is up in the Fall.

From the answers received to the query on this point it may be inferred that it is not yet the practice to harrow the ground in the fall after the wheat is up. This practice is a new one, and is, we think, very rare. As to its advantages or disadvantages we are not prepared to speak, as none of our correspondents have ever tried it. It may be worth trying, however, and we would like some of our careful wheat growers to make a trial this fall and let us have a report of the experiment for publication in *FARMING* later. In answering this question Mr. Cyrus Davis, Perth (Renfrew), says :

It is not the practice to harrow in the fall after the wheat is up ; but we sometimes roll the ground when the wheat is several inches high if the season is dry.

Mr. Thomas Brown, Woodburn (Wentworth), says :

I have never seen wheat harrowed after it was up, but have heard of its being done, and I intend to try it.

Harrowing or Rolling in the Spring.

In regard to these practices from the information received we may safely state that they are generally followed by our wheat growers. Many roll the wheat in the spring but do not harrow ; but a large number do both, with very good results. As far as our own views are concerned we believe it would be an advantage to harrow in the spring, especially where the wheat is partially winter killed and the plants weak. By loosening the soil around the plant it will grow and thrive better. Rolling in the spring is practically a necessity, especially where the land is top-dressed with manure, and presents a rough surface. It is also a good plan to roll wheat in the spring after clover is sown. Many object to harrowing in the spring after timothy is sown in the fall, as it will tend to destroy the "catch." Mr. Alex. St. Louis, Walkerville (Essex), says :

We roll and sometimes harrow if there is a hard crust on the land.

Mr. John Irwin, Red Wing (Grey), says :

We harrow and roll with good results, and we would be inclined to think that harrowing in the fall would do no harm, especially if dry.

Mr. J. C. Sheply, Kingsville (Essex), says in regard to this :

Some of our farmers harrow their wheat in the spring before sowing clover seed and follow with the roller. We find that rolling in the spring gives good results whether we harrow or not, as it presses the soil around the roots that may have been loosened with the frost.

The Kind of Cultivation that has Given the Best Results.

The kind of cultivation for fall wheat which seems invariably to give the best results is the summer fallow. Some very good results have been obtained after corn and after a clover sod. In every instance, however, good results can only be obtained by thorough cultivation. Whether the method pursued be a summer fallow, or following corn or clover, a good seed bed must be prepared before the wheat is sown. If this is done a good crop may always be expected, especially if the wheat is sown in good time. From the 1st to the 15th of September is the time largely recommended for sowing. If the land is in a good state of cultivation and the wheat sown early in September, the grain will have a good growth before winter sets in and will come out in the spring in good condition. Some recommend plowing the manure under, while others prefer a top dressing after plowing. Mr. A. J. C. Shaw, Thamesville (Kent county), says in reference to this :

Thorough working and rolling ; best results by plowing early and working continually by harrowing and rolling. Get a good seed bed with bottom solid, then the wheat stands the winter better, and if the land is well pulverized it gets a good start or top before winter sets in. After beans, if the ground is clean, use light cultivation and drill as early as possible. The ground should be well drained, otherwise the wheat on bean-land is easily winter-killed.

Mr. W. H. McNish, Lyn (Leeds), says :

There is no doubt that summer fallowing is the best preparation for wheat, with a little top dressing, which insures a good catch of grass.

Mr. R. J. McQueen, Salem (Welling-ton), states :

As soon as the peas are off, cultivate or gang-plow, harrow and manure the land ; then plow and sow your wheat. The land needs no further treatment to insure a crop.

Mr. J. W. Shields, Mono Road (Cardwell), says :

Rye sown in the fall, turned under by plowing in June, with manure added. When preparing the ground for the seed sow with drill $1\frac{3}{4}$ bush. to the acre. Wheat sown after crop of peas, if soil is good, is usually sure of a crop here; also when sown after a crop of clover has been cut, with manure added, I have had good results.

Mr. Andrew Paterson, Coldwater (Simcoe) writes :

Our land being heavy and chiefly flat, it is generally well ridged up; in fact it is necessary to do so. We find almost invariably our best crop of wheat is one which follows peas. The old sod when turned up, and well broken forms a good mulch; the land is less liable to harden, and gives the young plant a better start in spring. We never roll the land after sowing, in fact our aim is to leave it as loose as possible and lumpy, but not cloddy. This prevents what we call smothering under the snow and heaving also. Sod is also good if plowed early and plowed a second time, then worked down with the cultivator and harrows.

Mr. Wm. Whetstone, Lakeside (Oxford) says :

Clover sod plowed down and then worked on top until sown, or manuring after peas gives good results. I generally sow after peas and like that way very well.

Mr. Wm. Bailie, (Huron County) says in regard to this :

When we use a bare fallow we plough the land the previous fall very deep, not less than eight or nine inches. In the spring we run over it with the twin plough; this keeps the land moist and in fine tilth and helps the weeds to germinate. We harrow and roll it, then we twin plow again, harrow and roll again, then we run a wide share cultivator over it and harrow and roll. Then the last week of August we ridge up in eleven yard lands and harrow, roll and then sow. On pea land if the land is broken out of sod and is clean and has been plowed in the spring, after the peas are taken off we disc two or three times to make a good seedbed, then sow the wheat. This has given good results. I have 17 acres that I shall treat in that way. Some have plowed clover down and had a good crop, but I think careful work as I have stated above with ten tons of barnyard manure to acre will give the best results. We put the manure on before ridging up the last time. Then the wheat gets direct results.

Sowing Timothy seed with Wheat in the fall.

With one or two exceptions the replies to our question here are all in favour of sowing timothy seed with the wheat in the fall. Some vary this practice a little and sow a couple of weeks after the wheat has been sown. The practice has given good results, and may be looked upon as the very best plan for farmers to follow in sowing timothy. One or two have

practised sowing timothy in the fall with rye with good returns. Another plan adopted by a number is to sow timothy in the spring before the snow goes off.

In regard to sowing timothy in the fall, Mr. Jno. Irwin, Red Wing P.O. (Grey), says :

It is never done I think. It is usually sown on the snow next spring if the land is in good shape, and will catch every time.

Mr. J. A. Gordon, Acton (Halton), answers :

Yes, always. I think it is better to sow timothy about two weeks after the wheat is sown, as it gives the wheat a better chance.

Mr. A. Sproat, Aspdin (Muskoka), who follows another practice, says :

Fall rye does well throughout this district. It is customary to sow it upon new land and seed down in the fall to timothy and sow clover in the early spring, seeding down with the spring crops.

When to Sow Clover Seed.

The practice generally followed is to sow clover, both alsike and red, on the fall wheat land in the spring about the last of March or 1st of April. Some sow on the snow, and after the ground is dry harrow and roll. The returns from this practice have been good, and with very few exceptions a splendid catch has been obtained in this way. In one or two cases alsike, and occasionally red clover, has been sown in the fall with very good returns, but it is not the general rule. The seed is usually sown on fall wheat, but sometimes on barley and oats in the spring. Another variation is to sow in the spring after a root crop, and we quote herewith the practice of Mr. W. J. Haycraft, Agincourt (York), in this regard :

Do not sow either timothy or clover in the fall. I seed down on root land in the spring following the root crop, and have only failed in getting a catch twice in fifteen (15) years. In preparing the land for roots I never plow the manure in with the single plow. I believe in keeping the plant food as near the surface as possible, as it will get down soon enough without plowing it down. In preparing my land for the roots I either plow light with the twin plow or cultivate the manure in after the land has been plowed; I cut most of my straw, and I have no difficulty with that. After the roots are off in the fall I seldom plow, and if I do it is with the twin, very light. In the spring I either plow with the twin or cultivate, if the latter will make a proper seed bed. I prefer cultivating; if not, then plow light, as the catch of seeds depends on a proper seed bed

to a great extent. Do not spare a little work before the seed is sown. Sow as early as possible. I always sow with the seeder behind the hoer when sowing the grain, and harrow after and roll in a few days. And as I have had a good catch in 1895 and 1896 I think this is the method that has given the best results as with one or two exceptions I was the only one that got a catch in these years, and to-day I cut ten acres that will yield over two tons per acre.

Mr. Andrew Paterson, Coldwater (Simcoe), says :

I have sown clover in the fall with wheat ; alsike will do but not red clover. We grow a good deal of alsike clover, and once sowed we always have it, but not so with red clover.

Mr. Robert C. Tye (York), gives his practice thus :

I mostly sow timothy seed in the fall and clover the first thing in the spring on the fall wheat that I wish to seed down. In the spring of 1896 I harrowed the fall wheat, and at same time walked closely behind the harrow and sowed timothy and clover about ten pounds to the acre. The seed fell among the harrow teeth and was lightly covered, and I had a good crop.

The Difficulties of Obtaining a Good Catch.

During the past few years there has been considerable difficulty in obtaining a good grass crop, owing chiefly to the severe drouth in July and August. In nearly every case our correspondents report that there is not much difficulty in securing a catch either for timothy in the fall or for clover in the spring if the land is in proper condition when the seed is sown, but the great difficulty has been on account of the very dry weather. One or two report that it is very difficult sometimes during a dry season to keep the catch of timothy or clover from killing out after the crop is taken off till the fall rains come. This difficulty will not likely be experienced this year, and the reports from every district is that there are excellent catches of grass. In reference to this matter Mr. John Irwin, Red Wing (Grey), says :

Lots of failure here on spring sowing, but since we have commenced to grow corn there seems to be no trouble with seeds after corn. Where corn and other grain have grown side by side you would have a good catch on corn ground and none on the other. The great first cause of bad catches of seed is want of manure and a continual sowing of clover. Of course, dry seasons have to do with it too ; this present season seeds caught right along.

Mr. Adam Ruttle, Ripley (Bruce), writes :

Timothy has been a sure catch when sown with fall wheat or rye ; and clover when sown in the spring, in March.

The System of Preparing the Ground for Grass and Clover, and the Methods of Sowing which have Produced the Best Results.

The questions on these heads have been partially answered in the replies to some of the others. As may be inferred, the best general results have been secured by sowing timothy with fall wheat, and by sowing clovers in the spring. Special stress is laid upon the proper tillage and preparation of the ground. If the land is not in proper condition the general experience of our correspondents is not to seed down. Of course, if there is a very favorable season a good catch may be obtained if the land is not in good *tilth*, but with the average season it is almost useless to sow either grass or clover seeds without a thorough preparation of the soil. The experience of a few of our contributors may be valuable just here. Mr. Jonathan Cross, Caledonia Springs (Prescott), says :

We sow on stubble immediately after harvest, say first half of September, giving a good harrowing.

Mr. Cross' method varies somewhat from the general practice. Mr. J. W. Symington, Camlachie (Lambton), says :

Grass seed and clover are mostly sown on the fall wheat in March or early in April. I find the best time to sow the seed is after a fall of snow. Of late years it has been very difficult to get a catch by sowing the seed with spring grains.

Mr. Alex. MacLean, Carleton Place (Lanark), writes :

I always sow timothy in the fall immediately after harvest. I use the disc harrow ; then sow and harrow again. I sow clover in the spring on the last snow. This system is very good, but failed last year owing to the very little snow during the winter. On the whole, however, this system is the most successful and the most practiced. Of course, many sow in the spring.

Mr. Robert McCrow, Princeton (Oxford), says :

I have had little trouble in getting good catches of grass if the land is clean and in a good state of cultivation. I sow timothy in the fall with wheat and clover in the spring, and have had very good returns.

Mr. F. Birdsall, Birdsall P.O. (Peterborough), says :

We mix our grass seed and clover and sow with barley, not putting over one and one-half bushels of barley to the acre. For barley we plow in the fall, and give a surface cultivation in the spring, sowing the barley with a drill and the grass seed with grass seed attachment, sowing clover and grass seed in front of the hoe.

The Results from Sowing Grass or Clover Seeds Alone.

In regard to this practice there is a large difference of opinion. A great many of our correspondents have never tried sowing grass or clover seed alone. Those who have tried speak very well of the results obtained, though a few complain that weeds are more liable to grow, and sometimes the dry weather will injure the grass plant if there is no grain growing to protect it. As a rule, better results have been obtained from timothy sown alone than from clover sown alone. The practice with the timothy is to sow in the fall, either on stubble or land especially prepared. With the clover the seeding is always done in the spring. We give below the opinions of some of our correspondents who have had experience in this new method. Mr. John A. Holgate (Hastings) says :

I have not tried it, but one of my neighbors last year sowed timothy in August on a piece of well prepared land. He has a most excellent crop this year. It was sown on a low piece of land. He had previously tried sowing with spring grain on the same land, but could not get a catch.

Mr. Alex. McLean, Carleton Place (Lanark), says :

Have sown timothy alone many times with splendid results.

Mr. John Irwin, Red Wing (Grey Co.), writes :

Lots of clover sown here alone for seed purposes, and also timothy. Good results have been obtained, but it is not so good for the land. Maturing the grasses draws on the land more than when cut for hay, and especially if the hay is cut, when it ought to be, shortly after bloom.

Mr. Thos. A. Good, Brantford (Brant), says :

Yes, timothy; never clover. Have had very fine crops of hay when the timothy is sown alone. Have the land fine, and sow from the middle of August to the first of September. Cover with the harrow, and roll. The following July I have taken off over two tons of a superior quality of hay to the acre. This was on low, rich land, too wet for wheat.

Mr. Thos. Brown, Woodburn (Wentworth), says :

I think all grass seeds that were sown this spring have done well, even where they were sown alone, though the most trying time is to come yet; that is, when the wheat or other crop is taken off, especially if the weather should be very hot and dry, unless there is a heavy stubble or something to protect the grass. I have sown timothy and clover on wheat stubble after the crop was taken off, when there did not seem to be sufficient grass, with good results.

Mr. Van De Bogart, Napanee (Lennox), writes :

Yes, I have sown timothy alone in last week in August with good results, but have never sown clover alone. One of my neighbors plowed a piece of very rich land in the spring as soon as it would do to work; sowed clover alone, and had a fine crop the first year. Grass seeds of all kinds seem to do best in this section when sown with the drill. Have known clover to be sown late in the fall on winter wheat and rye just before freezing up, with good results, but do not know anyone who has sown it at time of sowing wheat in the fall.

Mr. John Fulton, jr., Brownsville (Oxford Co.), says :

I have not tried sowing grass or clover seed alone, but one of my neighbors tried it, and succeeded in getting a good catch, but had to cut it in August on account of the foul weeds. I have seen as good results by sowing in grain crop.

Since writing the above a couple of replies to our questions on fall wheat growing have been received, and as they contain information of value to our readers we give the following extracts from them.

Mr. David H. Marshall, Snelgrove (Peel Co.), writes :

Taking the results year after year I find that the best wheats with us are : (a) Dawson's Golden Chaff, (b) Red Clawson. The first mentioned wheat has a clear, stiff straw with a red chaff and a plump white grain. The head is moderately short. The Red Clawson has a very good straw but does not stand quite as well as the Golden Chaff. The chaff is red, as is also the grain.

There are three methods of cultivation employed here. (1) Summer-fallowing the land, sometimes rye turned under. (2) Plowing stubble ground and top dressing. (3) Plowing clean sod and working the top. In some cases buckwheat is plowed under and the top worked up. I have seen very good results from each of these methods. In the summer-fallow the soil is often too loose, and being such, the grain seems to heave more readily than in the stubble or sod fields. In my opinion it is most important to get the seed-bed firm and have the top well worked.

