

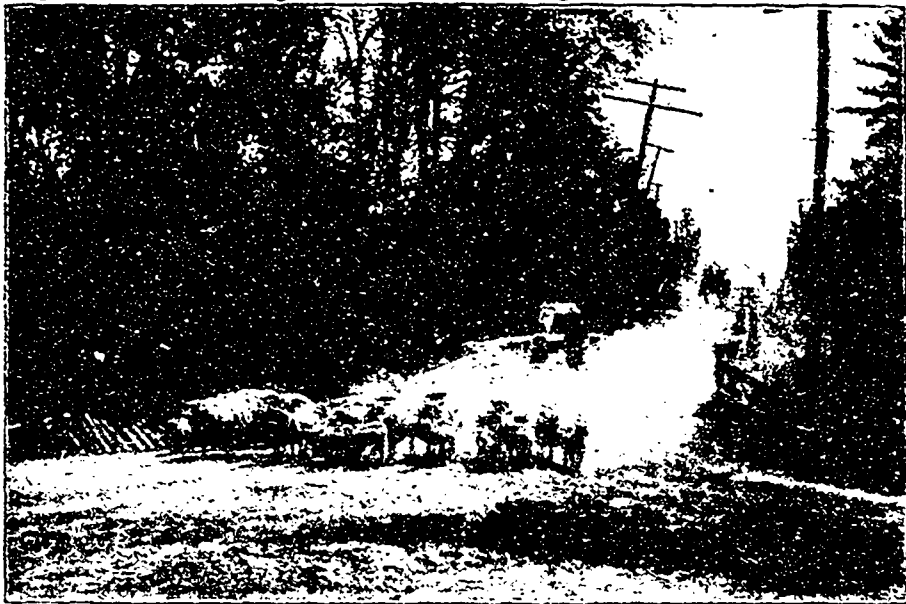
Exhibition Number

Vol. XVI. No. 1.

One Dollar per Year.
Published Weekly.

FARMING

September 6th, 1898.



An Ontario Road Scene.

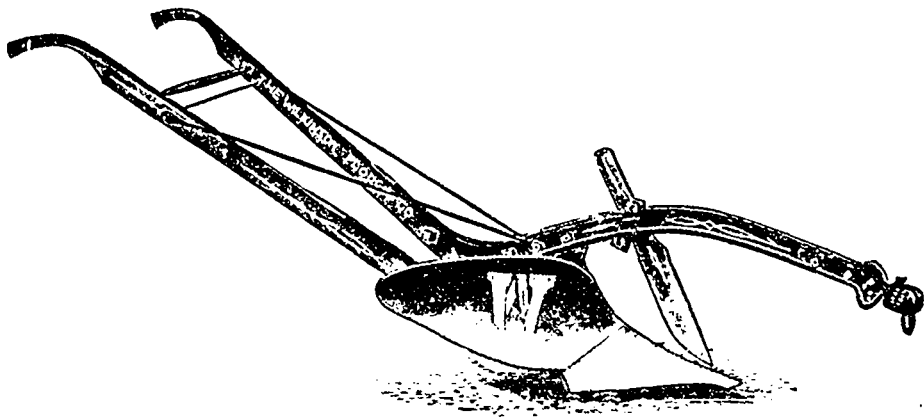
The Bryant Press

44-46 Richmond Street West
Toronto.

The Wilkinson Plough Co., Limited

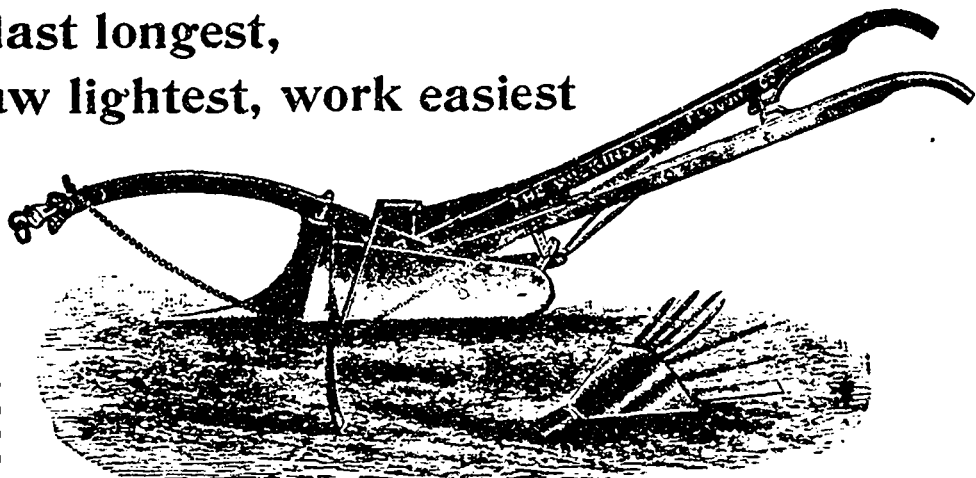
TORONTO

Have been Running to their utmost Capacity since January 1st.



A proof that their many customers distributed all over the Dominion, and in many States of the Union, appreciate their efforts to supply implements which are absolutely perfect in construction, strong, and long-lived. Their well-known trade marks, W and Wilkinson, are on all their manufacture. Their full name and address on all cast repairs. They last twice as long; and the farmer will always save money by insisting upon getting them. They are made of a special and expensive mixture of iron; that is why they last so long.

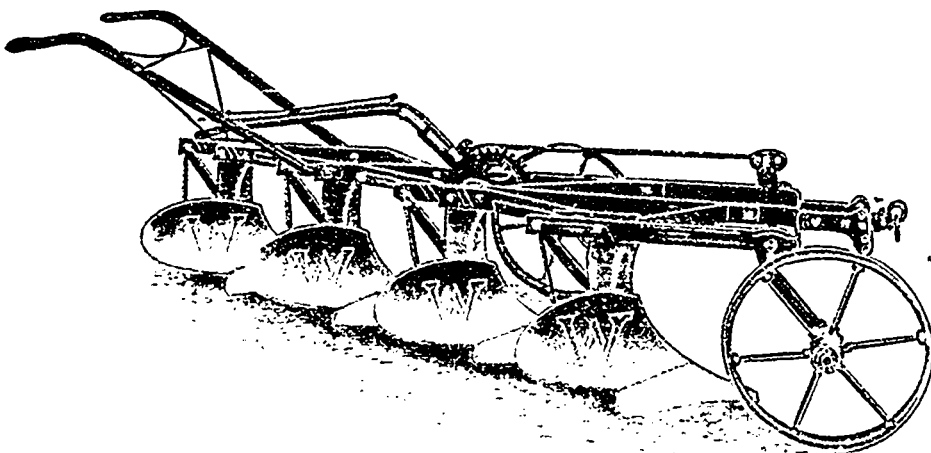
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draw lightest, work easiest**



Our Manufacture Covers
 All kinds of Walking Ploughs.
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 Carriers belong to the last century.
 All kinds of Manitoba Ploughs,
 And many other Implements.
 Steel Head Gangs, 2, 3 and 4 furrow; 8 and 10-inch cut.
 Double Mouldboard Drill
 Ploughs, Potato Digger Attachment.

Call and examine our Pneumatic Ensilage Cutters at the Exhibitions in Toronto, London, and Ottawa.

Sizes to suit all conditions.
 Climax A will cut twenty ton an hour, and deliver it a height of 40 feet.
 Threshers who have used our machines declare that a half day's threshing with the largest separators in use, is easily cut and put in the mow in less time than it took to thresh.

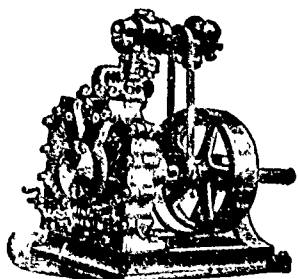


Remember, we guarantee all our implements, and ask no man to keep what is not satisfactory in every particular. We have built up our business on these lines; our many friends all over the Dominion, recognising the wisdom of buying the best implement; from the oldest and most reliable firm in the plough trade.

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Write, telling us your wants;
 or call on us at the Exhibitions.

YOU WILL HAVE A HEARTY WELCOME.



**The Dake Patent
Square Piston
Steam Engine**

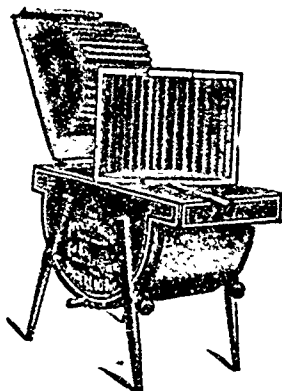
In use in the U.S. for the past ten years.

"Would not part with it for three times what I paid for it," says one farmer.

Its simplicity, economy and low cost make it particularly suitable for Farm or Factory use. A postal card will bring you information. Let us hear from you.

THE JENCKES MACHINE CO.,
30A LANSDOWNE STREET,
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INVINCIBLE WASHER**



The Greatest Household Labor Saver ever invented. Actual trial has proved that it will wash cleaner and quicker than any other machine now in use, it is without doubt the Best Washer in the World.

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Sold by Druggists and Dealers everywhere
Fifty Cents a bottle. Directions in
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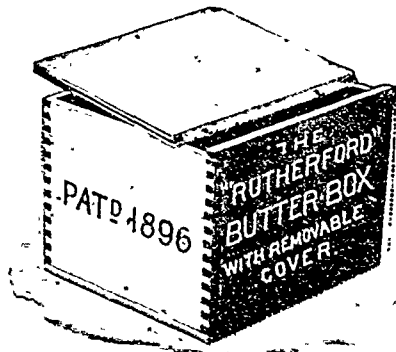
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The head of the herd is Lord Sterling, a prize winner. The imported Cows, Blue Bell, White Glen, and Kate Wallace belong to this herd. Won the 2nd herd prize at Montreal in 1897 against strong competition. Young stock of both sexes for sale bred from imported and prize-winning stock. **WM. WYLLIE,** Howick Que or 228 Bleury St., Montreal



Made of Kiln dried spruce. Smaller at bottom. All boxes paraffined lined. For sale by Dairy Supply Furnishers and Produce Dealers.

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30 Buildings on the Toronto Exhibition Grounds are roofed with our

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Is sold under a positive guarantee to cure, or money is refunded



Trade Mark Reg'd.

DEAR SIR, In regard to our experience with your Lump Jaw Cure, we used it on seven lumps last season. It worked all right. Some of the lumps had broken and run several times before using it.

SHOAL LAKE, MAN., Jan 26th 1898

Yours truly,
FLEMING & SHORT.

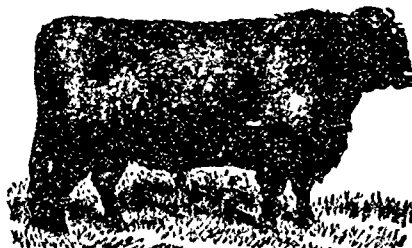
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Illustrated Treatise on "Lump Jaw" sent free
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Feed Cutters**

Best work. Cheapest and easiest to operate, and give better satisfaction than any other machines made for the purpose. Full information cheerfully sent free on application.

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Parties interested in Galloway Cattle should not fail to inspect the herd exhibited by the Messrs. Shaw at the Toronto Industrial, Western Fair, London, and Southern Fair, Brantford. For Beef, Butter and Robes they have no equal Address,

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No More Lump Jaw

What has proved one of the most serious diseases the farmer or rancher has to contend with is now quickly checked and cured, even when the case is of long standing, by the use of

MITCHELL'S

ANTI-LUMP JAW

Every bottle is sold under a positive guarantee that it will cure, or money cheerfully refunded. We do not say this simply as an advertisement for selling it—we shall refund your money in all cases where a cure is not effected by Mitchell's Anti-Lump Jaw. We most assuredly do not expect anyone to pay us money for an article that is useless to them. If you have a case of Lump Jaw in your herd, and think it a foregone conclusion that the animal will die, send to us and get a bottle of Anti-Lump Jaw, follow the directions, which are simple, and if it does not cure to your utmost satisfaction, we will refund your money.