Mr. R. H. Harding, Thorndale (Middlesex), writes :

The Democrat and Scott appear to stand the winter best and are not liable to rust ; but I do not know of any seed of these varieties that is not mixed. The best crop I ever grew was American

Bronze, which yielded 74 bushels from 2 bushels sowing. My mode of cultivation is plowing under clover and gang plowing pea ground. I gang plow three or four inches deep and thoroughly pulverize with the disc harrow, then level with the smoothing harrow, roll, drill in the wheat and harrow again to give the seed a uniform depth.

PREPARATION OF THE SOIL FOR FALL WHEAT.

By WILLIAM RENNIE, Farm Superintendent, Ontario Experimental Farm, Guelph, Ont.

[We have great pleasure in presenting along with our special Fall Wheat article the following account of the method employed by Mr. Rennie, the Farm Superintendent at Guelph, for the preparation of the soil for fall wheat sowing. Anyone that has seen Mr. Rennie's fields of wheat in the fall of the year, or in early spring after wintering, smooth and spotless as though covered with an immense green velvet carpet, or again at harvest, when upon land by no means of the best he obtains a yield of thirty-five bushels to the acre, will at once admit that the method of cultivation he employs is worthy of careful attention. We invite the special notice of our readers to what he says about the inadvisability of spreading manure upon the ground in winter and early spring ; also to his remark upon the wasteful influence upon the plant food of the soil of a bare summer-fallow during the hot summer months.—*Editor FARMING.*]

On the Ontario Experimental Farm the method used in preparing pea land for fall wheat has given during the past two years remarkably good results. The peas were grown on sod land plowed, thoroughly harrowed, and cultivated the previous fall. In the spring, before sowing, coarse barnyard manure was applied at the rate of fifteen loads per acre, and mixed with the surface soil by shallow gang plowing, harrowing and cultivating. Immediately after the peas were harvested the land again received surface cultivation by gang plowing, harrowing, and cultivating at intervals with a broad-share cultivator.

By this method the weeds and weed-seeds are destroyed.

Before sowing the fall wheat the soil was loosened to a depth of six or seven inches with a grubber (an ordinary cultivator with narrow chisel-pointed feet). To do this work thoroughly three horses are required. On heavy clay land a subsoil plow might be necessary to loosen the soil to a sufficient depth.

In no case should the decomposed vegetable matter be plowed under with

an ordinary plow, and covered with the crude subsoil which is unavailable food for plants.

The fall wheat was sown (drilled) in the last week of August, at the rate of less than one and a half bushels per acre. In the following spring as soon as the land was dry the crust was broken with a horse-weeder or harrow.

In preparing clover sod for a pea-crop that is to be followed with fall wheat, we plow the land in August to a depth of three inches, then roll, and harrow thoroughly. In about two weeks we cut up the sod with a disc cultivator twice in a place by half-lapping. We then give the soil frequent harrowing and cultivating until October, by which time the sod will be thoroughly rotted and made available for plant food.

In order to prevent the plant food from escaping by evaporation or leaching during the winter, it is necessary to rib the land to a depth of about four inches in drills twenty inches wide, with a double mouldboard plow. This will put the vegetable mould in the centre of the drills, where it will not be liable to get washed away with rain and melting snow. This will run off in the furrows. These drills can be easily levelled by harrowing and cultivating before sowing peas in spring.

There is an objection to applying coarse manure to the land in winter and early spring. The grain and other seeds in the manure are not then destroyed ; consequently, they will grow up with the peas and make the crop look unsightly. In future we intend leaving the manure in the barnyard undisturbed until the peas are harvested. It will then be hauled directly to the field, spread upon it and lightly gang-plowed in. The land will then be thoroughly harrowed and cultivated before sowing the fall wheat.

Worn-out land, which lacks plant food, so much that it is difficult to get a catch of clover, can be restored by sowing a mixture of peas and buckwheat. This should be done in the beginning of May at the rate of one and a-half bushels of peas and one peck of buckwheat to the acre. At the end of July the crop, along with ten loads of farmyard manure per

acre, should be ploughed under to a depth of three inches. With frequent harrowing and cultivating the green crop will be thoroughly rotted and mixed with the surface soil, and be in good condition in time for the sowing of the fall wheat, the end of August.

A bare summer-fallow in the hot months is most destructive to plant food.

FALL WHEATS IN 1897.

By JOHN S. PEARCE, London.

[Mr. JOHN S. PEARCE, is the head of the well-known firm of Jno. S. Pearce & Co., London, Ont., seed merchants and dealers in dairy supplies and furnishings. For many years Mr. Pearce has been a close student of the fall wheat question and has given special attention to the selection and introduction of new varieties that are suitable for our climate. We are pleased in connection with our special fall wheat articles to be able to give our readers the benefit of his practical knowledge and experience in respect to varieties of wheat that he has found most worthy of recommendation. EDITOR FARMING.]

The general appearance and promise of the fall wheat crop of 1897 up to the time of this writing has probably seldom if ever been better. Finer and prettier fields than those we have observed throughout the southern and western parts of Ontario would be hard to excel or to be wished for. While the straw was not as tall as we have seen, yet the stand was exceptionally even over all parts of the fields, and the heads lengthy and well filled with large plump kernels. The weather during the last two weeks of July has been unusually wet with very frequent and exceptionally heavy showers. This has retarded cutting, and when not well shocked, some slight damage from sprouting may result. However, we do not think this is general or serious.

No doubt there is considerable curiosity and considerable speculation as to the probable yield. From what we have seen, there is no doubt but that the yield per acre will be quite up to, if not above, the average. We have seen field after field that we feel confident will go 40 bushels per acre.

I subjoin some notes respecting qualities of some varieties of fall wheat that our experience has shown to be most worthy of consideration :

Early Arcadian.

Introduced to the public in 1896, and un-

questionably the best variety by all odds up to the present time. Has a beautiful clean, clear, medium length straw, holding a fine, square, compact bald head, very erect. The grain is large and plump, of a light amber color, which is very attractive. Altogether we predict for this variety a brilliant future. It is very early (in fact the earliest), and also an immense yielder.

Genesee Giant.

Has taken the place of Manchester and Democrat, being more extensively grown now than any other.

It is truly a wonder for thrifty growth and strong standing qualities. When sown at the rate of five pecks to the acre it will be thicker than most varieties at two bushels, which is a great saving of seed to the farmer. Fine amber grain, solid square head, having a full centre row which adds greatly to the yield.

Fields of this variety are estimated to run 40 to 50 bushels to the acre.

Long Amber.

Fields of this excellent wheat have done remarkably well this season, standing through our severe wind storms and wet weather without lodging.

Straw bright, clean, and of great strength. Heads bald, white chaff, extra long, and filled with grain of a light amber shade, long and very hard.

Millers say this variety is very rich in gluten.

Oatka Chief.

Although grown by ourselves for two years this variety was not sent out until last year and has done remarkably well.

Having just a medium straw it is intended more for strong land, where it will do better than some varieties.

Heads long, square built and bearded, filled with grain of medium length, of a beautiful light red, and partaking of the spring wheat appearance, being hard and flinty.

Dawson's Golden Chaff.

The best white wheat in cultivation.

If you are going to grow a white wheat, or in sections where there is a demand for white wheat, this variety cannot be beaten.

Millers have pronounced it the best for flour for pastry purposes.

Bald head, red chaff, and good stiff straw of medium length.

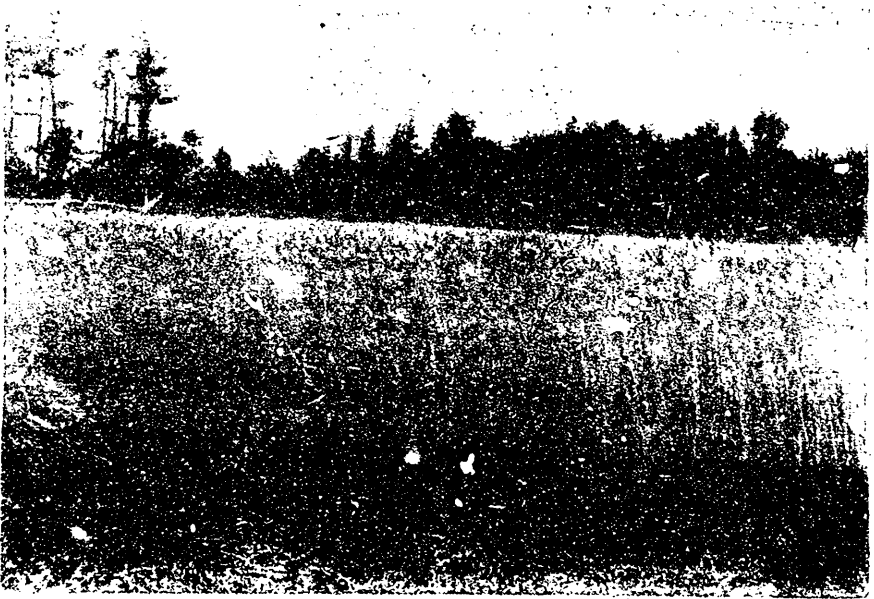
It has a very attractive appearance when growing, and in rich soils is less subject to lodge than some other kinds.

A SUCCESSFUL FALL WHEAT GROWER.

To grow fall wheat successfully requires great skill in tilling and preparing the land and good judgment in selecting varieties of wheat suitable to the quality of the soil and the climatic conditions prevalent in the locality where the wheat is sown. Such success can be obtained only by a careful study of and a long experience with the latest and best methods of cultivation.

About three and a-half miles from Milton, Ont., is the farm of Mr. Andrew

does his work carefully and well, and takes advantage of every new idea that he finds to be good. Some time ago Mr. Elliott visited the Ontario Agricultural College, when he heard the statement that pickling seed wheat before sowing it would prevent the growth of smut; and as he is naturally an experimentalist he made several careful tests of this plan. His tests were very successful and proved conclusively to him that the growth of smut in fall wheat can be prevented by



Pedigree Genesee Giant Fall Wheat.

A field of this variety of Fall Wheat on the farm of Mr. Andrew Elliott, near Milton, Ont. Ready to cut July 17th. From a photograph taken by FARMING.

Elliott, who has had exceptionally good success as a fall wheat grower. His farm contains 500 acres, a large share of which is devoted to the growing of seed fall wheat for the well known firm of Messrs. Steele-Briggs Company, Toronto. The seed grain branch of this firm's large establishment is under the direction of Mr. E. F. Crossland, manager of the retail department. A careful system of testing new varieties is carried on, which enables the firm to be thoroughly posted as to the best kinds to offer for seeding purposes.

Mr. Elliott is an excellent farmer, and

putting the seed in brine before sowing. He now adopts this method in all seed wheat sowing.

Every portion of Mr. Elliott's farm shows careful and thrifty habits on the part of the proprietor. The farm contains a variety of soil and thus it is exceptionally well fitted for testing the different varieties of fall wheat which he experiments with. The soil contains plenty of lime and also admits of thorough cultivation, which Mr. Elliott thoroughly believes in and constantly practises. One of Mr. Elliott's special features is summer fallowing for fall wheat; and though this

system is not recommended by some good authorities on wheat growing, yet everyone will agree that for the production of good clean wheat for seed the summer-fallow method cannot be improved upon. As The Steele-Briggs Company's chief object is to obtain a clean seed, this method of cultivation is very largely practised by Mr. Elliott.

In company with Mr. Crossland, who, at the time, was making his annual inspection of the standing grain before cut-

cut. This field of wheat was ready to cut on July 17th, and shows clearly from the length of the straw and the large head the excellent qualities of the variety itself and the effects of good cultivation. The grain is light amber in color, very hard, and very rich in gluten. Another new variety grown by Mr. Elliott for this firm is the *Harvest King*. An excellent view of this wheat in shock is given in the picture illustrating the Messrs. Steele-Briggs Company's advertisement which



A-Fall Wheat Harvest Scene.

Harvesting Fall Wheat on the farm of Mr. Andrew Elliott, near Milton, Ont. On this farm the seed fall wheat for Messrs. Steele-Briggs Company, Toronto, is grown. From a photograph taken by FARMING.

ting (at which period in its growth any foreign varieties in the grain can be easily detected), a representative of FARMING recently made a visit to Mr. Elliott's farm in order to see the different varieties of wheat standing. It was well worth the trip to Milton to see the splendid fields of wheat grown by Mr. Elliott, and we have pleasure in presenting to our readers the accompanying illustration of a field of *Pedigree Genesee Giant* wheat before being

appears in this issue. This variety promises well, and we predict for it a successful career.

The enterprise and care shown by The Steele-Briggs Company in testing and introducing new varieties are deserving of the highest commendation. Adapting as they do such methods of tillage as can be practised on every farm, the results obtained by them in the cultivation and selection of varieties are of great value.

THE WINNIPEG INDUSTRIAL EXHIBITION.

The exhibition management spared no expense to make the exhibition of 1897 a greater success than that of the previous year. A downpour of rain from

Monday evening till Thursday morning, however, upset all their well-laid plans, and brought them face to face with the possibilities of a dismal failure. This

only served to show the mettle of the management. The exhibition was extended until the following week, and it can be safely said that the exhibition of 1897 was bigger and better in every department than it ever was before. Despite the rain the attendance was over ten thousand more than ever before. This shows that the exhibition has attained such a success and such a hold upon the people of Western Canada, that a whole half-week of most disagreeable weather could not interfere with its success.

Manitoba has become famous as a great wheat-growing country, but these exhibitions show that she can raise extra good cattle, and that she will yet become famous as a stock raising country. The quality of the stock shown, the fine finish of many of the animals, and the way they were brought out, were indeed pleasing, and betoken a much greater interest in stock raising than ever before.

Horses.

There were some 350 entries of horses made, and nearly all of them were present. The quality on the whole was very good indeed, so much so as to surprise some of the judges.

CLYDESDALES.—Just nine aged stallions faced the judge. Mr. J. Gardhouse, of Highfield, Ont. They were an exceedingly good lot. Erskine Lad, owned by J. Ewen, of Morden, was placed first last year, and won the same place again this year. He is a right good one. Golden Hero, owned by Geo. Cartwright, Russell, Manitoba, was placed second, and Sir Arthur, owned by J. E. Smith, of Brandon, won third place. Mr. J. E. Smith also won first and second places in the three-year-old class; first for two-year-olds and first again in the yearling class. Six brood mares made a strong class that would do credit to any show ring. Clato Burns, shown by J. & D. Stephenson, Wawanesa, won first place. She is an ideal mare and was much admired. J. Thompson, Hamiota, was placed second with Lady Almondale, a mare of right good quality. J. E. Smith was awarded third place for a strong-boned and successful breeding mare, Bessie of Overlaw. There were just two three-year-old and two two-year-old fillies present. Seven foals were forward, and though quite young were good ones. Sir Arthur again won the sweepstakes award for stallion and three of his get.

The other classes of heavy horses were not so well represented. **SHIRES** were a small lot but of good quality. **DRAFT and AGRICULTURAL HORSES** were an exceedingly good lot. Mr. D. T. Wilson, Asessippi, had forward a number of animals of a stamp that met with general approval. The draft teams would grace any show ring. First place was given to a massive, squarely built team of mares, owned by J. E. Smith. They were Manitoba-bred, and would make a grand pair of breeders from which to raise stock that would sell at extra good figures. Hackneys were represented by a few good specimens.