Remember, Mitchell's Anti-Lump Jaw Cures, or Back Comes Your Money. Mailed to any address on receipt of price—\$2.00 a bottle; two for \$3.50.

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Prince Albert, N.W.T., Canada

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W. J. Mitchell, Prince Albert.

DEAR SIR,—I have given your lump jaw cure a thorough trial. Have used it on different animals affected with that disease, and it has effected a cure on every animal. I have also used all other lump jaw cures, that came under my notice, and have pleasure in saying that your Anti-Lump Jaw Cure is by far the best I have used. Would strongly recommend every cattle raiser to keep Mitchell's Anti-Lump Jaw cure on hand; and if at any time it would be of benefit to you, I will get testimonials from reliable parties who have also used your cure.

Prince Albert, Sask., May 11th, 1908

Yours Respectfully,
 J. M. PAUL

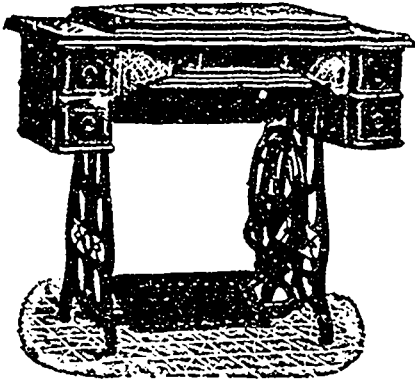
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Money Savers for Farmers

Every Up-to-date Farmer ought to have a "STAR" Galvanized Steel Windmill.
 Every Up-to-date Farmer's Wife ought to have a good SEWING MACHINE.
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"The Seamstress"

Improved high-arm Sewing Machine with steel attachments, automatic bobbin winder and self-threading vibrating shuttle.



New Folding Drophead Cabinet Price \$26

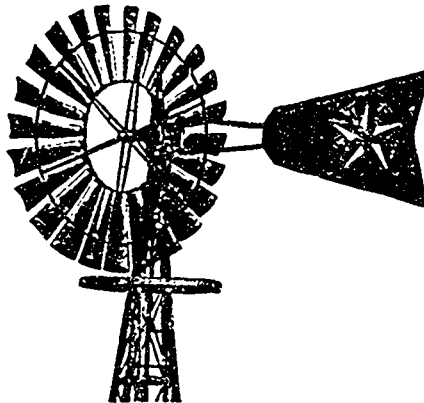
Finished in Oak or Walnut. The very latest. Beautiful in design. Simple in construction.

When not in use the head drops down out of sight as shown above, thus making the cabinet a useful as well as ornamental piece of furniture. We have machines from \$18.50 up.

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Galvanized STEEL WINDMILL for Power and Pumping. One-third heavier than any other mill made.

SIMPLE, AUTOMATIC,
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Headquarters for PUMPS, TANKS, IRON PIPE, Etc.
 Astonishingly Low Prices.

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A complete outfit of tools and materials for Boot, Shoe, Rubber, Harness and Tinware repairing.



JUST WHAT IS NEEDED IN every family—44 first-class tools, neatly packed in wooden box, weight 20 pounds. All these tools are full sized and practical, not mere toys. Full directions accompany each outfit. A great money saver. Hundreds of thousands now in use. Price... **\$1.75**

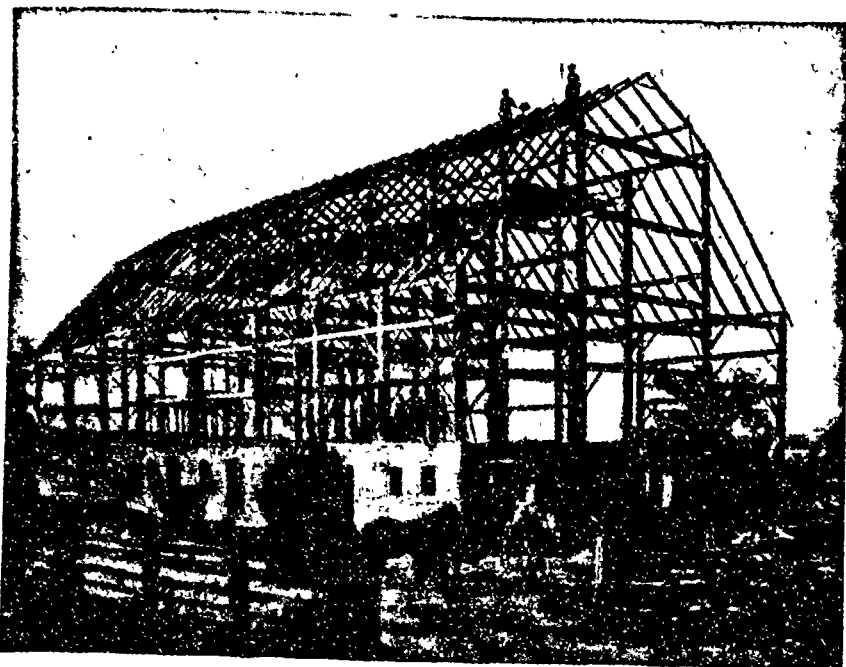
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56 Years in Use**

THE LEADING CEMENT FOR BUILDING BANK BARNs, CEMENT FLOORS IN STABLES, SILOS, CULVERTS, PIGPENS, ETC.



Mammoth Barn of Beswetherick Bros., near Hagersville, Ont. Floors for horses and cattle were put in this barn with BATTLE'S THOROLD CEMENT.

Has been tested in every capacity. Most perfect Cement made.

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We used Battle's Thorold Cement in our stable floors, and we must say it has given us good satisfaction in every particular. Our floors are as hard as stone. We can truly say it is just perfection for stable floors.

BESWETHERICK BROS.

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I built concrete basement with Battle's Thorold Cement under my barn, 36x55x8 ft. high from bottom of foundation footing for foundation 18 in. deep, and 20 in. wide; footing of concrete above foundation 14 in. thick at bottom and 12 in. thick at top.

I also built a wing to barn 15 ft. wide, same length as barn, with concrete foundation 2 ft. high. I used 96 barrels cement, and 46 loads gravel. I mixed five parts gravel to one part cement.

My walls are hard and dry, and I can thoroughly recommend Battle's Thorold Cement to all farmers who want first-class basements for stabling.

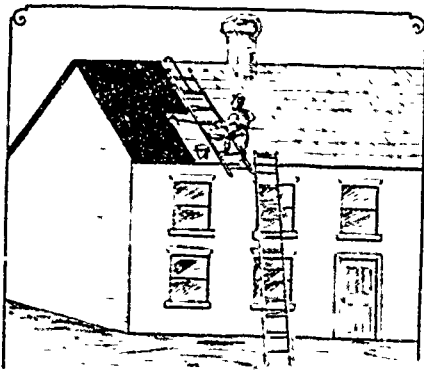
JOHN MCRAB.

We will send, free of any charge, a thoroughly competent mason and builder—who is also a practical farmer—who will lay out all work and give full instructions.

For Free Pamphlet with full particulars, address

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PAINT



So cheap you can afford to use it on old or new shingle roofs, sides of buildings or anywhere a paint is required.

A man and boy can paint a barn all over in less than a day with a good Sprayer.

Wood Preservative for sills, silos, posts—tested 23 years. Diploma World's Fair, 1893; Toronto, 1887 and 1897.

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THE FINCH WOOD PRESERVATIVE AND PAINT CO.

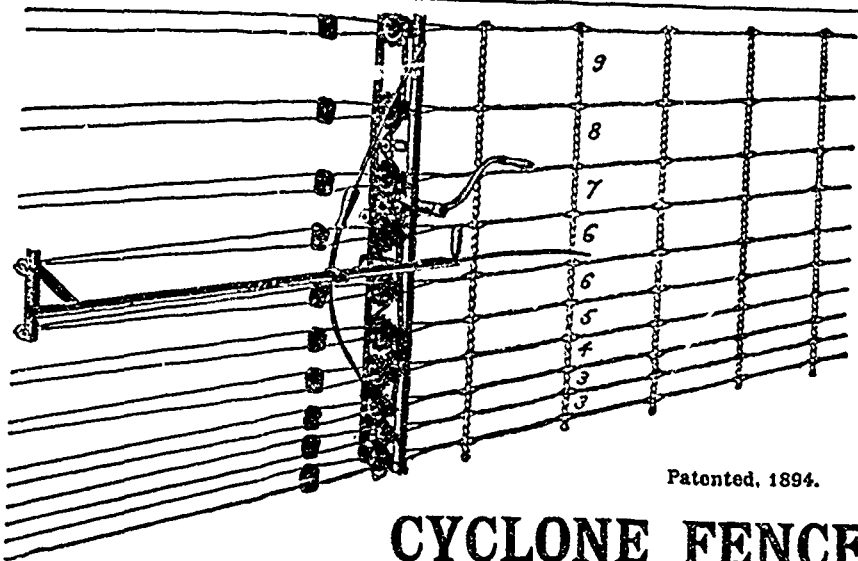
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The managers of Dr. Barnardo's Home invite applications from farmers throughout the country for the boys they are sending out periodically from the English homes.

MR. ALFRED B. OWEN, Agent,

Dr. Barnardo's Home, 214 Farley Ave. Toronto, Ont.



Patented, 1894.

CYCLONE FENCE

A solid web of perfect woven fence, from 2 1/2 to 5 ft. high, consisting of cables united from top to bottom by large crimped cross-stays. Our Fence is guaranteed strictly first-class. Our Machines were never equalled.

Cyclone Woven Wire Fence Co., 493 Dundas St., Toronto.

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\$2600 Lot 11, sixth concession, Township of Murray, County Northumberland. 100 acres. Good buildings.

\$450 Lot 23 and south-half lot 24 in 2nd con., Township Digby, County Victoria. 156 acres. Log buildings.

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Do you want Bee Hives and all kinds of goods for the Apiary?

ITALIAN QUEENS and Bees.

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Ingleside Herefords

Largest herd of choice-bred Herefords in Canada. Winners of both the first and second herd prizes at Toronto, Montreal, and Ottawa, 1895, 1896, and 1897; also silver medals same years for best bull and best female. This herd is of the "up-to-date-beef kind," combining early maturity and quality.

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Farm 2½ miles
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Ingleside Farm,
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The Champion Herd and Sweepstakes female at the three leading Exhibitions in Ontario, viz.: Toronto, Ottawa, and London, and Sweepstakes Bull at Toronto and Ottawa in the year 1897; have for sale some grand young bulls and females.

Lincoln Sheep of all ages.

Apply to

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SIX BULLS
FOR SALE,
fit for service, at
reasonable prices.
Write for particu-
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BONNIE BURN STOCK FARM, Stouffville station and P.O. D. H. Russell, prop. Breeder purebred Shorthorn Cattle, Shropshire Sheep, and Berkshire Swine.

W. J. BIGGINS SHORTHORN BULLS
AND HEIFERS
CLINTON, Ontario. of Select Scotch
Breeding at Low Prices

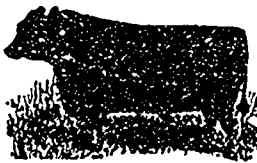
DEVONS.

W. J. RUDD, Eden Mills, Ont., Breeder of Devon Cattle, Cotswold and Suffolk Sheep, Berkshire Pigs, Plymouth Rock Fowls. Young stock for sale.

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choicest strain.
Choice Stock from
my prize-winning
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1897 for sale.



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DAVID McCRAE, Janeville, Guelph, Canada, Importer and Breeder of Galloway Cattle, Clydesdale Horses, and Cotswold Sheep. Choice animals for sale.

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Brookbank Holstein Herd

Champions for milk and butter. 8 have won public test. No bulls for sale at present. 15 Cows and Heifers due to calve from August to Jan., mostly with calf to

Sir Paul De Kol Clothilde

a milk and butter price whose 19 nearest female relatives average 22 lbs. of butter per week, and 14 average 19 2/3 lbs. milk in one year. Increase of herd only for sale.

A. & G. RICE, Currie's Crossing,
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Holstein-Friesians

THE GOLD MEDAL HERD OF 1897

Service Bulls

SIR PLEDGE DE KOL, Imp.
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Can spare a few young things of both sexes from strictly first-class cows of De Kol, Empress Josephine, McClathilde, and other famous butter families.

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...Gem Holstein Herd...

STOCK FOR SALE. We only keep and breed Registered Holstein-Friesians. Choice Young Bulls and Heifers, also some older animals, all of the very best dairy quality for sale. Correspondence solicited.

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HOLSTEIN-FRIESIANS AND TAMWORTHIS.

Meet me at Toronto. Will exhibit a Herd of Tamworths and a few Holsteins. Call and get my prices and compare quality.

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E. PANNABUCKER, Fairview Farm, Hespeler, Ont., Breeder of reg. Holsteins. Stock for sale.

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

SYDNEY FISHER, Knowlton, Que.

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EGGS FOR SALE.

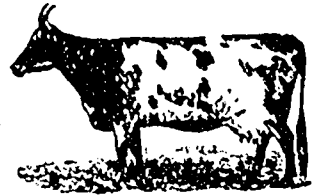
White Wyandotte, White Plymouth Rock, Cornish Indian Game, Black Minorca, Houdan, Black Langshan, White Langshan, Barred Plymouth Rock, Silver Laced Wyandottes, \$1.50 for fifteen, or \$2.50 for thirty. Packed in patent boxes. Will replace at half price any not fertile. Also poultry supplies. Will exchange any of the above for first class Tamworth pigs or light Brahma Pullets, say strain.

Dorset and Shropshire sheep, Tamworth pigs, Shetland ponies, Jersey cattle all ages. Registered. Prices right. STRATFORD BROS., Brantford, Ont.

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GLENHURST HERD OF AYRSHIRES.

Noted prize-winner. Choice quality and heavy milking families. Extra fine young animals of both sexes for sale. Also Leicester Sheep and Berkshire Swine.



DAVID BENNING,
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...GOLDFINDER, Imp...

—HEADS OUR AYRSHIRE HERD—

We have for sale five choice young bulls fit for service, two by the noted stock bull "Matchless," also some good females of all ages. We have a few choice Clydesdales on hand. Correspondence solicited and Visitors Welcome.

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Ayrshire Cattle.

Berkshire and Tamworth Pigs.
FOR SALE—Two young bulls fit for service, and five bull calves (calved in February).

One mile from Ottawa.) R. REID & CO.,
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HICKORY HILL STOCK FARM



2 Fine Ayrshire Bull Calves, one out of dam with record of 56 lbs. of milk per day. Also one Jersey Bull Calves 7 months old, a fine one. Write or come and see.

NAAMAN DYMENT,
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FOR SALE

One fine young Ayrshire bull fit for service, sired by Jack Morton.

EGGS for hatching from choice matings in Barred Rocks, Black Spanish, Black Minorca & Black Red Games at \$1.00 per 13.

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The celebrated stock bull

"WHITE PRINCE"

A winner at the World's Fair, Chicago. Parties desiring a first-class stock bull cannot do better than secure this animal. Large White Yorkshire pigs of the bacon type for sale, also a standard bred mare in foal, sired by Red Chief. Colt sired by Elm City.

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J. YULL & SONS, Meadowside Farm, Carleton Place, Ont., Breeders of Ayrshire Cattle, Shropshire Sheep, Berkshire Swine and Barred Plymouth Rocks.

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A number of choice Spring Calves sired by Douglas of Loudon (1884), from deep milking dams.



Prices and terms reasonable. Write for particulars
R. W. TAYLOR, Wellman's Corners, Ont.
Hoard's Station, G.T.R.

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For Sale

Good Shearling Ram and some fine Rams and Ewe Lambs; also some good young Yorkshire Sows and Boars. Some good young Heifers in Calf for sale.

John Cousins & Sons,
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IMPORTED OXFORD DOWN RAM

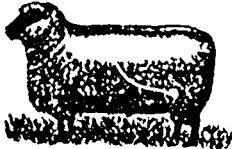
LAMBS—Canadian bred yearling and ram lambs. Yearling ewes and ewe lambs for sale, reasonable.

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For Sale.—A fine lot of ram and ewe lambs, bred from imported sire and dams. Prices to suit times.

SMITH EVANS
Gourock, Ont.
Breeder and Importer



Gotswolds Twenty good ram lambs, shearing and two-shear, at farmers' prices. Some excellent shearing ewes, bred to our best studs.

Berkshire Sows ready to breed. Boars fit for service. Twenty Plymouth Rock Cockerels, choice.

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SHORTHORN CATTLE

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Have an aged imported ram, and first-class ram and ewe lambs for sale.

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Champion flock at World's Fair. Awarded 20 prizes—10 firsts.

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Imported and Canadian RAMS and EWES

Choice lots to select from for breeding purposes, also first-class fitted sheep of both sexes for showing.

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Shorthorn Heifers by Statesman, and Berkshires by Baron Lee. Eight weeks old. Also one Baron Lee boar, ten months old.

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A. TELFER & SONS, Paris, Ont., Breeders and Importers of reg. Southdown Sheep. For sale.

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WM. E. WRIGHT, Glanworth, Ont. Breeder of Shropshire Sheep, Chester White Swine, White and Bronze Turkeys.

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Tamworths

It will be well for Tam fanciers to see the Cold Spring Herd at the Toronto Industrial. Examine the stock sired by King George, 516, and see the uniformity of breeding.

YOUNG STOCK of different ages for sale, at prices that are right. Address,

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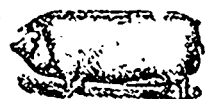
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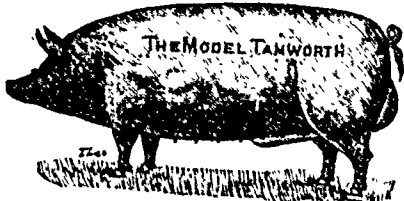
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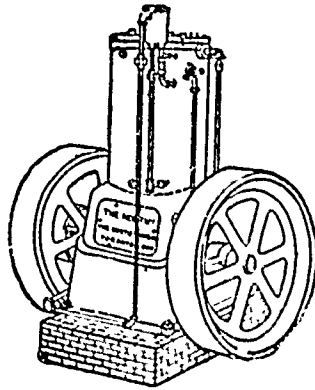
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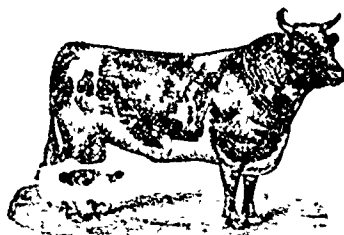
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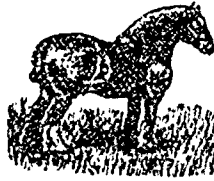
Good young cows, two years old; yearlings and heifer calves, out of Imported and Home-bred cows, and the Imported bull, E. ya. Member and Kaitum Kobim. Come and see them or write if you want something special. Station on the farm

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I have on hand the best young Clydesdale Horses and Maron on this continent Bred from the well-known sire, Prince of Wales, Darnley, Macgregor, Energy, Lord Montrose, The Ruler, Carruchan Stamp, Knight Errant, and other celebrities



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FARMING

Vol. XVI.

SEPTEMBER 6th, 1898.

No. 1.

About Ourselves

A Brief Glance at the Past; A Talk of the Present, and a Dip into the Future



W HEN a year ago we changed FARMING from a monthly to a weekly publication there were some slight misgivings as to the wisdom of the change, though we had been urged to do so many times before. But now after a year's experience with the weekly it is a matter of great satisfaction to us, and we trust to the many friends of FARMING as well, to know that the important change made at that time has proven successful in every respect. During the year just closed it has been demonstrated beyond a doubt that a weekly agricultural journal is what the farmer needs, and what he will appreciate more and more as he becomes familiar with and learns to depend upon receiving reliable market reports and practical and timely information on every phase of farm work each week. Our contention has always been that a farm paper should reach its subscribers at least once a week in order that they may have the full benefit of the practical information it contains before it becomes out-of-date, and we must repeat that our experience with FARMING as a weekly has amply justified the important change made in September of 1897.

The only regret we had when the change was made was that we found it necessary to discard the handsome form in which the monthly was issued for a twelve-page form more in keeping with a weekly publication. Though some may not think so, we were able to give a half more good, solid reading matter in fifty-two issues of the weekly than in twelve issues of the monthly. This in itself meant progress, in addition to having this matter reaching our readers before it had become out-of-date. When the change was made to a twelve-page weekly, or an eight-page and cover, it was not our intention to stop at that. We started the weekly in a modest way in order to test the matter thoroughly before staking much upon it. But now after one year's experience, which has demonstrated to us that a weekly is what the up-to-date farmer at the beginning of the twentieth century needs, we are very pleased to be able to announce that henceforth FARMING each week will contain sixteen pages and cover, or twenty pages in all, of the size of this, our special Exhibition number.

This large increase in the size will give us room for more reading matter of a practical character, and we might just here add that it is our purpose, more than ever, to make FARMING the most practical and up-to-date weekly paper published in America. It is now the only weekly agricultural paper published in Canada, a fact that the Canadian farmers should remember. Nearly all the leading agricultural journals published in the United States are issued weekly, and surely Canadians should not be behind hand in this respect. As a weekly, FARMING offers an excellent medium for publishing the experience of practical farmers on the various branches of farm work, and we would like our many readers to take advantage of this more than they have done in the past. Our columns are always open for timely criticisms of any article that appears therein. And let us here say that this is the most helpful way of receiving and imparting information of benefit to every farmer. No farmer should live unto himself. If he has followed any line of practice that has brought him good returns he

should be willing to let his brother farmers know, in order that the whole country may be benefited.

In conclusion, we wish to particularly emphasize the specially attractive form in which FARMING will now be published. To a greater extent than ever will it be helpful to our large advertising patronage. Many have been the compliments paid us for the style and attractiveness of all the advertisements which have appeared in FARMING. In the new form we shall be able to do better work than ever along this line, and it will be our aim to make the advertisements which from this on will appear in FARMING of the most attractive kind. We are confident, therefore, that advertisers will profit in the future more than they have done in the past by the unique and attractive manner in which their advertisements will appear in FARMING.

FARMING has always dealt liberally with those who help to swell its growing subscription list, and we wish to state just here that it is not our intention to adopt any retrograde policy in this respect. In fact, it shall be our aim, if possible, to deal more liberally with subscribers and others who send in new subscriptions than has been our practice heretofore. Already handsome and valuable articles have been secured as premiums for new subscribers, and our readers should watch very closely the columns of FARMING for full particulars regarding these. We are always prepared to pay liberal cash commissions on all new subscriptions sent in, and all those desiring profitable employment during the winter months should write us for agent's terms.

Thanking our advertisers for their liberal patronage during the past year, and our numerous friends and subscribers for their many words of commendation and good cheer, we enter upon the publication of the sixteenth volume of our journal with the utmost confidence that the end of August, 1899, will close the most prosperous year in its history.



Agriculture

A New Text-Book on the Subject for the Public Schools

The important part which agriculture plays in the economic history of Canada is recognized by everyone who has made a study of our great natural resources. But, if we mistake not, agriculture is destined to play a much more important part in this country's development in the future than it has ever done in the past. Our reason for making this assertion is that more attention will be paid to the teaching of agriculture in the public schools than has been the case even during recent years. To develop our agricultural resources this country needs more farmers, and not only that, but it needs the very best class of farmers, and where can these be had better than in educating the young people on the farms toward making farming their life work. To do this we must begin at the public school and endeavor to instil into the minds of the pupils a love for the farm and a liking for the farmer's calling. It is therefore with pleasure that we welcome into the educational arena of this province a new text-book on agriculture for use in the public schools. As this book is now being placed upon the market a short review of the work will be quite opportune at this juncture.