Thoroughbreds were fairly well represented, while standard bred horses were very well represented. A few good carriage and coach horses were also shown.

Cattle.

The cattle barns were well filled. The different herds were well represented, and some of the representatives were exceedingly good specimens. One thing noticeable was the greatly increased exhibit of grade stock, which, properly interpreted, means an increased interest in the improvement of stock throughout the country and a more general use of thoroughbred sires. This is a hopeful feature; indeed a decided improvement in the quality of all the exhibits was generally noticeable. Mr. John Isaac, Markham, placed the awards in the beef breeds and Mr. Jos. G. Snell, of Snelgrove, in the dairy breeds.

SHORTHORNS.—The strength of the cattle department lay in the number and quality of the exhibits of Shorthorns. They have proved themselves the best animals for general use, and the interest taken in the judging was very keen, being augmented by the unavoidable delay caused by wet weather. Four grand specimens of the breed answered the call for aged bulls—John G. Barron's Topsman, Andrew Graham's Manitoba Chief, Hon. Thos. Greenway's Hilliary, and Walter Lynch's Village Hero. They were eventually awarded places in the order named. In the three-year-old class three sons of Royal Don faced the judge; first place went to a nicely-balanced bull owned by Geo. Allison. Six good two-year-olds lined up in the next class. Barmpton Chief, a son of Indian Chief, was placed first. He is owned by W. S. Lister. J. Lawrence, of Clearwater, with Cavalier, got second place, while third place went to a good entry of Wm. Chambers. Five yearlings were brought out, but none of them were in high flesh. They were, however, a good lot. Nine thrifty bull calves were out that would do credit to any show ring. The silver medal for best bull any age, and the special for best bull calculated to get steers for the export trade went to Topsman. In the female sections there were a large number of very superior animals. No less than twelve aged cows were out; first and second places went to Lawrence. Lawrence topped the three-year-old class with Marvel, and again was he first in the two-year-old class with Spot, a red, thick-fleshed heifer. Mr. Greenway won second and third places. Mr. Greenway also led the list in yearling heifers with Gem of Athlestane, a sweet, stylish thick-fleshed heifer. Lawrence won first in the heifer calf class, Graham second, and third and fourth places went to Lynch. The first place for bull and two of his get was given to Lawrence for Indian Warrior and the heifers Spot and Florence of Clearwater; second place went to I. G. Barron for Topsman and two of his get; third place went to Graham for Manitoba Chief and two of his get. Mr. Lawrence scored again for cow and two of her produce. He also won the herd prize with Sittyton Stamp at the head. Messrs. Greenway, Lister, and Graham each had forward strong herds, and each had their supporters around the ring. Many favored Mr. Greenway's herd, but Mr. Lawrence's won.

POLLRD ANGUS.—The exhibitors in this class were John Traquair, Welwyn; Alex. Cumming, Rossburn; Hon. Walter Clifford, Austin; F. J.

Collyer, Welwyn; and Purdy Bros., Moosomin. The number of these animals shown at the exhibition does not increase as they might, though the quality of those shown is certainly on the increase. A number of good animals were shown and prizes pretty well distributed, though Cumming got a good share and the herd prize.

GALLOWAYS.—Mr. J. A. Simpson, Poplar Point, had it all his own way in this class. He got 11 but one prize.

HEREFORDS.—Much the same thing happened in the Hereford class. Wm. Sharman, Souris, had only two animals to compete with, but he could have held his own with much stronger competition.

HOLSTEINS.—The exhibitors of Holsteins were James Glennie, Orange Ridge; J. T. Hutchinson, Hayfield; Jas. F. Hindmarsh, Cannington Manor; R. McKenzie, High Bluff; A. Fraser, Portage la Prairie; and A. B. Potter, Montgomery. There were a lot of good animals shown, but also some that would have been better at home. McKenzie's old bull, Emperor of Canada, was again placed at the head of everything, but he is beginning to show his age. Several good younger animals were shown, and in the aged cow section Glennie's Daisy Teak's Queen was beaten for the first time by Hutchinson's Tempest 3rd.

JERSEYS.—Two herds were shown, and in the individual prizes James Bray, Longburn, and Neil Smith, Brampton, Ont., were the principal winners, Bray getting rather the best of the prizes. Geo. Smith, Grimsby, won on a cow, and James Walsham, of Portage la Prairie, had the silver medal bull.

AYRSHIRES.—Representatives of this breed are yearly becoming more numerous. Exhibits were made by Hon. Thomas Greenway; W. M. and J. C. Smith, Fairfield Plains, Ontario; J. S. Cochrane, Crystal City; Steele Bros., Glenboro, and John Lawrence, Morden. Some very good young bulls were shown, but perhaps the greatest interest in this class was taken in the cow classes, where Messrs. Smith's famous old cow, Gurta 11th was not so successful as usual, J. S. Cochrane's Maud being placed first. She is a big strong cow, carrying a very large udder. Steele Bros. won the special for herd open to all dairy breeds.

Sheep.

Sheep were a decided success only in the Shropshire class, but to win a prize in that class meant that extra good sheep had to be shown. In a number of cases the sheep were right off the pastures, and it became more a case of prize-lifting than prize winning. **SHROPSHIRE**s were a grand class, and were shown by Hon. Thomas Greenway, J. A. S. Macmillan, John Oughton, Peter Forgey, and Grogan & Peters. Many of the entries would have graced any show. Macmillan had the best ram of the breed at the show. There were a lot of very superior ewes shown, and Macmillan won sweepstakes for best ewe with a shearling ewe. He also won the diplomas for best pen and best pair, ewe and ram. **SOUTH-DOWNS** were shown by R. Shaw & Son, Gladworth, Ontario, and D. Fraser & Son, Emerson. **OXFORDS** were shown by P. B. McLaren, Clearwater, who had it all his own way. The same may be said of Wm. T. Lytle with regard to the **LINCOLNS**. **DORSETS** were shown by Ed. Vance, who won sweepstakes with a ewe that

dropped a lamb on the grounds. **LEICESTERS** were fairly well represented, the principal exhibitor being Jas. Murray, of Lyleton. Fat sheep were a good class, and show that prairie grass and something else will make fat sheep.

Swine.

Mr. Arthur Johnston, Greenwood, Ont., was the judge of the swine and sheep, and his decisions gave general satisfaction.

BERKSHIRES.—Representatives of this worthy breed were shown by F. W. Brown, Portage la Prairie; R. McKenzie, High Bluff; and Mr. Greenway. The quality was very superior, not a bad pig was brought out. Brown's Tippecanoe won sweepstakes and first with four of his get, and his sow Bonnie Queen won the female sweepstakes.

YORKSHIRES.—A. B. Potter, Montgomery; Jas. Bray, Longburn; Hon. Thomas Greenway; Andrew Graham, Pomeoy; Dr. S. J. Thompson, Carberry; and Jos. Callin, Whitewood, had forward exhibits of Yorkshires that would uphold the good name of the breed anywhere. The quality all round was good. Best pair boar and sow, any age, went to Graham.

The exhibit of **CHESTER WHITES** was not as good as it was last year. Some exceptionally good animals were shown. The lion's share of the awards in the **POLAND-CHINA** class were won by W. M. and J. C. Smith, Fairfield Plains, Ont. They were shown in good finish. **TAMWORTHS** were scarce, though some real good specimens were present. The same may be said of the **DUROC-JERSEYS**.

Agricultural Products.

The exhibits of wheat, an article that has played so important a part in the development of the country, were very good. The exhibit that attracted greatest attention was the one calling for twenty-five bushels of Red Fyfe wheat. There were seventeen entries, and first place went to S. J. Thompson, V.S., of Carberry. The prize was \$100, given by the Union Bank. Mr. Thompson also won several firsts on smaller lots.

Dairy Products.

Manitoba has held the palm as a wheat-growing country, but a visit to the dairy building would demonstrate that the province is rapidly coming to the front in dairy matters. The exhibit of butter was the largest ever gathered here, and in quality and appearance was far superior to the collections of previous years. There are twenty-eight creameries in the province, and of this number twenty made entries. Great improvement was noticeable in the mode of packing butter and in the manner of putting up rolls for the table, both by the creameries and from the farm dairies. These improvements are no doubt a direct result of the lectures and instructions given by the agents of the dairying service of the province and of the Dominion.

The exhibit of cheese was rather limited, only four out of the forty-two factories sending in exhibits. Those sent in, however, showed marked improvements over those of other years.

Poultry.

The poultry building was crowded, and more space will have to be provided for another year. The principal exhibits were made in Plymouth Rocks, Wyandottes, and Light Brahmas, which seem to have proven the best breeds for Manitoba.

CANADA'S GREAT AUTUMN EXHIBITIONS.

Canada's Great Victorian Era Exposition.

Judging from indications there never was such a year for the Toronto Exhibition, or to give it its grander and more formal title, CANADA'S GREAT VICTORIAN ERA EXPOSITION AND INDUSTRIAL FAIR, which is to be held from the 30th of the present month until the 10th of the next. It is an old story to say entries are better and more numerous than ever. But it can easily be understood that this is a special year, and that, therefore, it would be strange if the statement could not be made with truth. But our friends on the other side of the line have no more reason to exhibit this than in any other year, yet they are doing so. Several entries in the live stock classes have been made by United States breeders, one worth noting being of 22 head of Jerseys, which this year will be stronger than they have been since the days of the famous Oaklands.

Swine breeders are coming out in force, while sheep will be fully up to the average.

Horses will exceed by a round hundred the display of last year, when they were well up to the standard. It is gratifying to note that while all the leading classes, Clydesdales, Shires, Carriage horses and so on, will be represented, there will be no falling off in Hackneys, although one or two well-known faces will be missed, yet there is a noteworthy increase in Standard-breds; Saddle horses and Hunters will also be in abounding evidence: in fact, it looks as if those classes of horses on which we have most to depend for our export trade will be extremely well represented,

Thoroughbreds will hardly be more than up to the average. It is strange that when breeders of blue-blood pretend to be so anxious to introduce their character of horse, and when for export its parentage is not important, the larger breeders do not enter their stallions, if not to compete for premiums, at least for show, and to attract the attention of agriculturists,

Dairy products will loom up as strong as ever, and perhaps stronger. Honey will probably have comfortable premises all to itself, the present

idea being to devote the well-known Little World building, last year used by Alpine Village people, to its service.

The swine, as stated last month, will have entirely new quarters, a fact that doubtless is responsible for the increased entry list.

Every building promises to be full to overflowing. A number of applications for space had to be refused.

The new horse ring will be a great acquisition. It will be a fifth of a mile round, and will be used entirely for exhibiting purposes. It is situated to the west of the grand stand that

has previously been used for miscellaneous purposes.

One of the attractions will be a guideless horse, but which of the half-dozen now exhibiting before the public had not at the time of writing been determined. And this brings us to the crowning feature of the entire exhibition—the production in replica of the gorgeous Diamond Jubilee pageant that took place in London the Great, on June 22nd last. This will be produced on even a



H. J. Hill, Toronto,
Manager of the Industrial Exhibition.

more stupendous scale than at first contemplated. A thousand people will be engaged and several hundred horses. All branches of the colonial and Imperial services will be represented, as well as the princes of India and the notables of Europe who figured in the procession. Buckingham Palace in 1837 and St. Paul's Cathedral in 1897 will be shown in scenery 500 feet long by 80 feet high, historical tableaux of the principal events during the reign of Her Majesty being presented by 150 men and women and 70 or 80 horses. A *fac simile* of Her Majesty's state carriage, drawn by six cream-colored horses, with Her Majesty and the royal princesses, escorted by the nobility and princes of India, all in gorgeous costumes, mounted on richly caparisoned horses.

Amusing incidents will be introduced during the procession, as well as illustrations of the more serious ceremonies. The tableaux will comprise:— Called to the Throne; Coronation Festivities at Buckingham Palace; The Queen's First Council; Her Majesty's Marriage in the Chapel of St. James' Palace; State Ball in Buckingham Palace; The Secret of England's Greatness; The Proclamation of the Queen as Empress of India and others. All these things will be produced under Mr. John Henderson, of Earl's Court, London, England and an able corps of assistants especially brought over. At night all will be illuminated and the effect further heightened by a more than usually brilliant display of fireworks.

Thus it will be seen that Toronto's exhibition of 1897 does truly promise to be the greatest of the nineteen that will have been held annually.

The Central Canada Exhibition.

The Central Canada Exhibition has made rapid strides during the past few years. The president of the Association, Mr. Wm. Hutchinson, M.P., managing director of the McKay Milling Company, is a most energetic officer, and he has associated with him competent and enterprising gentlemen.

For several years the Ottawa fair has been recognized as the greatest in Canada, next to the

Industrial Exhibition, and it equals the Toronto show in many respects.

The prize list of the exhibition has been increased from year to year, and this year it aggregates \$14,900 in cash and forty-five gold and silver medals. The gold medals given at the fairs in the past are highly prized by the owners, who say they are superior to those given by any other show in Canada.

The prize list in the live stock and dairy departments has been very largely increased this year. The directors are anxious to please the farmers, and all the demands of that class of the community are carefully considered. The special prizes in the cattle department include one of \$25 from the Canadian Holstein-Friesian Association,

and a gold medal in each class of cattle for the best herd shown. A special prize of \$50 will also be given to the owner of the cow giving the most milk during the fair. In the horse classes eighteen gold medals are offered as special prizes, and in the dairy department three gold medals. The prizes in all other classes are also liberal.

The accommodation for live stock at the Ottawa fair grounds is admitted by everyone to be equal, if not superior, to even that at Toronto. Last year the city of Ottawa gave the fair directors \$40,000 to build new stables and stalls for the live stock. The directors spent over \$50,000. The stables erected are clean and commodious, have

an upper storey where attendants can sleep, and are also splendidly adapted to the purpose of exhibiting stock to the comfort and convenience of the visiting public.

The directors are prepared to accommodate 400 horses and 500 head of cattle. The long rows of sheds for the sheep and swine are also erected upon the most modern principles.

This year still another addition has been made to the large carriage building, while the capacity of the machinery hall has also been largely increased.

The enlarged grand stand has seating capacity for 8,000 persons, and affords perfect shelter on a wet day.



Mr. E. McMahon,
Secretary Central Canada Exhibition, Ottawa, Ont.

The stage attractions at the fair in the past were always the best that could be obtained, and this year a splendid programme of novel and entertaining specialities has been prepared for the delectation of the thousands who will attend Ottawa's great exhibition. The specialities will be seen twice daily—in the afternoon, and in conjunction with the spectacular representation at night. The spectacular to be presented this year is "The Taking of the Bastille." It is without doubt the most elaborately equipped production ever introduced into Canada. The scenic appointments are historically correct. Five hundred of the Ottawa militia will take part in the presentation, and the 43rd Battalion, the crack military corps of Canada, will go through special military manoeuvres and perform fancy drill. It is with pyrotechnics that it has been possible to present the dread conflict of armies in a manner that makes the spectator forget for the time that all that is seen is but the clever work of artists, and the show of fireworks this year will surpass any before seen in Ottawa. In addition to the pyrotechnics of the spectacular there will be a display each evening costing over \$1,000.

No extra charge is made for the evening entertainment. Visitors can go in the morning and stay till 10.30 p.m.