Early in 1897 the Minister of Education instructed Mr. C. C. James, M.A., Deputy Minister of Agriculture for Ontario, to prepare a work on agriculture suitable for use

in the public schools of the province. The book is being published by Geo. M. Morang, of this city. It consists of 200 pages, and is uniform with the other public school text-books, the price being fixed by the Department of Education at 25 cents. The aim has been to fairly cover all the branches of agriculture, and to put the matter in a simple and attractive form. The work is divided into six parts as follows: Part I., *The Plant*; II., *The Soil*; III., *The Crops of the Field*; IV., *The Garden, Orchard, and Vineyard*; V., *Live Stock and Dairying*; VI., *Miscellaneous*. To show how careful the author has been to cover all the branches of agriculture the chapters of Part VI. are here given: Bees, Birds, Forestry, Roads, and the Rural Home.

The aim or purpose of the book is to give the simple principles of the science of agriculture, and to show their bearing upon the art and practice of agriculture. For instance, it does not pretend to instruct how to plow or to drain a field, but explains the principles underlying their operation, pointing out the benefits, stating the results or giving the reasons for the work done. Such knowledge adds interest to the doing of the actual work. It would not be possible, nor would it be advisable, to go very exhaustively into the subject of agricultural science; but it is an attempt to interest the student or reader in the important work of the farmer. The various chapters have been well illustrated, and the general make-up of the book is attractive. The student will learn a little botany, a little geology, a little entomology, a little chemistry, a little physiology, and a little bacteriology, and the importance of these sciences to agriculture. There is nothing in the book beyond the comprehension of the senior pupils of our public schools, and there is nothing to be taught that will offend the taste of the most fastidious of our teachers, male or female.

We have said that the book aims at making a beginning in the study, it is by no means exhaustive. It is rather suggestive and written to arouse the curiosity and the spirit of enquiry. Here and there are scattered short simple questions, the answers to which can be got by observation or by questioning the older members of the family. Such a chapter for instance as that on "Horses" gives a few important points in connection with the general form of the animal, the relation of its small stomach to its feeding and the importance of the food. A few questions bring out the important points. A chapter on "Roads" and "Forestry" contain subjects boiled down to their simplest first principles.

The book is not intended for pupils alone, it is written also for farmers of the older class and we would like to see a copy in every rural home in Ontario. As for its being taught in the public schools, the matter is now in the hands of the farmers themselves. Any board of trustees may pass a resolution requesting the subject to be taught and the teacher is thereby required to use this book in the regular work of the school. The trustees of our rural school sections should take action at once and order the introduction of this book into the schools over which they have control. The work is entitled *Agriculture by C. C. James, M.A.: Geo. M. Morang, Toronto, Publisher. Price 25 cents.*

Canadian Fruit at the Paris Exposition in 1900

Another great world's fair, equal to, if not greater in many respects than, the World's Columbian Exposition in 1893, is to take place in Paris in 1900. Among other interests it is important that Canada's fruit-growing interests should be well represented there and that our fruit-growers should begin to prepare for their exhibit at as early a date as possible. The following extracts from a letter recently received from Mr. Alex. McD. Allen, of Goderich, who has been appointed special fruit commissioner by the Dominion Government to the Paris Exposition, will be read with interest by those interested in the coming Ex-

position. Mr. Allen has not definitely formulated a plan of action yet. When his plans are completed we will be able to give our readers full particulars. In the meantime the following is deserving of attention:

"This is an opportune time to make ready for that event, and I do hope fruit-growers will now attend very particularly to the cultivation and pruning of their trees and to the application of manures. Those orchards where care has been exercised will, doubtless, be looked after by collectors of fruit for the great exhibition. Next year all this work must be done to enable us to make a favorable and creditable showing at the opening, and I feel that it is important that orchards should be placed in a condition this fall by manuring, mulching heavily, salting light lands, or feeding hogs and sheep in such orchards, and then in the spring by trimming well and carefully every tree, scraping off all the loose bark, and making free and frequent use of the Bordeaux mixture in spraying. Such spraying should begin before the buds open and after the fruit forms, at such intervals as may appear necessary. Most people make the mistake of spraying only twice and often lose their labor and material and time by not watching for the appearance of fungi after the fruit has formed.

"In collecting fruits we will, doubtless, be guided by our knowledge of the special sections of Canada where certain kinds are grown to the highest state of perfection. We must appear at our best, and, in order to do so, we will have to select carefully, keeping flavor always prominent. It is just as necessary to observe high quality in selecting fruit for preserving in jars as it is in selecting fresh specimens to place in competition upon the tables. Flavor in any fruit will stand the severest tests, and the higher and finer that flavor is the better will we find the fruit carry through varying climatic changes. This is specially true in apples and pears. In order to get full flavor we must place the trees in a condition to provide by enriching our soils."

Our Dairy Products in Great Britain

In a recent interview with Mr. A. F. MacLaren, M.P., of MacLaren Bros., cheese exporters, etc., Stratford, Ont., who returned from a business trip to Great Britain a few weeks ago, some important information was obtained of value to cheese-makers and dairymen. One of the points upon which Mr. MacLaren laid special stress was that Canadian goods of all kinds do not receive sufficient recognition among the consuming classes. Even Canadian cheese is very little known as such among these classes. While the importer and larger dealer, who buys direct from Canada and comes in touch with Canadians, fully recognizes the superiority of Canadian dairy products over those from the United States, it is only very occasionally that a customer buying these products will call them anything else than American. This is indeed humiliating, and some special effort should be made at once to impress upon the great consuming classes of the Mother Country the fact that Canadian dairy products are separate and distinct from American dairy products, and very much superior to them. The Englishman talks very freely, and rejoices in Canadian loyalty and the good will of the Canadian people towards the Mother Land, but he does not seem to think enough of us to ask for Canadian products at his grocer's. All goods from this side of the Atlantic are called American.

Mr. MacLaren came across some Canadian cheese in England that was injured by being placed in cold storage too green. Every cheese should be properly matured and cured before it leaves the factory. So important does Mr. MacLaren consider this that he would favor a law being passed compelling factorymen to keep all cheeses made after the cows are turned out on the grass in the spring in the curing-rooms till they are at least two weeks old. In many instances cheeses leave the factory when only three or four days old. In such cases they are not cheese at all but curd, and only injure the reputation of Canadian cheese abroad, the maker and everyone else concerned. New Zealand cheese is coming to the front very quickly, and Canadians need to be on the alert in order to retain the prestige they have already gained. Brockville cheese is very highly spoken of in England, and the makers of Western Ontario, in whom Mr. MacLaren is more particularly interested, will have to look to their laurels.

Mr. MacLaren is quite optimistic as to the future of the Canadian export butter trade. Canadian butter is coming to the front very fast. In his opinion Canadian butter is equal to if not superior to the Danish butter. Mr. Mac-

Laren examined Canadian and Danish butter in several stores where both were for sale, and in every case the Canadian butter was of better quality than the Danish article alongside of it, but the latter sold for a higher price simply because its reputation was made. It will take a few years yet of pushing and making its good qualities known before Canadian butter will be on the same footing as the Danish. But it will eventually come if our creamery men keep on as they are now doing, and send to the British consumer only the very best quality of goods.

While abroad Mr. MacLaren visited Paris, where extensive preparations are being made for the great World's Fair of 1900. A large space has been secured for Canadian products, and preparations are now under way for making an extensive exhibit of the best that this country can produce.

Pure Water and Health

By Frank T. Shutt, M.A., F.C.S., Chemist Dom. Expl. Farms

That good health is one of the greatest blessings we can enjoy all will be ready to admit; but, alas, how many, either through carelessness or ignorance, act as if they failed to recognize, or at all events to realize, the truth of their admission! The Canadian farmer, though frequently subjected to extremes of temperature, certainly lives in an exceedingly healthful climate. The air throughout the Dominion is salubrious, and, except under certain local conditions existing over a few areas of restricted extent in Manitoba and the Northwest, the natural waters of the Dominion are exceedingly pure and wholesome. To corroborate this statement we have ample scientific and practical proof. Nevertheless, our rural homes are not always as free from illness as they should be. Indigestion, diarrhoea, sick headache, not to mention more serious evils, such as typhoid fever and diphtheria, are altogether too prevalent in many of our farm homes. Let us enquire briefly as to the possible and probable cause of these ailments, so that being forewarned we may be forearmed.

In the first place, I am of the opinion that an impure water supply is the chief factor in causing the above-named disorders, the most fruitful source in many instances of typhoid and other germ diseases. Secondly, bad air due to imperfect ventilation and over-heated rooms in the winter season. Thirdly, to the shockingly bad cooking so widely prevalent in country parts, whereby much good food is rendered indigestible and really unfit for human consumption. Fourthly, to imperfect sanitary arrangement—frequently an absence of any attempt at house drainage or the proper disposal of house refuse and excreta.

In the present article we confine ourselves to a consideration of the first of these causes, namely, polluted water, by which we mean water containing organic filth: derived from the drainage of the barnyard, stable, privy, and the like. The use of such water is a constant menace to the health of the farmer and his family, as well as to the thriftiness of his stock and the wholesomeness of his dairy products. It may be, and often is, the means of spreading typhoid fever, for if the dejecta of patients suffering from this disease find their way, by infiltration or otherwise, into the well, the typhoid germs will multiply there amazingly, especially during the hot months of summer. But, apart from this fell complaint, we have no hesitation in saying that the products of the decomposition of such organic waste as is here referred to are answerable for much ill-health, and especially for disorders of the intestinal tract and troubles arising therefrom. Water containing such pollution acts as a slow poison, often undermining the constitution and lowering the whole tone and vigor of the system, rendering its victim liable to "catch" any disease that may be prevalent, or to succumb to any attack of constitutional weakness, or to the results of any accident that may happen. It is most insidious in its manner of acting, the cause not being obvious often till the health has been seriously impaired.

In choosing a farm, therefore, we advise a careful scru-

tiny of the water supply; ascertain the probabilities for obtaining an ample quantity of pure water, if such does not already exist. Do not rest content with a hole of greater or less depth dug in the barnyard or under one of the farm buildings; for sooner or later, be the soil never so impervious, its water will be contaminated and dangerous.

If it is necessary to sink a well place it at a sufficient distance from the farmyard as to be beyond all possible risk of pollution. This is not as convenient an arrangement as the old plan, but health should not be jeopardized for convenience. In these days a windmill pump is not a very costly affair, and bringing the water direct to the house and barn will soon pay for itself in labor saved. It would not be possible to give, in a general article, more definite advice regarding the selection of the site for a well, as condition of soil, strata, etc., vary so greatly; each case requires its own consideration.

Again, use sufficient litter to absorb and retain the liquid manure. Air-dried swamp muck or good loam will be found extremely valuable for this purpose. Keep the surroundings of the farm buildings clean; it will be found to pay in the manure that would otherwise go to waste, and probably be the means of preserving the well water in purity. We also strongly advise the use of one or other of these materials in the privy, which should have a withdrawal box, so that it can be easily emptied from time to time.

Lastly, have a compost heap to receive the household slops. The practice of throwing refuse and liquid outside the back door is a dirty and wasteful one, bringing flies in summer, polluting the air and soil, and making the surroundings unhealthy. Of course, if the water is piped into the house, efficient drainage should be provided to carry to a safe distance all waste water.

The desire to keep this article from being too lengthy prevents the writer from touching upon many other points of interest in connection with this subject. Another time we may point out the necessity of pure water for the stock and dairy—a matter of importance second only to that we have dealt with to-day. In conclusion we may state that the chemical division of the Experimental Farms, Ottawa, will analyze gratis waters from farm wells, provided certain directions (forwarded upon application) are followed in the collection and shipment of the sample.

The Agricultural Outlook in Nova Scotia

By J. E. Hopkins, Dairy Supt. Nappan, N.S.

In this age of competition, especially in agriculture, it might be of interest to the farmers of Nova Scotia to discuss what place Nova Scotia can take in the race in order to compete in the products of the farm.