The dates of the exhibition are September 17th to 25th. Entries close on the 17th. Live stock will be received on the grounds up to 10 a.m. on Monday, September 20th.

Visitors can go to the grounds from any part of the city on the electric cars for five cents.

Secretary Ed. McMahon will be pleased to furnish copies of the prize list and all information required to those who apply for them.

Canada's Favorite Live Stock Exhibition.

The Western Fair, London, is again to the front and is providing further accommodation and improvements to their already excellent stock buildings, necessitated by the increase of entries last year in these departments.

The directors of this time-honored show have had sufficient experience to know the proper course to pursue in maintaining the proud position the Western now enjoys as The Live Stock and Agricultural Fair of Canada.

Twenty-nine years have passed away since the Western Fair was established. Each and every year since has been marked by advancement in all the departments. This annual improvement is largely due to the thoughtfulness and care of the management, and the fact that the agricultural interests are given first place.

Over thirty-four thousand dollars were expended in exhibition buildings last year, and others being found necessary are in course of construction for the coming fair. London's fair buildings are worth a visit to the city to see.

Exhibitors of first-class stock, machinery, or produce of any kind, looking for purchasers, cannot go to a better place than the Western Fair to get what they want—ready sales at good prices.

The prize lists are ready for distribution, and a simple application to the secretary, Mr. Thos. A. Browne, will secure a copy. It is well just here to say the closing date for making entries is September 9th.

While the association gives particular attention to the exhibitors and their exhibits, they at the same time are aware of the necessity of having some first-class special features to edify and amuse their visitors during the afternoons and evenings.

Sie Hassen Ben Ali, the Arab prince, has been engaged, not only to bring with him his wonderful troupe of Arabs, but secure the best talent in America along other lines. His knowledge of the business and his acquaintance with the best artists and his own unsullied reputation is sufficient guarantee that two hours of good, clean, high class attractions will be on hand. The official programme will be published the first week of August, and is free to all.

Southern Fair, Brantford.

The Southern Fair, Brantford, now ranks among the larger exhibitions of the province. Last year a phenomenal success was achieved, and this year a programme of a most elaborate character has been entered upon. This action seems to be fully justified by the fact that 12,000 people were on the grounds during the fair of 1896.

The most pronounced development has taken place in the live stock department, in which the prize list has been doubled, and breeders will find this feature of the fair deserving of careful consideration.

The ladies' department, which was such a successful feature last year, will again be conducted by the leading ladies of Brantford and district, and the prizes this year are of an unusually valuable character.

There will be a four days' fair, beginning on September 21st, and continuing until September 24th, and every day will have its special features. The amusement programme, which embraces two nights of fireworks by Hand & Co., of Hamilton, rivals the big fairs, and will contain many things entirely new in Canada.

Low rates have been secured on the railroads, and special trains will be run at the close of the evening performances.

Montreal's Jubilee Exhibition.

Everything points to this year's exhibition being one of the best yet held. In the industrial department there are a number of new entries, and some of our prominent industries will be again represented for the first time for years, including the large white and colored cotton and woollen mills. In the agricultural, live stock, dairy, and poultry departments there will be a show that cannot fail to be interesting and instructive to all. The working dairy is always watched with great interest. The much-talked-of-moto-cycle or horseless carriage will be in full operation, for the first time in Canada, and cannot fail to interest everyone.

While the management are not losing sight of the educational and instructive benefits of the exhibition, they find that some amusement is expected also, and they have provided a very interesting and novel programme, including balloon races for the championship of the world, a lady riding a bicycle to the clouds, the Royal Canadian Dragoons, the Cinemetograph representation of the Queen's Jubilee, a yoke of oxen weighing

7,300 pounds, and the smallest horse in the world. There are also horse and pony races and high jumping contests. Those intending to exhibit should lose no time in making their entries so as not to be crowded out.

Mr. Joseph Laduc, the Klondyke millionaire and owner of Dawson City, who is now at his former home near Plattsburg, will visit the Montreal Exposition and show some of the nuggets that are found on the Klondyke.

WINTER WHEAT EXPERIMENTS AT THE ONTARIO AGRICULTURAL COLLEGE

At the Ontario Agricultural College this year, owing to the late harvest, and the exceedingly wet season, no "Winter Wheat Bulletin" can be issued in time to be of service before the winter wheat seeding is reached, and we therefore have pleasure in giving to the readers of FARMING a summary of the results of the experiments as reported by Mr. Zavitz, the College Experimentalist.

One hundred and eighty-nine plots have been devoted this season to winter wheat experiments.

Summary of Experiments.

In the experiments (for 1897) with ninety-three

varieties of winter wheat, all grown under similar conditions, it is found that the seven varieties which stand highest in yield of grain per acre are the same seven which have given the largest yield of grain per acre among eighty-six varieties grown on the experimental plots for four years in succession. These seven varieties have yielded at the following rates per acre in the average of the four years' experiments: 1, *Dawson's Golden Chaff*, 53.4 bushels; 2, *Early Red Clawson*, 50.6 bushels; 3, *Egyptian*, 50.2 bushels; 4, *Early Genesee Giant*, 50.1 bushels; 5, *Ritable*, 49.2 bushels; 6, *Golden Drop*, 49.0 bushels; and, 7, *Imperial Amber*, 48.8 bushels. It is earnestly hoped that the readers of FARMING will carefully consider the valuable information embodied in the two preceding sentences and apply it when making selections of seed fall wheats this year.

CORRESPONDENCE.

Churn Butter Tests.

A HOLSTEIN MAN HAS NO USE FOR THEM.

Your Jersey correspondent of June issue should be satisfied with the explanation of July number of FARMING. It is my opinion that the words "in a measure" in Mr. Gilroy's article were put there for about the same reason as a pig has a tail, that is, for ornament, or to soften an otherwise harsh expression. Certainly there is no need for any reservation. This "cost of production" question is one not so easily settled, and is for that reason taken as a last ditch by those that have been beaten at every other point. But as there is more difference perhaps between individuals of a breed than between breeds, the question is to get true representatives of each breed. The plan mentioned by Mr. Joseph Yuill would appear on the surface all O.K., but Mr. Yuill is too much of a dairyman not to know that there is no telling what a cow may do next year. There are many little things that happen to put us in mind "that the best laid plans of mice and men do oft-times run a-glee," and that accidents will happen. What is more they *did* happen in the case of one of these station tests. The cows were selected, and one of them I had seen, and I knew she was a good one, and when I saw her work, only 25 to 30 lbs. of milk a day, I made enquiry for the cause, and found that the cow had met with an accident and calved prematurely; she was in reality a farrow cow, and instead of giving her 70 to 80 lbs. daily as pre-

viously only gave in this test 25 to 30 lbs., and no sane man would call that a representative Holstein. I cannot, of course, know the cows of all the tests, but from what I do know I am inclined to take some of these tests at a big discount. From what I know of the Holstein breed I am prepared to say that a Holstein cow that will not make her 400 to 500 lbs. of butter per year is not a representative of what a good Holstein can do; to say nothing of the fact that a great many will exceed 16,000 lbs. of milk and 600 lbs. of butter. Another point made plain by the Danish test of 1896 is that a large milker may be the most profitable butter producer also; for among these two hundred cows in the Danish test a cow taking as high as 27 lbs. milk to make 1 lb. of butter was one of the most profitable. In fact the most profitable cows in the test were all large milkers, and no allowance was made for skim milk, which is a valuable product on any farm. Twenty-seven pounds of milk to 1 lb. of butter will seem large in comparison with the Jerseys quoted by Mr. Clemons, as making 1 lb. of butter from 6 and 7 lbs. of milk. I used to wonder how butter could be made from so little milk, but in my work as a butter-maker I have found it does not take much skill to make butter only 50 to 60 per cent. butter fat. It is largely a question of temperature, and chilling butter in the granular state to hold the buttermilk. "Churn" butter tests mean nothing to me.

Curries, Ont.

GEORGE RICK.



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 arrears 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.

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Distribution of Seed for Testing Purposes.

The authorities of the Ontario Agricultural College wish it to be known that the following three sets of winter wheat varieties will be sent free by mail in one-half pound lots of each variety to every farmer applying for them who will carefully test the three kinds in the set which he may choose, and report the results of his test after harvest next year. The seeds will be sent out in the order in which the requests for them are received as long as the supply lasts.

Set 1.	Set 2.
Dawson's Golden Chaff, Early Genesee Giant, Early Red Clawson,	Dawson's Golden Chaff, Pride of Genesee, Poole.
Set 3.	
Dawson's Golden Chaff, New Columbia, Imperial Amber.	

Every person wishing one of these sets should write to C. A. Zavitz, B.S.A., Experimentalist, Ontario Agricultural College, Guelph, mentioning which set he wishes. Thereupon the grain, with instructions for the testing, and blank forms on which to report, will be forwarded free of cost to his address, until the supply of grain for distribution is exhausted.

Publisher's Desk.—Continued.

Brockville Business College.—This prominent educational institution advertises in this issue of FARMING, and our readers who contemplate securing a good business education are requested to communicate with the principal, Mr. C. W. Gay, Brockville, Ont.

Toronto Poultry Show.—We have received notice that the Toronto Poultry, Pigeon, and Pet Stock Association will hold its next annual winter show from December 16th to 20th, inclusive. Mr. R. Deuston, 42 Austin avenue, Toronto, is secretary, and will be pleased to answer all enquiries regarding the show.

Fire Proof Safes.—We beg to call the attention of our readers to the advertisement of S. S. Kimball, Montreal, which appears in this issue. Mr. Kimball has made a speciality of manufacturing the highest type of champion fire and burglar proof safes, and after an experience of sixteen years is able to turn out a safe that is second to none.

Seed Wheat.—In this, our Fall Wheat number, John A. Bruce & Co., Hamilton, Ont., advertise a special line of seed wheat to which we have pleasure in drawing the attention of our readers. Only pure, clean seed should be sown, and our readers will consult their own interests by sending their orders to this reliable and well-known seed firm.

Common Sense Bolster Spring.—Among our new advertisers this issue is the Windsor Bolster Spring Co., Windsor, Ont., who advertise their new Common Sense Bolster Spring for wagons and light vehicles. They carry a light load as easily as a heavy one, and are guaranteed to have a capacity up to 7,000 pounds. Each spring is graduated so as to be easily adjusted for a light or heavy load.

The Gem Fence.—This easily made and durable fence is acquiring a reputation as a cheap and simply constructed fence. It is manufactured by the firm of McGregor, Banwell & Co., Windsor, Ont., whose renewal advertisement appears in this issue. The Gem Fence Machine is something that every farmer should have. One man can weave 40 rods of fence in a day, and the machine is easily operated.

The Bell Pianos and Organs.—Another well-known firm to begin another year's contract for advertising in this issue is The Bell Organ and Piano Co., Limited, Guelph, Ont. The goods made by this firm, one of the largest of its kind in Canada, are so well and favorably known that anything we can say will not add to their present high reputation. We are pleased, however, for the continued confidence shown by the Bell Organ Co. in FARMING as an advertising medium by a renewal of their contract with us.

Production of Cream at the Farm.—We are in receipt of a comprehensive bulletin on this subject from the Department of Agriculture for Manitoba. It is edited by Mr. C. C. Macdonald, Dairy Superintendent for the province, and is full of interesting and practical information on the care and feeding of dairy cows and the care of milk for creamery purposes. Special attention is given to the production of cream on the farm for use in the creameries, and as the cream gathering system is largely practised Manitoba's bulletin cannot help but be of immense value to the dairymen of that province.

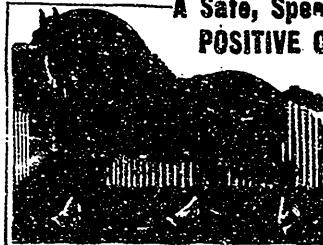
Ontario Wind Engine and Pump Co.—We beg to draw the attention of our readers to the On-

Horse Owners Should Try

**COMBAULT'S
Caustic
Balsam**

The GREAT FRENCH VETERINARY REMEDY

A Safe, Speedy and
POSITIVE CURE.



Prepared exclusively by J. E. Combauld ex-Veterinary Surgeon to the French Government Stud.

SUPERSEDES ALL CAUTERY OR FIRING

Impossible to produce any scar or Membr. The Safest and Best BLISTER ever used. Takes the place of all liniments for mild or severe action. Removes all Bunches or Blisters from Horses or Cattle.

As a HUMAN REMEDY for Rheumatism, Sprains, Sore Throat, Etc., it is invaluable.

WE GUARANTEE CAUSTIC BALSAM will produce more actual results than a whole bottle of any liniment or spavin cure mixture ever made.

Every bottle of Caustic Balsam sold is warranted to give satisfaction. Price \$1.50 per bottle. Sold by Druggists, or sent by express, charges paid, with full directions for its use. Send for descriptive circulars, testimonials, etc. Address

THE LAWRENCE-WILLIAMS CO TORONTO, ONT.

tario Wind Engine and Pump Co.'s (Limited), manufactures, consisting of the Canadian Steel Air Motor, which is now so well known in Ontario as well as the other provinces. They shipped this season five outfits for the government of Cyprus for irrigation purposes. They also furnished the C.P.R. Co. eleven complete outfits for their line. They will have a very practical exhibit at the exhibition this year, which will be interesting and profitable for all who intend having an economical power for pumping or any work on the farm, such as grinding, pulping, etc.

Special Offer to "Farming" Subscribers.—

We are pleased to be able to make the following combination offer to the readers of FARMING. Examine it carefully and see if it will not be in your interests to secure the advantage of these clubbing rates :

FARMING and <i>Toronto Weekly Globe</i>	\$1 50
FARMING and <i>Toronto Weekly Mail and Empire</i>	1 40
FARMING and <i>Farm and Fireside</i>	1 40
FARMING and <i>Montreal Daily Witness</i> ,	3 00
FARMING and <i>Montreal Weekly Witness</i>	1 60
FARMING and <i>Family Herald and Weekly Star</i>	1 75
FARMING and <i>London Weekly Free Press</i>	1 75
FARMING and <i>London Weekly Advertiser</i>	1 40
FARMING and <i>Ottawa Semi-Weekly Free Press</i>	1 60

Judges for the Montreal Fair.—One of the necessary and important parts of an agricultural exhibition is to have competent and impartial judges. Great care is always given to this point at the Montreal Exhibitions, and among those secured for this year's fair are the following well-known gentlemen : L. G. Jarvis, of the Agricultural College, Guelph ; Richard Gibson, Delaware, Ont. ; F. A. Lovelock,

Publisher's Desk.—Continued.

Lynchburg, Va.; J. M. Hurley, M.P., Belleville, Ont.; Dr. Greensides, Mount Morris, N.Y.; Robert Ness, Howick, Que.; John Brennan, Sand Point, Ont.; Jacob Erratt, ex-Mayor of Ottawa; Dr. Couture, Quebec; Robt. Beith, M.P., Bowmanville; F. S. Peer, New York. With judges so competent there should be no cause for complaint on the part of exhibitors.

The Daisy Tread Power and Grinder.—We have pleasure in drawing the attention of our readers to the advertisement of The Wortman and Ward Co., Limited, London, Ont., who with this issue begin another year's contract for advertising in FARMING. Their goods have acquired a reputation of excellence and durability, and give perfect satisfaction to their numerous customers. Their Daisy Feed Grinder and Tread Power are models of efficiency and simplicity. The latter having cold rolled steel shafting, long bearings, and an improved governor which acts automatically. Messrs. Wortman and Ward inform us that the results from advertising in FARMING in the past have been exceptionally good, and we have no doubt that with FARMING'S growing popularity and increasing circulation future results will be even greater.

Ontario Agricultural College.—The annual fall announcement of the Ontario Agricultural College appears on page xiii. of this issue. The college will reopen on October 1st and we bespeak for this admirable institution a large patronage from among our farmers' sons. The farmer of to-day needs a thorough training in everything that pertains to farm work and practice, and where can he find better opportunities for acquiring this training than at an in-

stitution whose one specialty is the teaching and practice of the most modern and up-to-date methods in agriculture? The number of farmers' sons who attend the Agricultural College is increasing year by year, and there is no reason whatever why it should not be filled to overflowing. Before making arrangements to go elsewhere write to Dr. Mills, Guelph, Ont., for circular of information as to the course of study, cost, etc.

Salt on the Farm.—The limited use of salt for fertilization is a proof that its action in the soil is not fully understood. It has been proved by experiments that the solvent powers of salt in solution are twenty times greater than those of rainwater for breaking up the soil and setting its constituents free and available. Salt may therefore be described as a powerful chemical agent for providing and preparing soluble food for plants from the materials present in the soil. This is a most important consideration when we remember that in all soils there are about two-thirds lying dormant, and only one-third in an active condition. Being a "disintegrator," salt makes stubborn soils easier to work if applied just before the land is broken up. In all cases salt hastens weathering, and keeps the soil soft in frosty weather. Salt not only absorbs moisture from the atmosphere, but retains such moisture in the soil, thus compensating for a deficiency of rain. Salt purifies and cleans the land by decomposing all inert matter, neutralizing sourness, and assisting in the circulation of stagnant water.

A Tent at the Great Fair.—Through the courtesy of Mr. H. J. Hill, Manager of the Industrial Fair, Toronto, FARMING will have a tent on the grounds during the coming exhibition, which opens on August 30th. Our tent will be located near

Purest and Best.

WINDSOR SALT

Is recommended by the leading Butter and Cheese makers. Messrs. D. Derbyshire & Co., of Brockville, say:

"We have been using the Windsor Salt for a number of years, and selling the same to our butter and cheese factories, and we confidently recommend it as the best salt on the market to-day, without any hesitation."

Mr. Derbyshire is President of the Butter and Cheese Association of Eastern Ontario.

IF YOUR DEALER CANNOT SUPPLY YOU WRITE TO

THE WINDSOR SALT CO., LIMITED,

Windsor, Ont.

Publisher's Desk—Continued.

the cattle rings, and in close proximity to the cattle and horse stables, in the northern portion of the grounds, and we have pleasure in extending to our many patrons and friends who will visit the exhibition a cordial invitation to call and see us there. We shall be pleased, indeed, not only to meet our advertisers and subscribers, but every visitor to the show will be cordially welcomed. Pens, ink and paper will be at the disposal of stockmen and others who may care to use them, and we shall take it as a favor if our friends will avail themselves of all the privileges of the tent at any time during the exhibition. A representative of FARMING will be on hand to give information or answer any inquiries regarding subscriptions, advertising rates, etc. Stockmen and others requiring business cards, letter heads, etc., printed can have their orders promptly executed by leaving them with us at the tent.

Don't fail to pay us a visit when at the fair, and to confer with us regarding FARMING. Any suggestions you may care to make regarding its policy will be gratefully received.

North-West Dairying.

The Dairymen's Association of the Northwest Territories has issued its annual report for the year 1896-97. This report contains a number of the principal papers read and addresses delivered at a series of local conventions held in various parts of the Territories during the past winter, and should be of interest to the dairymen and farmers of those sections. The president of the association is Mr. E. N. Hopkins, of Moose Jaw, who was one of the pioneers in dairying in Oxford county when Canadian cheese was endeavoring to gain a foothold in Great Britain. Our readers will wish the pioneers of this great industry in the Territories every success, and if they maintain a live organization no doubt they will.

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.

In our July issue an error was made in calling the stock bull of W. J. Biggins, Clinton, Ont., Royal Dove, and as having been bred by the Hon. John Dryden. The name of the head of Mr. Biggins' well-known herd of Shorthorns is Royal Don (imported), bred by Alexander Campbell, Deyston, Kinaldie, Aberdeenshire, Scotland. He was sired by Royal James, and his dam was Lady Kintore by Gravesend.

T. BROOKS & SONS, of South Brant Stock Farm, Brantford, Ont., write: "The grand Bull, 1129, Beauty's Style of Auchenbrain (2758), imported by the Hon. Thos. Ballantyne, Stratford, Ont., and which stood at the head of his herd, taking first prize at Toronto in 1896, now stands at the head of our herd. The young bulls are all sold. A pair of beautiful heifers, 10 months old, and two younger ones for sale. They are beauties, from grand stock and grand milkers. Our young Chester boars and sows are of first quality, and our Tamworths are second to none in the country. All stock is in useful breeding condition."

H. CARGILL & SON, Cargill, Ont., write: "We have been selling a number of Shorthorn females this spring, the following being a list of the lot: To A. J. McArthur, for shipment to the West, one yearling and four 2-year-olds; to W. R. Stewart, Calgary, six yearlings; to Arthur Johnston, Greenwood, three yearlings; to T. E. Robson, Ilderton, one cow and one calf; also sold Mr. McArthur, two roan bull calves. We still have a lot of good young cows for sale. We expect to hear from Major Robson about exhibition time, as the cow and calf purchased from us will stand a lot of beating."

Mr. J. R. HARVIE, Clay Field Farm, Orillia, Ont., writes: "I sold four young bulls the past season, and am raising five this year which I intend selling this coming winter. I have for my stock bull Indian Duke, a son of Arthur Johnston's Indian Chief, a very fine animal. I am now cutting a very fine crop of fall wheat (Dawson's golden chaff), which I will guarantee to be pure and clean for seed."

MR. FRANCIS RUSSELL, Cedarville, Ont., reports the following sales of stock: One Berkshire sow to John Deemer, Mt.

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Sept. 9th to 18th, 1897 - - And 4 Evenings

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Entries Close Sept. 9th, in all Departments.

Sie Hassen Ben Ali, the Arab Prince, has been secured to furnish and superintend the Stage Attractions. The original Beni Zoug Zouz Arabs, Achille Philious Rossow's Midgets, Rube Cyclist, and many others have been engaged. Best three hours' amusement ever given in London.

Magnificent Pyrotechnic Jubilee Exhibition

Each evening in connection with the Ring and Stage Attractions.

Auction Sale of Booths and Privileges, August 15th, on the Grounds, at 2 p.m. For Frize Lists, Programme, and Maps, apply to—

COL. F. B. LEYS, President.

THOMAS A. BROWNE, Secretary.

Stock Notes.—Continued.

Forest, Ont.; one Berkshire boar to Stephen Bennet, Arthur, Ont.; one Yorkshire boar and Berkshire sow to John Starks, Pitherton, Ont.; one Berkshire sow to Thomas Bunson, Yeovil, Ont.; one Berkshire boar to T. Read, Yeovil, Ont.; one Berkshire boar to John Campbell, Demare, Ont.; three Berkshire sows to George Snell, Yeovil, Ont.; one Berkshire boar to T. Spence, Hopeville, Ont.; one Berkshire sow to John Desigel, Hopeville, Ont.; one sow to Peter McPherson, Cedarville, Ont.; four Yorkshire sows and one Berkshire sow to J. Snell, Harriston, Ont.; one Yorkshire boar and sow to H. McCalley, Harriston, Ont.; one Yorkshire boar to Belton & McDonald, Atwood, Ont.; one Berkshire boar to Peter Marley, Egerton, Ont.; one Berkshire boar to Robt. Morrison, Farewell, Ont.; two Berkshire boars and two Berkshire sows to Wm. Bowman, Mt. Forest, Ont.; one Yorkshire boar to John Johnston, Garderville, Ont.; one Yorkshire sow to T. Garton, Holstein, Ont.; and one Yorkshire boar to John Murray, Arthur, Ont.

MR. R. E. WHITE, Perth, Ont., writes: "Our Ayrshires and Berkshires are doing well, and the animals we offer for sale are fit for show in any company. We are forced to part with Grand Duke, our stock bull, owing to his heifers coming in to breed. He should prove a gold mine to some dairyman. The other young bull is a beauty and will no doubt be heard from. He is a very close descendant on the dam's side from old Golden Prince, owned so long by R. Robertson, Compton, Que. Our poultry are doing well. We have some Plymouth Rocks from a pen headed by a cock from Bradley Bros, Lee, Mass. The white Minorcas are of T. A. Duff's strain."

JOHN CAMPBELL, of Fairview Farm, Woodville, Ont., writes from quarantine, Quebec, on the 16th July to say:—I have recently landed here with my importation of sheep, which have come over in first-class condition. The lot is made up of Shropshires, Oxfords, Hampshires, Lincolns and Leicesters. The latter were first prize winners at the Royal Show, and go to Mr. A. W. Smith, of Maple Lodge. Among my Shropshires are several winners of the highest honors. A Montford Dreamer shearing ram out of a Fair Star ewe bred by Mr. A. E. Mansell, was my choice of four, out of his pen of five winners of second prizes at the Royal and Shropshire Shows. He is of similar breeding to Mr. Mansell's champion ram this year, and his noted champion of 1895,

BOYS FOR FARM HELP

The managers of Dr. Barnardo's Homes invite applications from farmers throughout the country for the boys they are sending out periodically from the English homes.

MR. ALFRED B. OWEN, Agent,
Dr. Barnardo's Home, 214 Farley Ave.
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New Seed Wheat

We offer a limited supply of the following varieties of Winter Wheats, all of recent introduction, and recommend them for trial:

"Jones' Long Berry"
"Early Oatka Chief"
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"Diamond Grit"

We have also a full supply of the standard varieties in general cultivation, such as:

"Dawson's Golden Chaff"
"Long Amber"
"Pedigree Genesee Giant," etc.

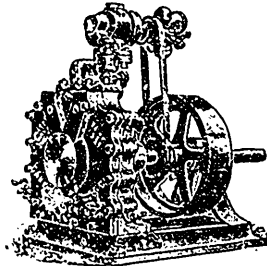
All Carefully Selected and Recleaned for Sowing

A descriptive price list will be forwarded to all applicants.

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From 2 to 14 Horse Power.

Write for prices and other information.

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Engines and Boilers, Machinery,
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Also: Band Saws, Drag Saws, Horse Powers, Ensilage Cutters, Threshers, Etc.

Fall Wheat for Sale

Dawson's Golden Chaff

Price 90cts. per Bushel. Bag 20cts. extra

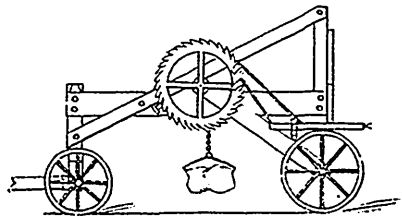
The Seed of this leading variety guaranteed pure and clean.
Cash to accompany each order.

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Stone and Stump Lifter

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Capacity of Lifting 18,000 lbs.

WITH NO EQUAL.

Lifting and carrying stones at will, so you can make with them fences from 4 to 5 feet high. When buying this strong and durable machine you can make your fence with big stones instead of buying spike wire for fences. You will clear your land for the mowers and reapers. To lift a stone you make the lever work, and the hooks will hold it when lifting. You can lower it in the same manner or make it fall by touching a ring fixed in the wheel. You can lift, remove and put into fence a stone in 10 minutes. Agricultural societies should buy it. Farmers, if they like, may join in club to buy it. Price moderate. For all particulars address to

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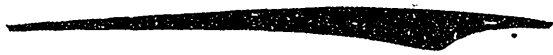


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H. J. HILL, Manager.

Stock Notes.—Continued.

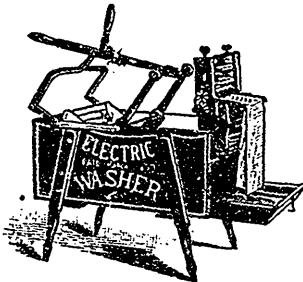
Darlington, was also sired by Montford Dreamer. Another shearing bred by Mr. Fenn is half-brother to his second prize shearing ram at same shows. I expect this ram also will prove valuable as a breeder. In ram lambs, one bred by Mr. Parker was the first pick out of the pen of five, winning first at the Shropshire show. He is a rare good one, and so are three out of Williams' second prize pen. I managed to get two pairs of shearing ewes out of two first prize pens, which were first winners as lambs, also at the same show. Probably, as good as any in my lot are a pair of ewe lambs bred by Mr. Mills, which were my choice out of his pen of five, which were outstanding winners, though the first and second prize winners at the Royal the previous week were entered. One of those lambs was sired by the Mansell ram, Buddington Eclipse, which made the top price of \$1,200 at his sale in 1895. He was the sire of Dr. Davidson's last year's unbeaten ewe lamb. Taken all in all, this importation is considered the best I have made and I anticipate its proving useful in other flocks as well as Fairview. See new ad. page x.

MR. W. F. STEPHENS, of the Brook Hill Farm, Trout River, Que., informs us that he has recently bought out his brother's share of stock in the firm of W. F. & J. A. Stephens and that he will continue the business in his own name. He reports the sale of all the young bulls fit for service and that there is a keen demand for bull calves, having only one left, which is a very fine animal. These calves have always been a fair even lot, well marked, strong and vigorous. The young bulls from the present stock bull of the herd, Uncle Sam, are all splendid animals and the heifers are promising well. His cows are doing exceptionally well this season, giving large quantities of milk, especially the younger ones. Mr. Stephens also reports that the pastures in his district have been exceptionally good this season, owing to copious showers. In fact, there has been too much rain, and haying has been very much delayed on that account. Grain, corn and roots show excellent prospects for a fine crop, if they are not injured by too much rain.

BRAMPTON JERSEY HERD. About two miles south-east of Brampton is situated the fertile farm and beautiful home of Messrs. B. H. Bull & Son, proprietors of the Brampton Jersey

THE ELECTRIC WASHER.

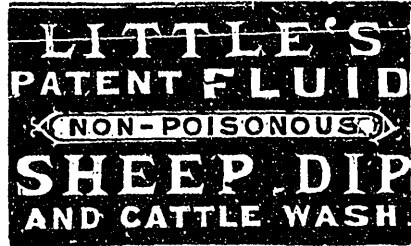
The Leading Machine. Excels all Others.



Made from the best of material, and guaranteed not to leak. Nicely painted and finished. If no Agent in your locality, write us. N.B.—Agents wanted. Territory for sale.

SEMMENS & SON,
174 York St., Hamilton.

The most complete and scientific machine, operated by a double-action lever movement. Very light running. It has a uniform rubbing motion. It is provided with a sliding drawer to receive the clothes. The lifters for raising the rubber are malleable iron, so constructed that during the wringing the rubber can be thrown back out of the way.



The Original Non-Poisonous Fluid Dip.

Still the Favorite Dip as proved by the testimony of our Minister of Agriculture and other large Breeders.

FOR SHEEP

Kills Ticks, Maggots; Cures Scabs, Heals Old Sores, Wounds, etc., and greatly increases and improves growth of Wool.