Nature has done much for Nova Scotia, not to speak of its wealth in coal and gold, fisheries and forests, but of its beauty and possibilities as an agricultural province, when clothed in its robe of green, with its many acres of dyke land, which have been producing hay for hundreds of years. Its rich "intervals" (of which nearly every farm has some), its many rivers and springs afford abundant water, and its broad sloping hills crowned with evergreens, fir and spruce, not only give a picturesque scenery, but there is amid this beauty great prospects in agriculture; and we often wonder why her own sons seek other places not so promising, and other fields that have not so good a climate. Nature has done much, and it is for the Nova Scotia farmers to improve their resources and make their province rich in agriculture by solving the problem of how to compete and how to conduct their farm operations. There may be some truth in the statement that agriculture is not as well advanced as in some of the other provinces; but this can be accounted for from the fact that the farmers have not been relying fully on agriculture, and lumbering, mining, fishing and shipbuilding have taken up a large part of their attention in the past. But now there is a grow-

ing interest in agriculture all over the province and a marked change is taking place.

Fruit has already become a prominent feature, and is bringing to the farmers and the province a large revenue.

Two milk-condensing establishments are carried on. One of these is the largest in the Dominion. During the past five years the farmers have erected twenty five fully-equipped creameries, and others are going to be built, besides the cheese factories now in operation. True, the prices have been discouraging sometimes; but what would have been the result if all the milk had been made into dairy butter? Should we not ask ourselves are we entering on the right lines; is dairy farming the best line to adopt, and is Nova Scotia well-adapted for dairying? When I say dairy farming I do not mean dairying exclusively; for many sections in Nova Scotia are largely engaged in raising fruit. But dairying will help to raise more fruit, as it is a practical method of getting cheap fertilizers to supply plant food for the trees.

Then the country has a demand for beef, and certain farmers fancy beef production in preference to dairying. But farmers as a whole cannot afford to keep cows just to raise the calves, and a large part of the efforts even in beef-raising should be directed to dairying to get the greatest profit. Again, there are certain sections in the province where farmers have large, hilly farms which are well-adapted for sheep, keeping some cows on the lower lands. Then, further, a very important branch of dairy farming is producing pork, which is always sure to follow where dairying is successfully carried on, and becomes a large item of profit on the farm. Already the farmers in connection with the creameries are giving their consideration to having a pork-packing establishment and producing hogs suitable for the same. Therefore, what I mean by dairy farming is that dairying should be the leading line or principle, and that the other branches should be carried on in connection with it.

Nova Scotia is well-adapted for dairying, especially butter making, and in some respects has advantages over the other provinces. While vegetation does not start as early in the spring by about ten days as in Ontario, yet when it starts it is very rapid, not having as much hot sultry weather; the generally cool nights affording better natural pasture. Then, the summer closes with a lovely fall, so on the whole the climate and natural pasture are favorable. Water is a great factor for making a fine flavored butter, and there is no section in Nova Scotia but what is well watered, and ample feed can be produced for the production of milk. One of the advantages in producing milk for butter and feeding the skim-milk on the farm is that one can sell more dollars' worth of butter and take less fertility out of the land than by any other line of farming. It also leads to the principle of building up the farm; each year producing more food. By keeping better and more stock a greater interest in agriculture is aroused, thereby causing better cultivation, and as a result we will have improved farms, better barns and stables, filled with cows that are producing milk at a profit.

Perhaps some will say the picture is too bright. I am aware that all this cannot be fully accomplished in one year, but the time is coming when Nova Scotia will be noted for her products from the farm along dairy lines. Ontario did not build up her reputation for fine cheese in one year, nor in five years; neither did farmers say that dairying was the most profitable line to follow in the early days. Many did not find it so, even at higher prices, because they did not give their cows the care and attention they do now. They learned the lesson of co-operation, not each individual for himself, but by farmers co-operating together. Private dairying is not going to build up or maintain a reputation for fine butter. It has been done along private dairy lines from the first and each year the butter is getting worse. Even if the quality improves, there will be as many varieties as makers. The demand is not only for good butter but for a uniform quality. As trying as the situation is at present because of low prices, the creameries for the manufacture of the milk is

the true method; not that it is a new experiment, but one that has been successfully experimented upon.

As we have already said Nova Scotia is a lovely country; it has a good climate, is well watered and well adapted for growing hay and pasture. Roots do well. In fact, all the food that is needed to produce milk and stock can be grown easily, and I don't think it is too much to say we have the people who can grow it. When our farmers enter more fully on this advance system of farming, improving their farm and reclaiming others, Nova Scotia will look even more beautiful than it does now.



A Typical P. E. Island Farm

By J. Hamilton, New Perth, P.E.I.

It is seldom that any allusion is made by western journalists to P. E. Island, its people, or its agriculture.

Now and then a stray summer tourist from the mainland, after spending a few days in Charlottetown, Summerside or Souris, or a week or two at one or other of the bathing resorts on the north shore, undertakes to enlighten the reading world on such matters relating to the general aspects of the country as strike the sense of a pleasure-seeking bird of passage.

With regard to the history of the island, the social status of its people, their various industrial pursuits, their manners and their way of living, the outside world of this big Dominion is left in as profound ignorance by the continental scribe as if the granary of the Gulf were an appanage of the kingdom of Dahomy and its people descended from the apes, whom Professor Teufelsdröckh describes in "Sartor Resartus" as hanging by their tails to trees, and chattering in an unknown gibberish by the margin of the Dead Sea.

It would be altogether invidious to include the editor of FARMING in this diatribe against western journalism, seeing that he has on more than one occasion invited contributions on Island agriculture from the local scribe, and freely placed his columns at the service of any Islander who has anything of interest at his command to write about the "little sister" whose home is by the sea. You have been polite enough to ask the writer for a contribution to your September number on "The Typical P.E. Island Farm." On turning up the expression "Type—Typical," I find its derivation is from the Latin *Typus* and the Greek *Typos*, and that among various other definitions it means "the ideal representation of a group or species combining its essential characteristics."

In common candor I have to inform you, sir, that an ideal farm in the true sense, so far as I have travelled over its surface, is not to be found on P. E. Island. There are, however, many fine farms of 100 acres or thereabouts that are well tilled and bear luxuriant crops of all the ordinary staples of our Canadian climate, whose buildings have an appearance of solid comfort, and whose owners are not lacking in refinement or intelligence.

To the passing traveller who views the homes of our Island farmers from a distance in the mild radiance of an August evening sun, as he sits in a comfortably cushioned buggy, the idea is apt to occur that he has at last arrived on the confines of an agricultural Arcadia, and among a people "Whose milk rolls in like flowing seas, and comes without their care." A nearer view too often dispels this illusion, when a sagged gate, a crooked fence, or hump-backed barn shatters his ideal, and calls the dreamer from the realm of fancy to that of sober fact.

Typical, ideal or model farms are exceedingly rare in the Maritime Provinces. It is only in the columns of the agricultural press that they abound, where the pen of the ready writer is sometimes found doing an amount of work that perhaps only one farmer in a thousand has ever been able to accomplish since the days of Solomon.

Dr. Samuel Johnson is reported to have said, "A man is often far less innocently employed than when he is making money." The same may be said of the farmer who so far controls the prevailing rage for riches as to devote some

attention, when he has secured means for the purpose, to the establishment of a typical or ideal home. He engages not only in an innocent but highly commendable course of action in striving to improve his heritage in the soil in order to leave his paternal or purchased acres in better condition than he found them, and his name will go further down the road to posterity than that of the mere money-maker.

There are many of our Island farmers now engaged more or less in this "typical" work planting shade and ornamental trees and otherwise endeavoring to beautify their surroundings; but the end is not yet, the work so far is merely tentative. When the typical essayist has realized his ideal the writer will make it a point to pay him a visit, and the editor of *FARMING*, if still to the fore, will probably be furnished with an outline of the result.

Dairy Progress in New Brunswick

By Harvey Mitchell, Dairy Superintendent, Sussex, N. B.

Dairying in New Brunswick is but in its infancy. Although the first cheese factory was built at Sussex, Kings County, in 1867, it had a small beginning, and attracted but little attention for a number of years. For a time successful dairying in the province was by no means assured. The lumbering and fishing industries took up the attention of the farmers, and they were slow to fall in line with the dairy movement. In 1890, seeing the great benefit the farmers in Ontario and Quebec were deriving from co-operative dairying, the Local Government offered a bonus to anybody who would equip and operate either a cheese factory or a creamery, and in 1892 they engaged an expert from Ontario to visit the factories giving instructions to the cheese and butter-makers. Since then the growth of dairying has been steady and sure, rather than rapid and sensational.

In 1893 the output of cheese and butter from the factories was valued at \$67,488.21, and in 1897 the value of the output was \$107,507.67, an increase of over \$40,000. This season we have fifty-five cheese factories and nine creameries in operation, and there is a considerable increase in the output of cheese and butter.

During the past winter the Provincial Department of Agriculture conducted a central creamery and dairy school at Sussex. Cream was furnished from four creaming stations. Upwards of fifty cheese and butter-makers took advantage of the courses given, and I am pleased to note an improvement in the quality of cheese and butter made in factories managed by those who attended the school. The Government are erecting a new building for dairy school purposes. It is their intention to continue the school, and this, with the up-to-date information now being disseminated through the Farmers' Institute meetings and the press, will be of great benefit to the dairy industry.

In looking over the history of the origin and development of the dairy industry in the province, there are a few names which stand out most prominently, and which should be written in letters of gold on the pages of its history.

Among the first might be mentioned the names of R. Keltie, Logan & Lindsay, of St. John, and Wm. Roach, of Sussex, the promoters of the first factory. Also George H. Wallace, now stipendiary magistrate and collector of customs at Sussex, who visited Ungersoll, Ontario, in the spring of 1867 to get information in regard to the building and operating of cheese factories, and to purchase a plant for the first factory which he built. Then there are the late Hon. James Mitchell, commissioner of agriculture, Hon. A. S. White and Hon. Wm. Pugsley, who were the first to bring before the Legislature the importance of offering a bonus to cheese and butter factories. Next to them come Julius L. Inches, late secretary for agriculture, John Robertson, who was dairy superintendent from 1892 to 1897; and W. W. Hubbard, secretary of the Farmers' and Dairymen's Association, also James Good and C. L. Tilly, who started the first factories in Carleton County. Then there are P. L. Richard, Rev. F. X. Michaud and Michael McLaughlin, who have done a great deal to promote dairying in the French-speaking districts of the province.

Variations in the Proportion of Butter Fat in Milk

By J. C. Chapais, Assistant Dominion Dairy Commissioner, St. Denis, Que.

For the dairyman butter fat is, of all the constituents of milk, the most valuable. It is for that that we see all those who take an interest in dairying striving to find out what are the causes which have some influence upon the increase or decrease of butter fat. Many are the causes which produce such increases or decreases in the proportion of butter fat in milk, according to the circumstances met by the cow. The principal causes are: More or less frequent milking; well or badly done milking; change in the cow's habits; and, last, feeding.

MORE OR LESS FREQUENT MILKING has a well-marked influence on the percentage of butter fat. If we milk three times a day we get more milk and more fat in the milk. A large number of conclusive experiments are quoted, and especially one where a cow milked twice a day gave milk of which twenty-five pounds were required to make one pound of butter, while, when, a few days after, she was milked three times a day, she gave milk of which twenty-one pounds would yield one pound of butter. Besides, one thing was remarked, showing how true it is that butter fat increases in milk through frequent milking, and that thing is that, when the cow was milked three times a day, her morning milk was poorer in butter fat than the milk of the other two milkings, because a longer time elapsed between the night and morning milkings than between the others.

WELL OR BADLY DONE MILKING increases or decreases the proportion of butter fat in milk in this sense, that, if milking is done slowly, the milk will contain less fat than if it is done quickly. To prove this, during a few days a cow was milked by a person milking her quickly, and then she was milked by another who milked her slowly, after which she was again milked by the one who milked fast. The result was that, from the moment the cow was milked slowly by the second persons, there was a decrease of 11 per cent. of the butter fat in her milk, and this fact does but corroborate the experience of a large number of persons.