CATTLE, HORSES, PIGS, Etc.

Cleanses the skin from all Insects and makes the coat beautifully soft and glossy.

Prevents the attack of Warble Fly.

Heals Saddle Galls, Sore Shoulders, Ulcers, etc.
Keeps Animals Free from Infection.

No Danger, Safe, Cheap, and Effective.

BEWARE OF IMITATIONS.

Sold in large tins at **75 Cents**. Sufficient in each to make from 25 to 40 gallons of wash, according to strength required. Special terms to Breeders, Ranchmen, and others requiring large quantities.

Sold by all Druggists. Send for Pamphlet.

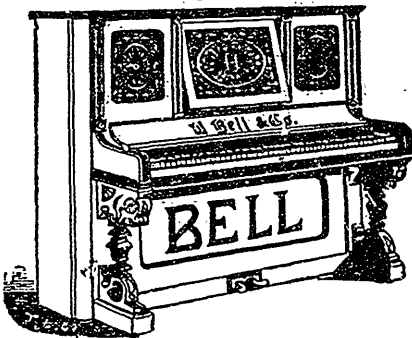
ROBERT WIGHTMAN, Druggist, Owen Sound,
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Sole Agent for the Dominion.

Nimmo's Shorthand and Business Academy, Sarnia, Ont.

Sixty-three graduates assisted to excellent positions during the past year. Fall term begins Sept. 6th. Write for Souvenir.

A. S. NIMMO, Manager and Proprietor.

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Branch Warerooms at Toronto, Hamilton, London, Etc.

Stock Notes—Continued.

Herd. Upon our arrival there we were heartily welcomed and entertained in a business-like manner. We saw this herd of typical Jerseys in the best form that it has ever been our privilege to see them. We first inspected the cattle on pasture, which numbered some 30 head, among which were the St. Lambert cow Corinne of Don, a grand-daughter of Kitty of St. Lambert and sired by Brier Pogis. She was winner of second place at the provincial dairy test in 1896, with her two year old daughter, Fawn Kitty of Brampton. This is a magnificent heifer, winner of many first prizes, including the Industrial; also her grand-daughter, Chicora of Brampton, a very stylish heifer that has taken first in Toronto and was in the first prize herd of calves. Our attention was next drawn to Maud of Hazlehurst, a typical four-year-old out of Sibyl's Lass and sired by Aylesbury. We could write pages telling of the merits of the animals seen here, but we will simply mention a few of their names and pass on to the stable. Princess Minett of Brampton, a daughter of the great show cow Princess Minett, with a 19lb. record; Merry Queen of Brampton, Una Masena, Minett's Pride, Chaptrell of Brampton, several daughters of Sibyl's Lass and, and Princess Minett, etc. After taking a walk over the farm, which is almost entirely devoted to producing fodder, and according to present appearances there will be a bountiful supply this year—there are sixteen acres of luxuriant corn, twenty acres rape, ten acres mixed grain for hay, five acres roots, with an abundant supply of oats, peas, wheat, etc.—we next came to the stable, where we were delighted to inspect some twenty-five head receiving the finishing touches for the leading exhibitions. Our attention was first drawn to the imported stock bull, Kaiser Fritz, who is a vigorous grandson of King-Coffee, his pedigree containing very rich butler notes. He certainly is a typical animal of extraordinary long, deep body, broad hips, fine arch, short legs, fine head and horns, rich, mellow skin, these and many other qualifications render him desirable for the important position he occupies. We pass on to the four-year-old heifer Rhoda, she is another grand-daughter of Kitty of St. Lambert, and sired by Stoke Pogis of Don. She has recently dropped a heifer calf sired by Sir Ollie, a full sister to Ollie Boy, a winner at London and London last year. Rhoda is now coming down to business, giving nearly fifty pounds rich milk per day and increasing. She is entered for the dairy test in Toronto. Next comes Princess Minett, a large cow of magnificent form, udder and teats perfection, has a 19lb. record and is a daughter of Minett of St.

Montreal's Great Exposition

AND.....

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Splendid Display of Live Stock, Agricultural, Horticultural and Dairy Products

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Grand Attractions, New Features, Special Jubilee Novelties

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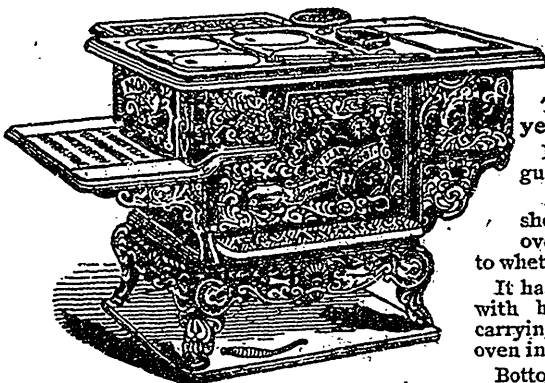
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The Famous Model

WOOD COOK STOVE.



This Stove baked 212 loaves in 6½ hours with 2¼ cubic feet of wood.

Our Latest
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The result of 50 years experience.

It's good working is guaranteed.

A Thermometer shows exact heat of oven, no guessing as to whether it is hot enough.

It has a ventilated oven with hot air circulation, carrying all fumes from oven into the chimney.

Bottom of oven is steel, no cracking, and Top of Stove is made so as to prevent cracking.

The McClary M'f'g. Co. LONDON, TORONTO.
MONTREAL, WINNIPEG,
VANCOUVER.

If your local dealer cannot supply, write our nearest house.

Stock Notes—Continued.

Lambert, she by Stoke Pogis grd. Standing beside her is Colonia, another rich four-year-old with a grand appearance and due to calve shortly. Sibyl's Lass and, next attracted our attention. She is the ideal Jersey and we are not surprised that she was the sweepstake cow of the province, winning the gold medals at Quebec and Three Rivers in 1896. She is of high testing ancestry and has herself a record of fifty pounds of milk per day. We were well pleased to see Corinne's oldest daughter, Sunbeam of Brampton, in such excellent shape. The six red tickets she won last year certainly have agreed with her. She is fully as good as a three-year-old as she was as a two-year-old. She will calve in a few days and is expected to make a high butter record with her sister Rhoda this summer. While admitting Sunbeam, Jetsam frequently attracted our attention. This heifer is in fine form and due to calve in a few days. Last year she took first place at Toronto and several other fairs, and according to present appearances she has a brilliant outlook for this year. She is a daughter of the imported Jersey Island cow, Jetsam, who was in the first prize herd at Toronto and sold when a four-year-old for \$400. Beside her stood her half-sister, Lisgar of Brampton, a heifer of great promise, being a daughter of Lisgar's May Flower and by Molina's Stoke Pogis. We next saw Corinne re-produced in her pretty little yearling daughter, Trilby of Brampton, sired by Sir Ollie, who won several firsts last fall, Toronto included. Her companion is Laurel of Brampton, dam Laurel of Crafts-dale, sire Aylesbury, which are of high testing strains. There are also a grand lot of yearling bulls, bull calves and heifer calves, sons and daughters of the above mentioned animals. These are as promising a lot of youngsters as it has been our privilege to examine. The Messrs. Bull intend exhibiting their herd at the leading Canadian Fairs, and such enterprise as they have exhibited is certainly worthy of success.

English Shows.

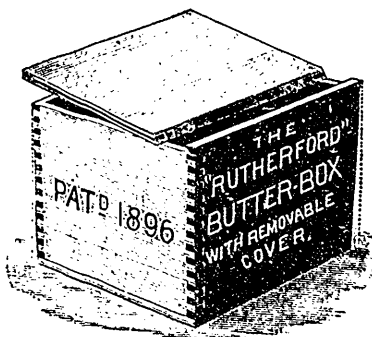
Oxfordshire show is the first of the important shows held in England, and this year we found it located at Banbury. All sections were fully filled, competition being most keen and good in every section. Shorthorns were a really first-class exhibit, Messrs. Game and J. Deane-Willis being the leading winners in the bull section. In the female section we found a capital entry of first-class animals; Messrs. Brierly with Queen of Hearts, Mr. J. Deane-Willis with Bapton Daisy, and Mr. J. Thorley with Ringdale Bella II. were principal winners. Herefords came out fairly well, but many of

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are farmers' sons, who make much more successful farmers after enjoying a good practical business training. Think out this matter, and get particulars.

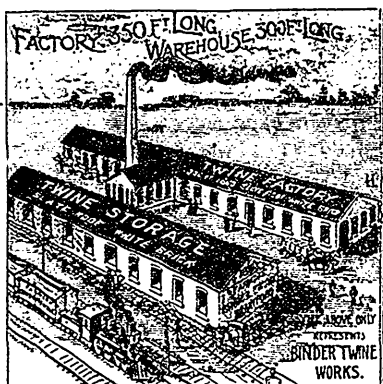
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There is only one
Farmers' Binder Twine
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Headquarters, Brantford. Their **RED STAR** and **BLUE STAR** Binder Twine is said to be the best ever made for the Canadian market. Do your duty by your own Company, consisting of three thousand farmers in Ontario and Quebec, all stockholders. Order out Twine early and pay them promptly.

Agricultural Implements of the most improved patterns will be furnished you through this same co-operative movement in the near future at about half present prices.

HON. THOS. BALLANTYNE,
President.

JOSEPH STRATFORD,
General Manager,

BRANTFORD, ONT.

Stock Notes.—Continued.

the best were not here. Mr. J. H. Arkanpot's Red Cross won in the old bull class, whilst in the younger class Mr. E. W. Caddick's Royal Caradoc secured premier honors. Female section a very poor one. Jerseys a very large and meritorious class, the Guerneys and Kerries also made very excellent displays.

Horses were very good indeed, shires leading the way. We need not go into particulars here; it will suffice to say that seldom if ever have we seen better classes at this show.

Hunters made a capital entry, and great merit was displayed in nearly every class; whilst hackneys were well to the fore, and the competition all through exceptionally keen and close. How strange from a few years ago, when we used regularly to see one or two friends from over the "Herring Pond"; none here now. Our export trade to your flocks and herds has not come to a stop. I trust such is not the case, for you have now greater need to get the best in order to produce the best, to keep your market going both at home and with us here.

Sheep, a section of very good merit. Oxfordshire Downs found Mr. A. Brasse first, Messrs. J. T. Gun & J. C. Eady and A. H. Wildon being able to secure the smaller honors. Hampshire Downs, a large entry of very useful merit, in which Mr. G. Flower's well-known flock was well to the front with grand and typical sheep of all ages, *i. e.*, shearing rams, ram lambs and shearing ewes. Mr. A. de Mornay also had a splendid ram here, as did also Mr. W. T. Nordell, who secured well-deserved first in ram lambs, and second in ewe lambs.

Southdowns made a capital show. Mr. E. Matheus being first with a very good shearing ram. Lord Bathurst and Mr. E. Ellis also being close up. Ram lambs again found Mr. E. Mathews to the fore with a really grand pen and Mr. E. Ellis close behind him. Forshearing ewes Lord Bathurst went clean to the top. Mr. Ellis a capital second with a pen of rare merit and quality, and Sir James Blythe, Bart., close to him. Ewe lambs found the Summersby flock to the top with a grand pen of very great merit.

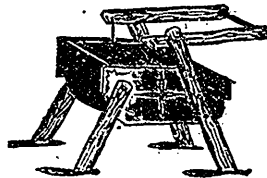
Shropshires were largely and well shown, and although it is impossible for all to be satisfied with the decisions given, it was certain that the awards given here did not meet with general approval. The well-known flock of Mr. R. P. Corpet came with first for rams and also for ewes; of the latter very useful pens, Mr. E. L. Foster Hastings' being preferred by many for the premier place. Mr. Raw's pen was leading winner for ram lambs.

Cotswolds were not largely shown, but for sheep Mr. T. Hurlbert won first both for ewes and rams, whilst Mr. Charles Gillett was successful for ram lambs.

Pigs were very useful and of general good merit. Mr. Sanders Spenser took a prominent place with large whites; the Hon. D. P. Bouvrie for small whites, and for Berkshires Lord Carnarvon secured quite a leading place, and the fact clearly shows that his herd is now beginning to be a herd of importance in breeding circles. Messrs. J. Lawrence, E. Barbrige, J. Pitman King and A. Hiscock also were successful.

THE PERFECT WASHER

... Gives Perfect Satisfaction...



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The Best Farm Wagon Spring in the World....

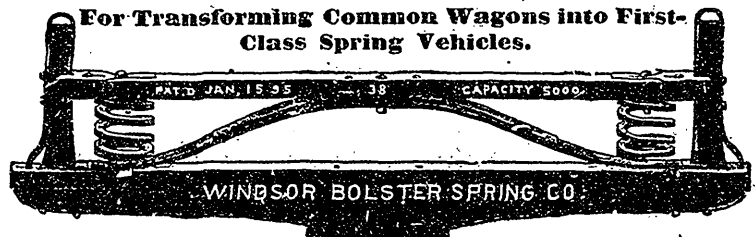
Every Spring guaranteed. Will carry light or heavy loads. Especially adapted for marketing fruit, etc. Capacity up to 7,000 lbs.

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In ordering give width between stakes and capacity required.

The Common Sense Bolster Spring

For Transforming Common Wagons into First-Class Spring Vehicles.



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Live Stock Farm

FOR SALE

IN TOWNSHIPS OF CALVIN AND LAUDER, DISTRICT OF NIPISSING, PROVINCE OF ONTARIO.

Lots 24 and 25, Con. 10, Township of Lauder

Lots 4 and 9, Con. 1, Township of Calvin

Which contains 387 acres, more or less, of which about 90 acres of loam and clay are under cultivation, and on which all kinds of machinery have been used.

The buildings erected are: Bank barn, 40x86 frame, 18 ft. wall, with 9 ft. stone wall underneath, with stall room for 64 head, and into which water is supplied in iron pipes taken from a chute in a creek, 1,600 feet distant; also a frame barn, 16 ft. wall 40x50; pig-house 30x40; dwelling house, well finished and plastered 18x24; summer kitchen, 16-18; wood shed, 18x24 ft., and silo, 16x24 ft. wall. There is a fine water power and valuable Mica mine on the property, and is well-watered, the Potois Creek running through the property. For any one thinking of going into a stock farm this is a grand opening. Game and fish in abundance.

Post Offices: Calvin, distant 3 miles; Mattawa, 10 miles; Eauclaire, 6 miles.

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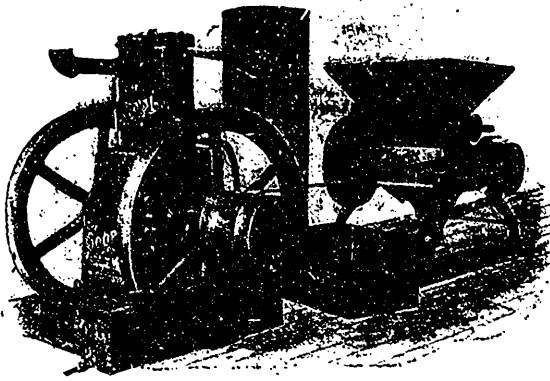
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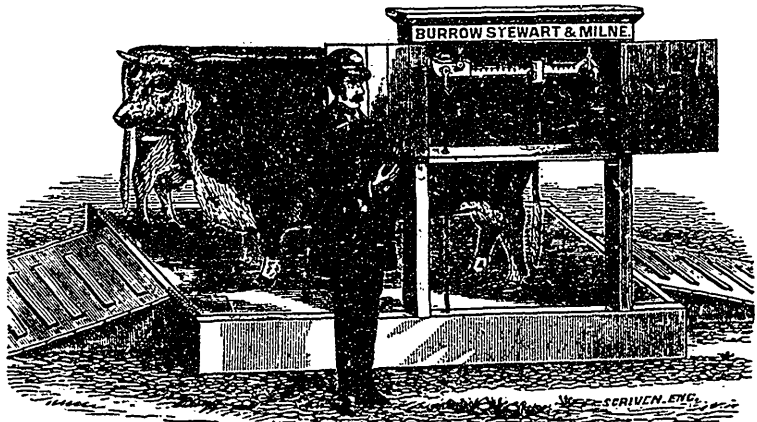
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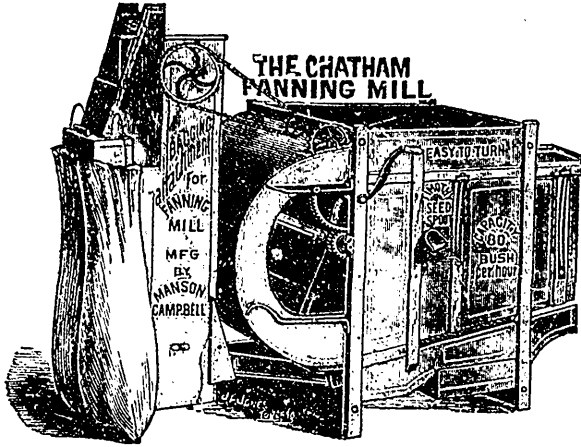
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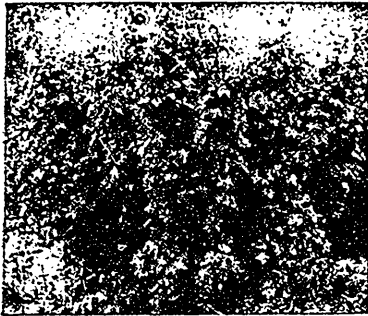
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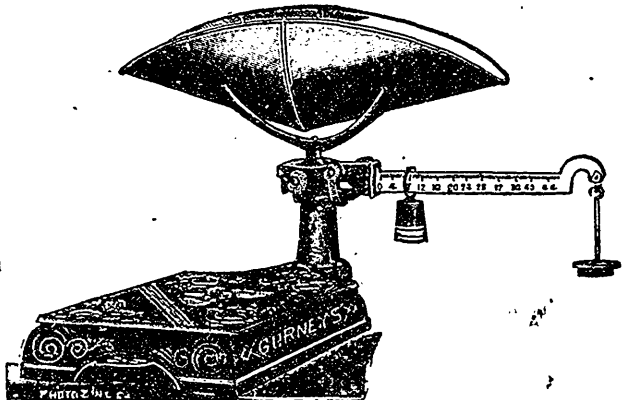
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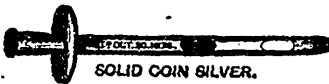
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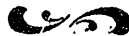
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Boars, Yelts, and in-pig Sows always for sale at moderate prices.

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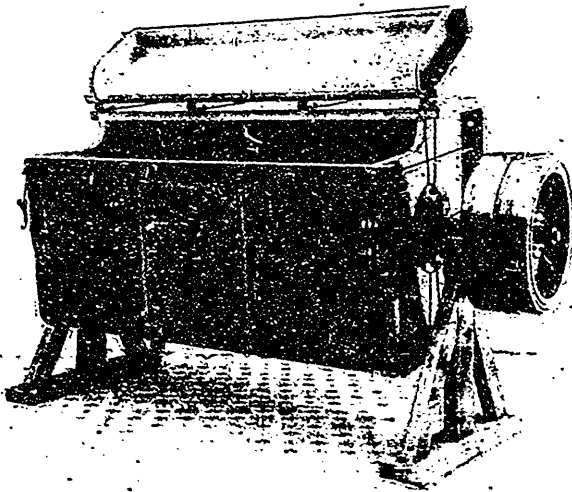
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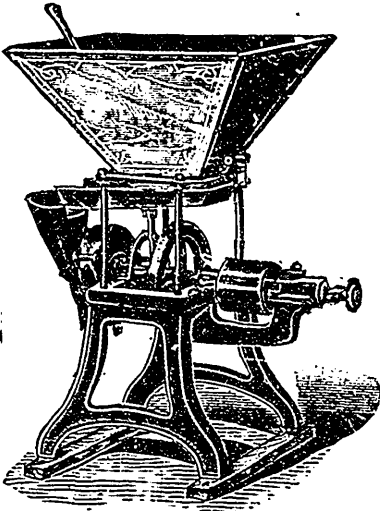
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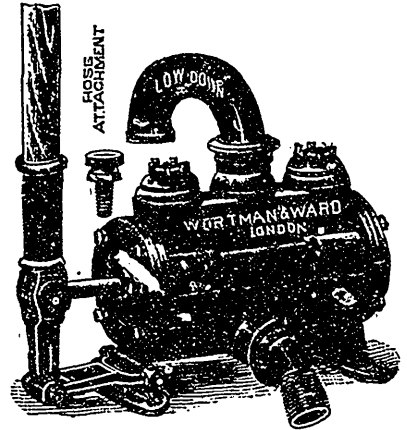
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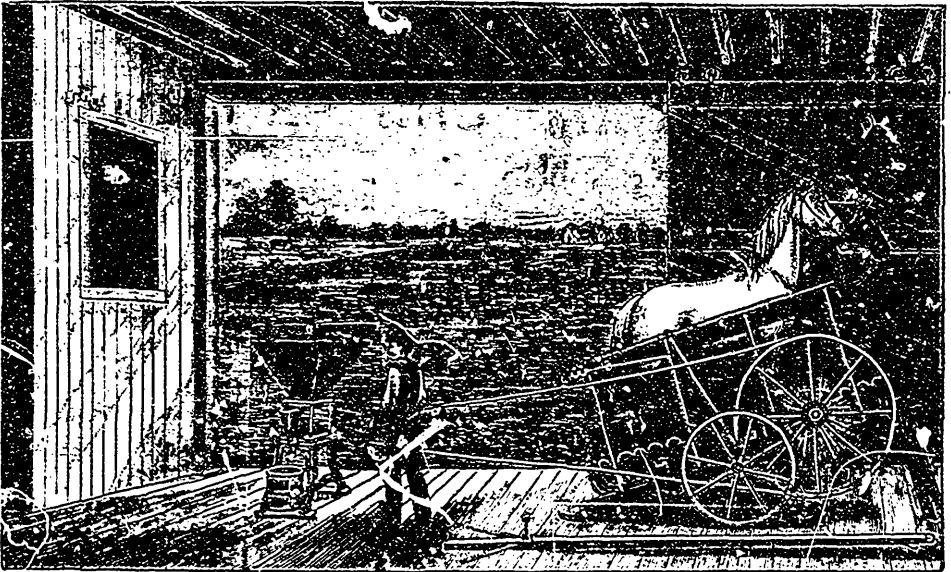
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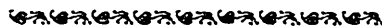
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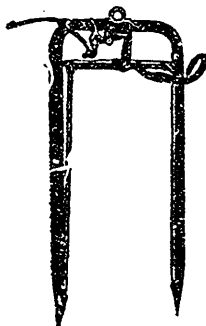
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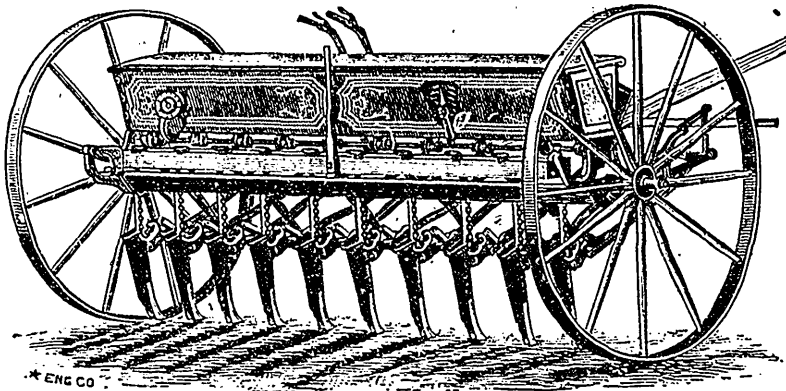
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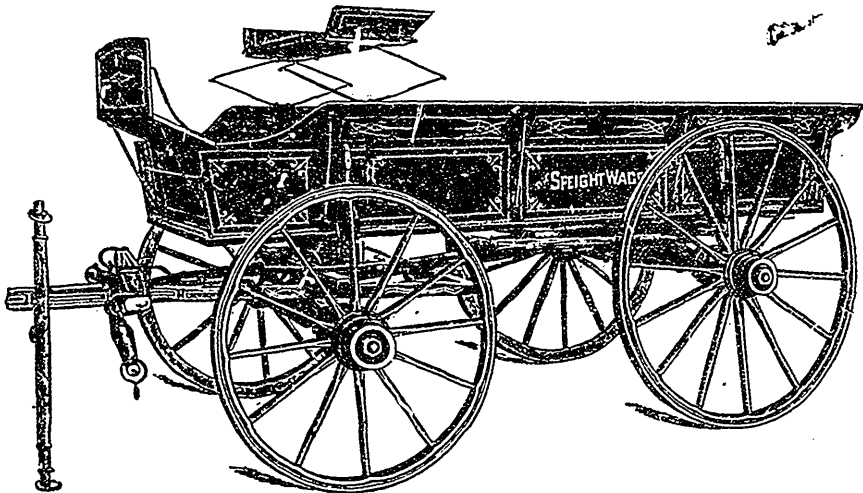


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AND we have a reputation for excellence of workmanship,
DURABILITY, and material not equalled in the Dominion in our line, and it is our aim that the excellence of our productions shall not only be maintained but advanced to a still higher standard.
WRITE US. We invite correspondence and on application will be pleased to give full descriptions, with catalogue and prices.

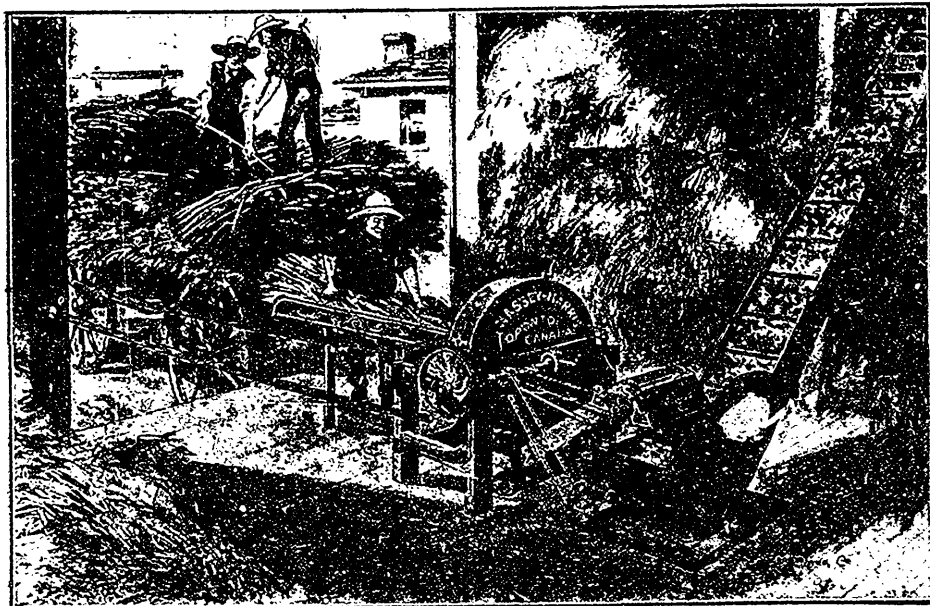
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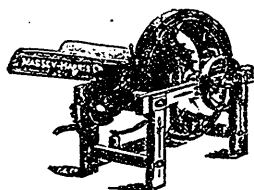
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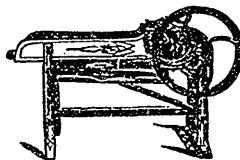


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**Massey-Harris
Feed Cutter**

This little Cutter is of the "Cumming's" type, and is a great favorite. It is suitable for hand or power, and can be driven by either Knur'le or Pulley. It cuts five lengths, viz., $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, 1 and 2 inch. Just the machine for small farms.

Massey - Harris Company

LIMITED

TORONTO, CANADA.



MR. DAVID McINTYRE'S TWIN SILO.

The walls of the silo, the foundation walls of the barn, and the floors of the stable are all built with **Queenston Cement Concrete**. Mr. McIntyre raised his feed alley and put in Mr. Usher's system of ventilation. It gave him perfect ventilation.

Gives Complete Satisfaction.

ISAAC USHER & SON :

Gentlemen,—We like the concrete silos built of Queenston Cement. This is the second time we have had them filled; they keep ensilage perfectly, and do not cost more than our neighbors' silos, which are built of wood, and are propped in every direction to keep them from bursting. We intend building two more next year like the others we now have. Wishing you every success, we are,

Very truly yours,

BOTHWELL DAIRY CO.
(Per Mason.)

I. USHER, ESQ.,
Queenston :

FROME, Jan. 3rd, 1896.

Dear Sir,—Your letter was received some time ago, but I delayed answering in order to compare the keeping qualities of my ensilage with that kept in wooden silos. Some days ago I had an opportunity of doing so, and find that in the wooden silo the corn for about two inches is rotted, while in my silo it is keeping perfectly. I do not know, of course, if this is the case with all wooden silos. I remain,

Yours truly,

F. H. SHARON.

[Mr. Sharon's silo is 16x44 feet, 23 feet in height, with two partitions, making three silos. These silos were built three years ago, and have been filled three times, and prove to be absolutely perfect.]



BRANTFORD Steel Wind Mills

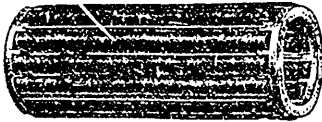
With Patent Roller Bearings

Galvanized Steel Towers and Wheels

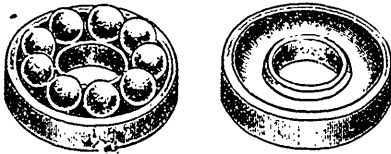
The Best in America

Ideal Spray Pumps, Iron Pumps, Water Tanks, Piping, etc. The Ideal Solid Power Mill, with Roller and Ball Bearings, is a wonder.

PATENT ROLLER BEARING



BALL BEARING

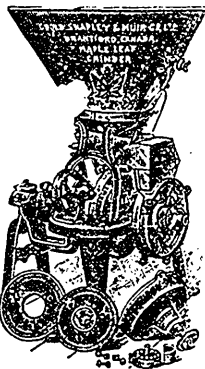


IDEAL POWER WIND MILLS

Are under easy control, cannot break loose and run away in a storm. Are strongly built and durable. Have the heaviest gear and will safely give the most power in high winds. Are the most satisfactory farm power. Cheapest, easiest to operate, and most effective.