While speaking of how a cow should be milked, it is right to say a word about the well-known fact that the last milk drawn from the udder is always much richer than the fore milk, and, consequently, those who, before sending their milk to the factory, keep part of the last milk for the family use, show more cleverness than honesty. In fact, such extreme variations have been found as the following between the last and the fore-milk of a same milking:

Fore milk: 9.62 per cent. of solid matter, of which 1.2 was fat.
Last milk: 10.07 per cent. of solid matter, of which 11.02 was fat.

Though the variations are not always as marked as these, there is, nevertheless, always a very wide difference as to the richness in butter fat of fore and last milk.

CHANGE IN THE COW'S HABITS is another cause of a great variation in the proportion of butter fat in the milk of a cow. When a cow is brought from one herd to another, and meets a lot of cows unknown to her, there is immediately a large decrease in the fat of her milk. I had once a clear proof of this when a cow, bought by myself as a first-class butter yielder, having been brought into my herd after having travelled a good deal, gave milk showing a great variation in butter fat when compared on the day of her arrival and after a rest of ten days:

Milk drawn on the day of her arrival showed 11.28 per cent. of solid matter, of which 2.16 was butter fat. Milk drawn after ten days' rest showed 15.08 per cent. of solid matter, of which 5.54 was butter fat.

THE FOOD OF MILCH COWS is, of all the points above mentioned which may possibly have some influence on the percentage of fat in milk, the one which arouses most the attention of dairymen. It is, indeed, through feeding that they seem to believe that the percentage of fat can be increased in a sensible way in milk. Do facts corroborate

their belief? Numerous answers are given to such a question; but, first of all, to get a right answer the question should be rightly put. In my own opinion the problem lies absolutely outside of the increase of the quantity of milk. By this I mean that if one wants to make a valuable point in answering he must consider the question as being this: If a cow gives one hundred pounds of milk containing four per cent. of butter fat when she receives a stated kind of food, can she give one hundred pounds of milk containing four and a half per cent. of butter fat with another stated kind of food? No useful conclusion can be drawn from a question put otherwise.

A good number of chemists and agriculturists have made experiments to solve this interesting question. Since 1867 Kuhn, Fleisher, Stohman, Vieth, Dettweiler, Lawes, Gilbert, Speir, Wiley, Duclaux, Babcock, Henry, and many others have studied this subject, but we may well say that, till lately, it was impossible to draw any conclusions from the numerous reports of experiments published in Europe or America. But now, Professor Soxhlet, of the central experiment station of Munich, publishes in 1897 a report of his investigations on this question which seems to cast some light upon it. Till now it was not positively denied that it may be possible to increase the proportion of butter fat in milk by feeding some substances rich in fat, such as linseed cake, sesame cake, cotton-seed cake, and, above all, palm-nut cake; but the true difficulty was that it was impossible to give enough of these feeds to the cow to obtain that increase without making her sick. It was necessary to give her such a proportion of protin, while feeding these feeds to the cow in order to increase her butter fat, that there was great danger of killing her through indigestion. Professor Soxhlet seems to have got round the difficulty by giving, as usual, a bulky feed, such as hay, but by adding to that kind of food, the bulk of which is required on account of the peculiar conformation of the cow's stomach, emulsion of linseed or sesame oil, or of stearin, which is obtained as a residue in the manufacture of margarine, in lukewarm water, as a beverage. In this way he managed to increase notably the percentage of fat. But the butter obtained by means of that almost artificial fat is very poor in volatile fatty acids, requires a much higher temperature than ordinary butter to melt, and is, consequently, much harder, and looks like butter adulterated with margarine. It has also a peculiar flavor.

As will be easily seen, the question has made, as yet, but little progress towards practical usefulness. There remains to establish what would be the cost of that supplement of oil and of its preparation, and to ascertain if the greater proportion of butter fat thus obtained would compensate this extra expense, to find out what influence such an apparently abnormal food would have on the health of the cows, and, above all, to prove whether the hard and peculiarly flavored butter thus obtained would be accepted on the market. Scientists have still a wide field in which to exert their sagacity.

What the Manitoba Dairymen Need Most

By C. C. MacDonald, Dairy Superintendent, Winnipeg, Man.

The dairy industry of Manitoba has had three bright years of prosperity during the seasons from 1895 to 1897. The present season, 1898, promises to be a good one, but under more trying circumstances than any other year, and hence the ultimate results at the end of this season may not bear as good a record as at present it seems.

The price of creamery butter has been somewhat higher this season up to date than it has been for the past three seasons, but there have been other matters to contend with which may be considered a drawback. Of course, with the good prices paid, and with what creamery butter that is being made, the showing at the end of the season will be proportionately as good as that of other seasons. The chief drawback to the creamery industry of the province this year is the apparent determination of the country town

merchants to "sink" the creameries. No reason can be assigned for their actions except, it may be, their greed for trade. The merchants in most of the towns where creameries are established have been paying very high prices for farm-made butter—in trade, of course; they have been paying fifteen cents in trade and selling for twelve cents to the wholesale. There is no objection to the farmers getting high prices for their dairy butter if these high prices were only paid in *cash*, as is the case with the creameries.

What the dairy farmers of Manitoba need most is to establish a *strictly cash* system with all comers. The credit system was never ultimately a benefit to any one. The farmers get cash when they send their cream and milk to the creameries, and so the country merchants should be made to pay cash for the butter made on the farm. If the dairy farmers of Manitoba would only adopt this cash system, they would soon learn that the creamery method of manufacturing butter would bring far more profit to them. Farmers need to keep up their reputation as butter producers, and they cannot very well do it by letting the country merchants handle their butter. Farmers had an expensive but forcible lesson in this matter about four years ago, when their butter brought only from 7 to 9 cents per pound. The merchants have not got the facilities for handling butter, and therefore the product does not and cannot reach the consumers in good condition, and the result is that it is *not wanted*. On the other hand the creamery butter is shipped regularly and fresh to the consumers, and there is always a ready market for it. When the farmers begin to *think* and study for themselves, the creameries of Manitoba will be doing three times the volume of business that they are now doing.

Dairy farmers need a better class of dairy cows. We have some excellent performers in milk production, but they are too few; but where there are a few good ones there could be a multitude of them just as well as to have a number of poor ones. Farmers need to weed out the poor ones and breed from the best only. The Babcock milk-tester can work wonders in Manitoba just as it has done in other countries. Very few of the Manitoba dairymen use the Babcock tester as yet; there are a few, however, who do, and these are finding out many things by it in their business that they should know. The dairy farmers in Manitoba, in common with farmers of other provinces, need to systematize their work and to study to make the most profit possible out of their labor.

The cream-gathering system is the one followed in the province at present, and will be the only system in vogue until such times that this country is more thickly settled. Hand cream-separators are largely in use, nearly three thousand having been sold this year. This is a step in the right direction, and yet there is room for thousands more. There are now about thirty thousand farmers in the province, and every one of that thirty thousand should have a hand separator. No farmer with a herd of five cows and over can afford to be without one of these separators, for they will pay for themselves in one season when properly handled.

Development of Dairying in the North- West Territories

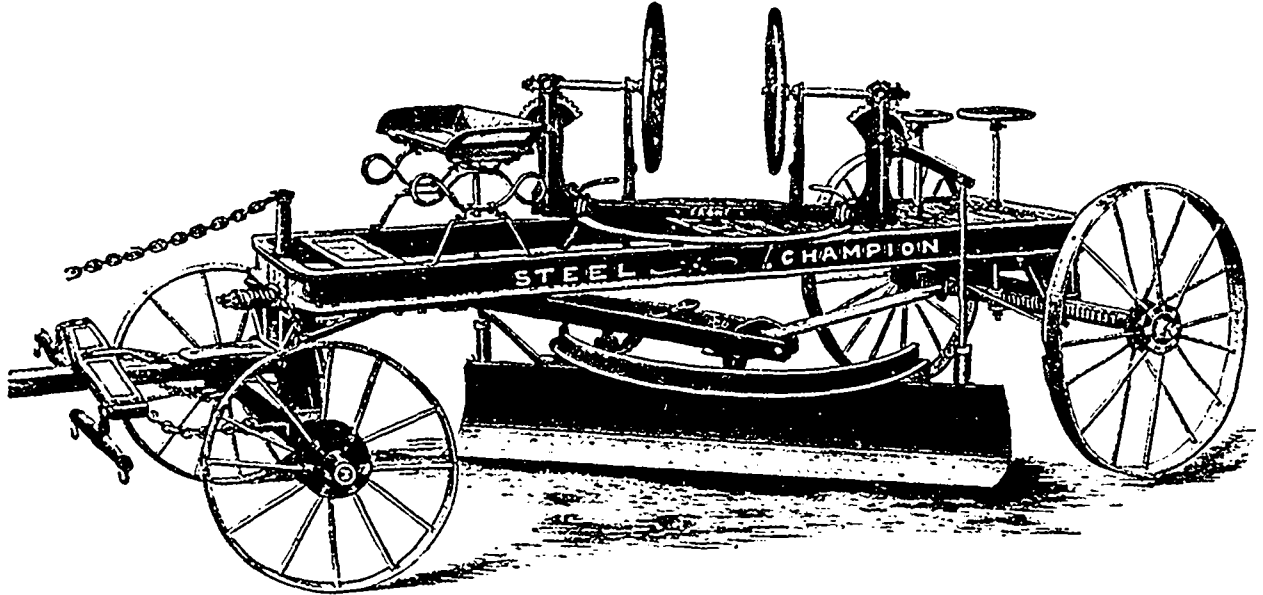
By J. A. Kinsella, Superintendent Creameries, Assiniboia and Saskatchewan, N.W.T.

In the early days the west was looked upon as the great granary of the north. While this was true to a great extent, after a careful investigation of the possibilities of the country, by such a close observer and deep thinker on all matters pertaining to the prosperity of dairying and agriculture as our Commissioner of Agriculture and Dairying at Ottawa, it was found that a great many districts, or I may say a large portion of the country, is more suited for mixed farming than for grain growing exclusively. Hence it was that dairy experts from the commissioners' staff were sent to the Northwest, in 1893, to enquire into the

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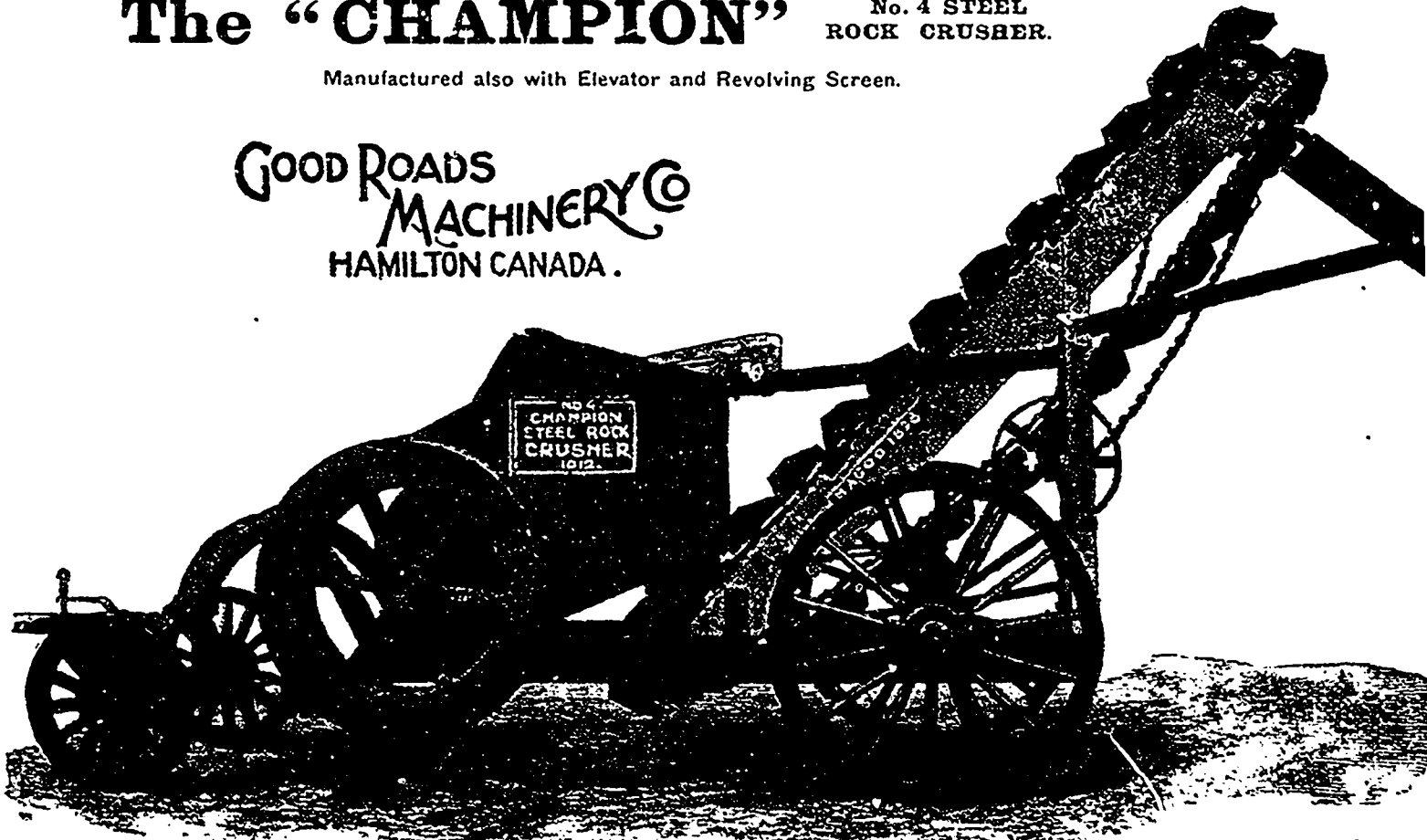
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conditions of the country, and the feasibility of dairying, as well as to address meetings of the farmers upon the improvements required in their stock, the proper care and feeding of the same, the proper care of milk and cream, and the best methods of making a fine article of butter.

In 1894 there was only one creamery in operation in the Northwest. At the present time there are nineteen fully-equipped creameries controlled and operated by the Dominion Government for the farmers. The output from these creameries this season will be upwards of six hundred thousand pounds. All these creameries are carried on on the Cream Gathering System. Although working under great difficulties by having to haul cream so far, and, as is the case in any new business, people have to be educated into the proper caring for the milk and cream, and, notwithstanding the difficulties and drawbacks which we have to contend with, our North-west butter has already made a name for itself in Great Britain, as well as in China and Japan. The bulk of the make last season sold in Great Britain bringing as high a price as finest Australian and Ontario, all separator butter. This is a point which the people of the territories should not lose sight of. They should go on and try to improve the quality of their goods until they reach that high standard, with their butter, that Ontario has reached for her cheese in Britain.

The question may be asked: Is co-operative dairying going to be a success in the Northwest, in the face of the enormous wheat crops of ninety-seven along with, we may say, the record "beater" boom in prices in the early part of ninety-eight? To this we have to say that, if the farmers have as successful a wheat crop as last season, and were successful in resurrecting Leiter again, it would certainly have its effect on the dairy industry. And, although this would be the case and there would be a slight decrease in the make of butter next season, yet I do not look for the farmers going out of keeping milch cows, nor do I look for such intelligent farmers as we have in the North-West Territories putting their foot on the neck of an industry which is now a workable success, and an industry which is already bringing into the hands of the farmers thousands of dollars annually. Neither do I look for those farmers, who are interested and who assisted in building up this industry, to drop off from the creameries because of the gale of prosperity the creamery industry has brought to their neighbors who could not take advantage of the creamery. As every clear-thinking man of the west knows, the sending out of the country such large quantities of creamery butter has brought to these farmers who cannot take advantage of the creamery a good price for their dairy butter, where previous to the starting of the creameries these people were obliged to accept from four to five cents per pound for it and in many cases whatever the local dealer would offer them.

I think it is a reasonable argument to use when I say that I do not think it would be wise or prudent on the part of the farmers of the Northwest to withdraw from the creameries on account of having one or two good wheat crops, and go back to the old system. Should they do so they would be throwing five to six hundred thousand pounds of inferior dairy butter on the British Columbia markets, and again place the whole dairy industry in the hands of the local dealers.



The Essential Feature of a Good Road

by A. W. Campbell, C.E., Provincial Road Commissioner

The essential feature of a good road is good drainage. This is true in all climates, but it becomes absolutely operative in Canada, where the rains are heavy, at certain seasons are almost continuous, and attended in the winter, autumn, and spring seasons with severe frost, snow, and rush. Every rule has its exception, it is frequently said, and the maker of roads can safely follow the principle, under all conditions, that the drainage cannot be too perfect; that where drainage is perfect there is a perfect road.

On first sight this statement may seem exaggerated. The impression has so long existed that, if we get a surface of gravel or broken stone piled on a ridge of earth, we have built a road, it is difficult to adjust our minds to other principles. No doubt, working with this object, many fairly good roads have been produced, but they are, in a measure, the result of accident rather than reasonable and clear-headed design. When roads are built with the fundamental purpose of doing so by securing perfect drainage, we will be on the most direct and shortest route toward securing good roads. Much unnecessary labor and money will be saved, much disappointment and dissatisfaction.

Doubtless the dweller in the country of sand will be inclined to think lightly of this advice, for he knows that in wet weather, not too wet, his roads are at their best. He will be inclined, if he has never lived on clay lands, to think that advocacy of road-building with such an object is a false doctrine. Yet even on sand lands the principle of good drainage is the principle of good roads.

An essential part of good drainage is to attend to the shape of the road surface. This must be "crowned" or rounded up toward the centre. The shape of the road will then tend to throw off to the side the water as it falls in rain and the water of melting snow.

In addition to being crowned, the surface must be smooth—that is, free from ruts, wheel-tracks, holes and hollows. If these exist on the surface of the road, instead of being thrown to the side the water is held back, and is absorbed into the roadway, which softens and yields readily to the wearing of wheels. Like the water poured on a grindstone, so the water on a road-surface assists the grinding action of wheels. When the road is wet the holes and ruts rapidly increase in size; wagon after wagon sinks deeper, until finally the road becomes utterly bad, and perhaps impassable, as we so frequently find Canadian roads in late fall and early spring.

In order to provide for a smooth, rounded roadway, that will remain so in wet weather, it is necessary that the surface of the road be hardened with some stony material, and for this we use gravel and broken stone. By resisting wear, ruts and hollows do not readily form, or, when commenced, they do not increase with such great rapidity.

Having now crowned the road and made it smooth, having placed on it a coating of metal to harden it and assist in keeping it so, it is necessary to provide for the water which flows from the travelled roadway to the open drains we provide at the side. These open drains must have an outlet to which the water flows readily and freely. Drains which have not a good fall and free outlet, and which merely catch the water and hold it until it sinks into the earth, are of little service to the road. The reason for this points to another of the main features of good drainage. That is, it is not sufficient that we round up the surface, making it hard and smooth, and carry away the surface water in open drains at the side of the road. It is absolutely necessary that the natural earth sub-soil, which we crown and coat with stone, shall be kept dry; for to keep it dry is to keep it firm and strong to support the load. The gravel or stone which we place on the road does not support the load; this metal, as we have said, resists wear; the natural earth underneath has to support not merely the load but the surface material as well. It is therefore, as previously stated, of prime importance that the water caught by the side drains shall be carried away immediately before it can sink into and soften the road foundation.

More than this, not merely must the surface water be carried away quickly, before it can sink into the soil, but underdrainage must frequently be resorted to. In many sandy and gravelly localities, and even in clay districts, nature provides sufficient natural underdrainage; but frequently we find low, wet sections, where the water-line is high, perhaps, at the surface. In such cases the water-line must be lowered by means of tile drainage. A tile drain under each open drain is, in nearly every case, the best plan to pursue, where under-drainage is needed.

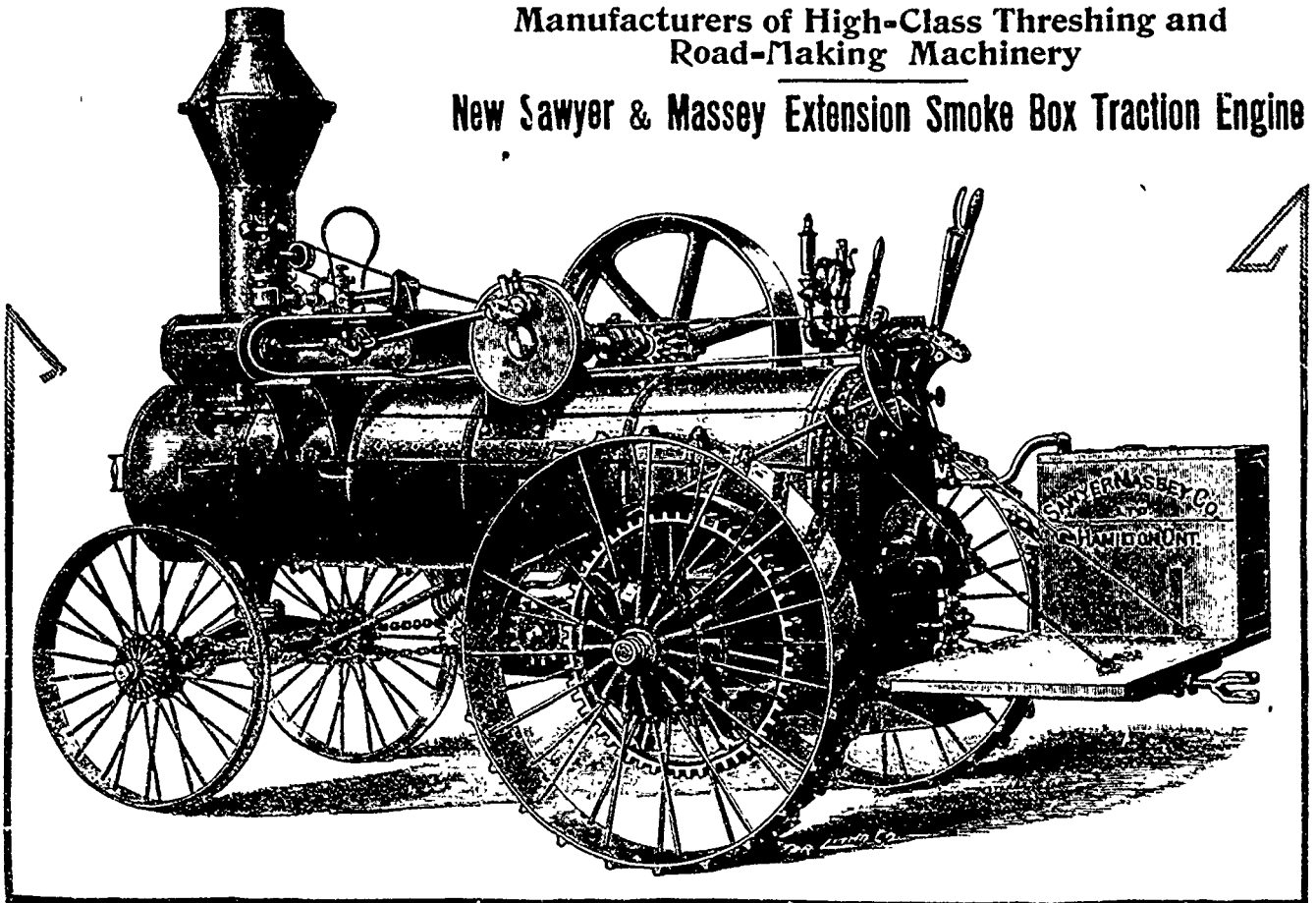
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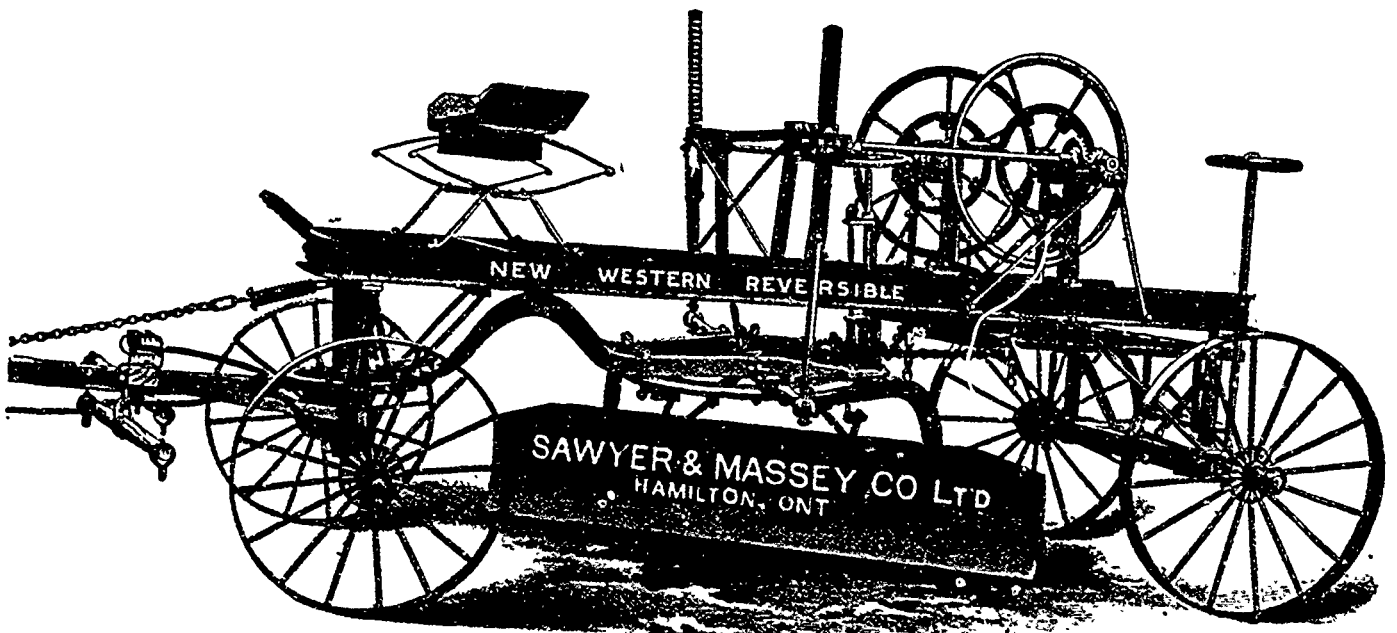
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tile underdrainage on the roads has been too long overlooked in Canada. Agriculturalists who have used tile in the underdrainage of farm lands will be able to better understand its action on the roads. Just as there are lands which are useless for farming purposes without underdrainage, so there are roads which are useless without underdrainage. A dry sub soil can support any load. But with a wet and consequently weak sub soil the road metal is at once forced down and buried in the mud, while the mud rises to the surface. And so, for want of a firm, dry foundation, the crown of the road is destroyed, the stone is mixed with the mud, and the surface becomes soft and rough, easily worn, and surface drainage is thereby interfered with.