The Celebrated "Maple Leaf" Grinder

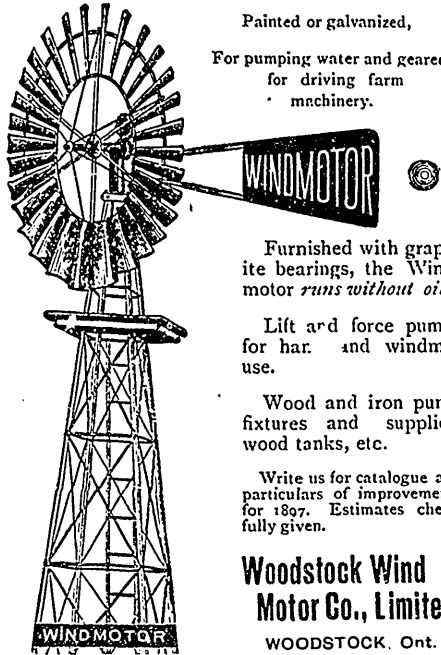
10 inch Reversible Burrs.
Fine and Coarse Burrs.
Ball Bearings for Plate Relief Springs.
For any Power or any Work.
Always Guaranteed.



Send for Circulars and mention FARMING.

THE WINDMOTOR

Painted or galvanized,
For pumping water and geared for driving farm machinery.



Furnished with graphite bearings, the Windmotor runs without oil.

Lift and force pumps for bar. and windmill use.

Wood and iron pump fixtures and supplies, wood tanks, etc.

Write us for catalogue and particulars of improvements for 1897. Estimates cheerfully given.

Woodstock Wind Motor Co., Limited,
WOODSTOCK, Ont.



Harvest Excursions

TO

Manitoba AND CANADIAN North-West

Good to go on Aug. 31 Return until Oct. 30
Good to go on Sept. 14 Return until Nov. 13

From all stations in Ontario, Onaping, Sault Ste. Marie, Windsor and East.

For rates, maps, time tables, pamphlets, and full information, apply to any Canadian Pacific Ry. Agent, or write C. E. MCPHERSON, 1 King Street East, Toronto.

Sow

Harvest King Wheat

. This Fall

IT'S THE MONEY WHEAT

It is one of the hardest varieties in existence. The roots develop largely and hold well to the earth, which fact allows it to draw food from the soil should dry weather prevail. The plants or stalks are firmly built from the ground up, and withstand ordinary storms, not lodging until ripe. Heads, magnificent in proportion, neat and compact in structure; chaff, close fitting, prevents the grain from wasting. Such heads are bound to yield heavy. The shelled grain weighs very heavy; its milling qualities are all that can be desired.

Price: Small lots by mail, post paid, lb, 20c.; 3 lbs., 50c.; larger lots by express or freight at purchaser's expense, 1 peck, 75c.; 1/2 bush., \$1.25; 1 bush., \$2.25; per bag (2 1/2 bush., bag included), \$5.



Field of Harvest King, July 16, '97.

Price List of other varieties: Diamond Grit, 1 peck, 75c.; bushel, \$2.50. Oatka Chier, 1 peck, 75c.; bush., \$2.50. Early Arcadian, 1 peck, 65c.; bush., \$2.00. Pedigree Early Genesee Giant, bush., \$1.25. Bearded Winter Fife, bush., \$1.30. Dawson's Golden Chaff, bush., 95c. Bags 18c each.

SEND FOR OUR FALL WHEAT CIRCULAR



The Steele, Briggs Seed Co. Limited

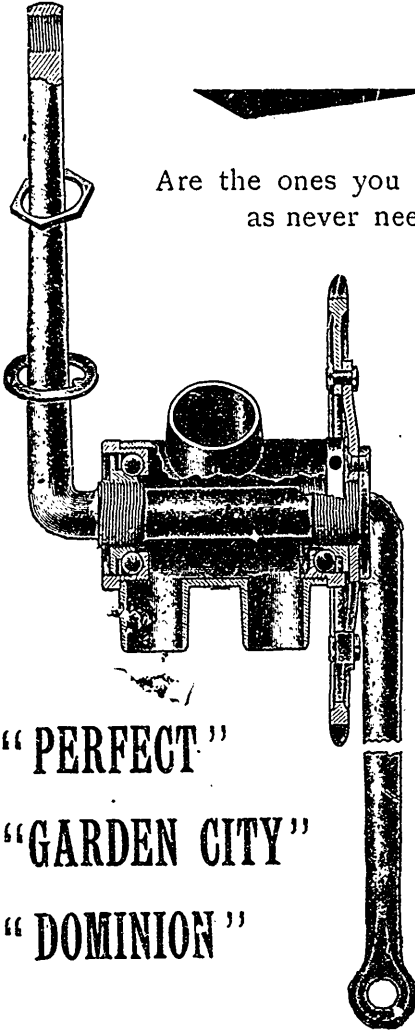
TORONTO, ONT.

SEEDS, PLANTS, BULBS, Etc.

CATALOGUE
FREE

Welland Vale Bicycles

Are the ones you hear so much about
as never needing repairs.



Our one piece Axle and Crank is
the simplest and best attachment for a
Bicycle, and is

**Guaranteed
Unconditionally**



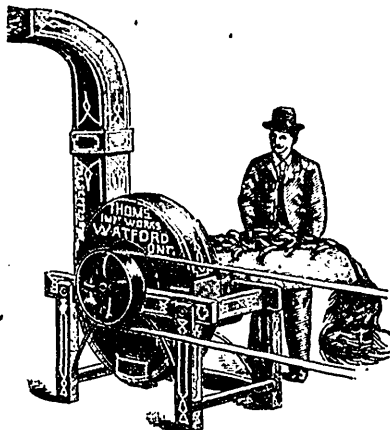
It will pay you to enquire into the
merits of our machines before purchas-
ing elsewhere.



Welland Vale Mfg. Co., Limited.

ST. CATHARINES, ONT.

“PERFECT”
“GARDEN CITY”
“DOMINION”



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.

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Testimonials



Established
1875.

MICA ROOFING

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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.

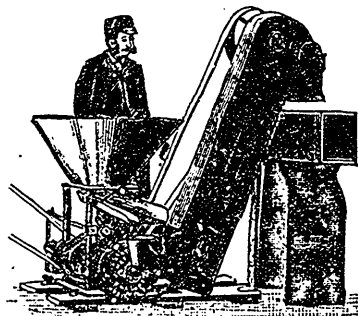
HAMILTON MICA ROOFING COMPANY,

Office—101 Rebecca Street, HAMILTON, ONT.

664

THE VESSOT IMPROVED GRAIN GRINDER

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



OUR LITTLE CHAMPION GRINDER

run by horse power, especially for farmers' use.

OUR LARGE-SIZED GRINDERS

for mills, grind twenty to sixty bushels per hour as fine as desired. Always guaranteed.

Our Mills are greatly improved, being made low down. Elevator and bagger added when desired. A sieve or screen protects the plates from sticks and stones. The plates can be instantaneously parted and brought together again while in motion by a simple LEVER ATTACHMENT. Price List unchanged. Last year's mills sold at great reduction.

We also furnish an improved Corn and Cob Crusher.

Send for circular. Information cheerfully given.

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

All Eyes are on this Invention!

Patented 1893, '95, and '96.

HARVESTING PEAS



The Genuine Tolton Pea Harvester with New Pat. Buncher at work harvesting in the most complete manner from eight to ten acres per day. Harvesters to suit all kinds of mowers.

EVERY MACHINE WARRANTED.

Our Motto: "NOT HOW CHEAP BUT HOW GOOD."

No drilling holes in Mower Bar or Inside Shoe.

A wrench is all that is required to attach it to any Mower.

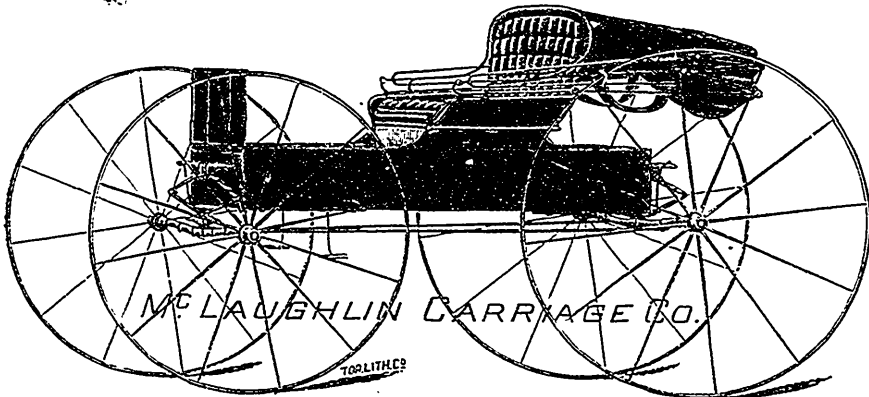
Give your order to any of our Local Agents, or send them direct to

TOLTON BROS., - - - GUELPH, ONTARIO.

Be sure and see us at the Industrial Exhibition.

...The Best is Always the Cheapest at any Price...

It's our No. 3½ Speeding Buggy. It's a beauty, and tough as whalebone.



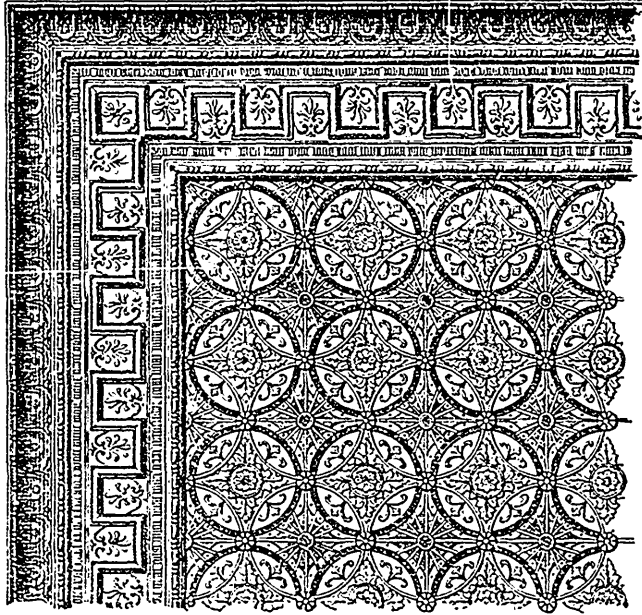
¾" wheels, Double A. Grade; ¾ axles with wrought iron case hardened boxes, and patent noiseless washers. Body, 20 or 22 in. wide. Top and back removable. Seat full lined, velvet carpet, etc. Special all through.

Don't handicap your horse at the Fair by hitching him to some old rattletrap! Give him a chance to win first prize by hitching to one of our neat little ¾ Buggies, a natty "Newport," or a "Concord." They're all winners! Catalogue and nearest agent's address free.

60 Styles, but ONE GRADE ONLY, and that the best.

THE McLAUGHLIN CARRIAGE CO.
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Embossed Metallic Ceilings



Illustrating a corner of room covered with one of our designs.

The Latest and Most Decorative Interior Finish for Ceilings and Side Walls.

Made from soft metallic Plates, embossed into the most artistic designs, with borders, mouldings and cornices to match.

One hundred and fifty designs to choose from, suitable for every description of buildings and private houses.

Some of the advantages of their use are, that they are practically fire proof, will not crack nor drop off, consequently no danger of falling plaster; are light in weight, are highly ornamental, are dust proof, permanent and durable, and the cost places them within reach of all.

They can be applied by any handy mechanic, as we furnish working drawings with explicit directions for putting up each particular job.

We publish a handsome catalogue of eighty pages, profusely illustrated with photographic reproductions of these goods, containing much valuable information on the subject and shall be pleased to mail a copy to any one interested.

Write for any information desired. We shall be pleased to answer all communications fully and promptly.

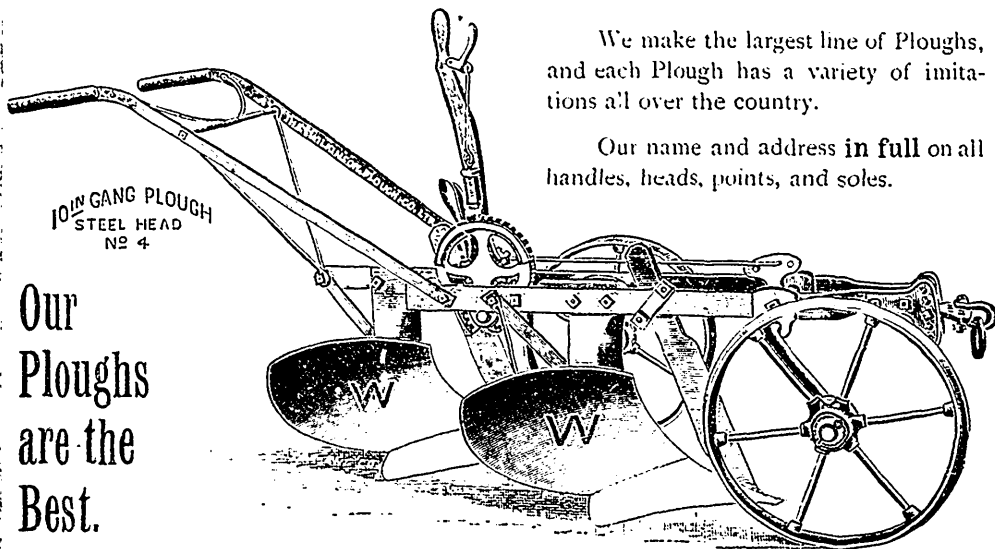
THE METALLIC ROOFING CO. OF CANADA, LIMITED

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THE WILKINSON PLOUGH CO., LIMITED

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We make the largest line of Ploughs, and each Plough has a variety of imitations all over the country.

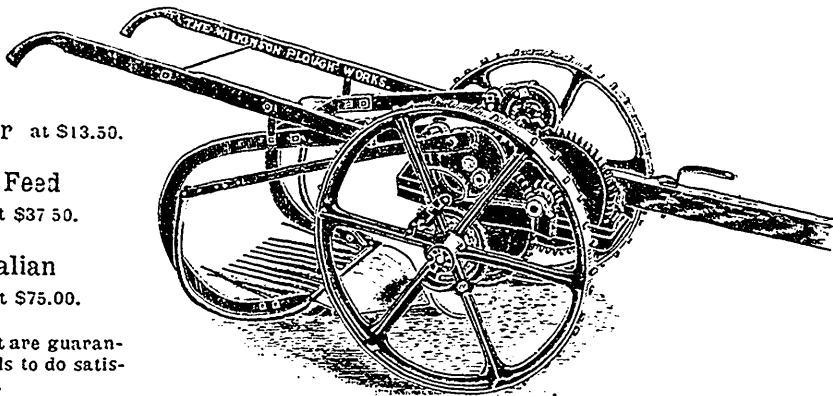
Our name and address in full on all handles, heads, points, and soles.

Our
Ploughs
are the
Best.

You should buy them at very nearly the same prices as other makes, and you get double the life because they last twice as long.

All our mouldboards of the best Pittsburgh Crucible Soft Centre Steel. All Mouldboards tempered to the glass, polished smooth as glass, and full weight; making our Ploughs easiest to see and best to buy, because they draw lightest, run straightest and hold tightest in wet and dry weather.

Potato Diggers



The Shaker at \$13.50.

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The Australian
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The two last are guaranteed in all soils to do satisfactory work.

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