Here, then, we have in brief the principles of road-making, which resolve themselves essentially into a matter of good drainage. A smooth, hard, rounded surface throws the water to the side drains, and the side drains carry it quickly away. The metal covering is both a roof and a floor. A roof, since it sheds the water to the side before being absorbed into the sub-soil beneath; a floor, in so far as it resists wear. The under-drainage of the roadway provides a firm, dry foundation, and so in our structure we have provided foundation, floor, and roof—all by means of good drainage. Sand, unless in a low section, seldom requires under-drainage, but with a good road covering of gravel or stone frequently makes the strongest of roads; so also with gravel. Clay is most frequently in need of under-drainage, particularly in low and swampy districts. But in every class of soil, at every season of the year, the water-line should be kept three feet below the surface of the road. If nature does not do this, then artificial means—tile under-drains—should be resorted to.

It is by means of good drainage that we provide against the action of frost on our roads. Frost can only be destructive where there is moisture. The upheaving action of frost on soil is caused by the presence of water. Water expands on freezing, forces the soil upward; when thawing takes place the ground is left spongy and wet, and the roads "break up." Keep the roads dry and they will not break up. Our energies, then, in the making of good roads must be directed to the essential feature, *good drainage*.

Pasteurizing

By T. C. Rogers, Instructor in Butter-Making, Provincial Dairy School, Guelph

Only those butter-makers who have had trouble with bad flavors in the butter, and who have adopted the pasteurizing of the cream while sweet or immediately after separating, have any true conception of the value of pasteurizing as a means to overcome and remove undesirable flavors that may be in the milk when it is received into the creamery. Valuable information and many good suggestions have been given to patrons of creameries and cheese factories as to how milk should be cared for at the farm. Most of the patrons are diligent in their efforts to produce and supply to the factories milk of good quality; still, at some seasons of the year in some creameries, milk of very inferior quality is taken in. This milk causes bad flavors in the butter which are followed by lower prices and a slow sale.

In 1893, during our first dairy school term, we were unable to get a sufficient supply of milk to run the school properly. Being located in the centre of a beef and stock-raising district, our patrons were scattered and had little or no experience in the handling of milk for creamery use. We were obliged to get milk in by train from east and west and to take it regardless of quality in order to run the business; just as many of our creameries have to do where milk is scarce. The result was our butter was of inferior quality, and we were receiving complaints about the flavor from the commission houses in Toronto—not a very pleasant report to be connected with an institution of this kind.

After trying my best skill, and failing to overcome the turnip and other flavors, I applied to the best authorities for a remedy. Among those to whom I applied was our

esteemed Professor, J. W. Robertson, who promptly recommended the pasteurizing of the cream, as he had found in his experiments that it thoroughly removed the turnip flavor from the butter. As he gave no suggestions as to how to perform the work, and having had no experience with the process myself, I feared that heating the cream to 158° F. would destroy the grain of the butter, and do as much harm as it would do good, so the matter was dropped for a time. During the summer of 1885 Prof. Dean, who is doing so much to advance the interests of dairying, decided that we should conduct a few experiments. In 1896 we carried on the experiments with gratifying results. The flavor of the butter in many of the experiments was improved, and in all our trials we found that the butter made from pasteurized cream had a uniform, pleasant, but mild, flavor, and had good keeping qualities, and the grain was not injured in the least, although many would naturally think it would be. In fact, the grain of some samples appeared to be improved. This, no doubt, was due to a better controlling of the temperature of the cream while ripening, and before putting it into the churn. The butter always scored high. One sample was scored 99 points by Mr. Brill, of Guelph. The same sample was sent to Mr. D. Derbyshire, of Brockville, to be scored, and was pronounced by him to be the best tub of butter he had seen during the season up to that date, and he gave it 100 points, which is the mark for perfection. From our own experience, from observation and the opinion of experts, we have had no hesitation since in recommending pasteurizing to assist the butter-maker in the creamery or dairy to overcome bad flavors.

At the beginning of the dairy school term in 1897 we were met with the same trouble in the flavor of the butter as in former years, so we decided at once to pasteurize all the cream by simply setting the cans of cream, as they were taken from the separators by the students, into a tank of hot water kept at a temperature of about 180° F. by means of a jet of steam. The cream was stirred constantly by the students in charge until its temperature was raised to 160°. It was then removed from the water and let stand for about twenty minutes before it was emptied into the cream vat to be cooled and ripened. Our students took a lively interest in the process and its effects on the quality of the butter. Very encouraging reports were received from the commission men about the flavor, and the grain was always pronounced of fine quality.

It was in this year of our school that we had the channel vat made for pasteurizing the cream. It was so successful in heating the cream to the desired temperature with but little attention and labor that we began to see the way clear for introducing the pasteurizing process into the creamery.

It was in our dairy school where pasteurization was first adopted on this continent in any way more than experimental, for the purpose of improving the quality of the butter. Since then pasteurizing has received much attention, and is being adopted in many of our best creameries. It is said that about ninety per cent. of the creameries in Denmark are pasteurizing the cream. Some are advocating the pasteurizing of the whole milk before it is run through the cream separator. The Reid pasteurizer is an excellent machine for this purpose. It does away with the use of a milk pump, is easy to clean, and requires very little attention to run it. Other machines are in the market for pasteurizing the cream only.

Mr. Young, of the Stouffville creamery, and Mr. Reesor, of the Locust Hill creamery, are pasteurizing in the ordinary cream vat, and report good results. Mr. Reesor has invented an agitator that is run by his engine to stir the cream and milk while heating. He uses the exhaust steam for this purpose. Those desiring more information on the important points to be observed when pasteurizing may apply to the Department of Agriculture at Toronto, or to Prof. Dean, of the Ontario Agricultural College, Guelph, for the 1898 Dairy School Bulletin, which contains some valuable hints on this important process in the art of butter-making.

Care and Feeding of Farm Horses

By J. Hugo Reed, Professor of Veterinary Science, O.A.C.,
Guelph

Many of the diseases to which farm horses are subject are caused by errors in feeding. In order that a horse may be kept in good health and condition he must be properly cared for and fed. The kinds of food given are sometimes controlled by circumstances, and the times of feeding and the quantities given are controlled by the attendant. In my opinion, hay and oats, with an occasional feed of bran or a few roots, are the foods best suited for horses. We have not space to enter into a discussion of the relative value of crushed or chopped oats compared with whole, or of cut compared with whole hay. Where the farmer has facilities for doing this work himself with little expense I think it will pay him to do it.

The points I particularly wish to discuss are the hours of feeding and the quantity to be given. Many feeders of horses think that there should be food, at all events hay, and often oats, in front of the horse at all times. I know many stables where this is the case. The standard quantity is one pound of hay for every hundred pounds of the animal's weight, with a reasonable quantity of grain in twenty-four hours; the hay, of course, to be given in two or three feeds. But no set rules can be laid down. Horses differ greatly in their capacity to eat and digest food, and in this respect the individuality of each animal should be carefully studied by the attendant. We find that in a number of horses of the same class and weight some animals will require much more hay than others in order to keep them in like condition while receiving the same quantities of grain. But in no case should a horse be given more hay than he will eat in, at most, one and a half hours. The capacity some horses have for eating appears to be almost without limit—they will eat, eat, eat, almost constantly while in the stable; while others are almost the reverse, they will not eat quite enough to satisfy our idea as to what a horse should eat. But in the specified time (one and a half hours) a heavy feeder will have eaten all that he can digest properly, and a light feeder will have taken all he will eat. The man who feeds the horses can very soon tell about the quantity to give each animal, and if any be left when the time is up it should be removed, or the horse taken out to work, which amounts to the same thing.

The horse should not have food before him between meals; if so, he will salivate and breathe upon it, and it becomes more or less foul, and he will also eat more or less, and will not be hungry at next feeding time. In order that a horse, or, in fact, any animal, may thoroughly enjoy a meal and digest its food properly, a certain degree of hunger must be experienced. Some horses will eat too much hay if allowed to, others will not. A reasonable quantity should be given at each meal; for horses used for quick work I prefer feeding hay only twice daily; horses used at slow work are probably better fed three times. The quantity of grain given must depend upon the amount of work the animal performs. The opinion often expressed, that a horse should be fed the same whether idle or working, cannot be too highly condemned. For a horse of 1,200 to 1,400 pounds, doing ordinary farm work, I consider a gallon of whole oats, or its equivalent of chop, a reasonable allowance. If he is performing very hard work, the quantity may be increased. When extra heavy feeding is required I think it better to feed four times a day than to give the extra amount in the three ordinary meals. Horses do better when fed oftener and less at a time.

In watering, as in feeding, horses a man must study the individuality of his animal. With few exceptions, in my opinion, a horse should have water in sufficient quantities to satisfy his thirst whenever he is thirsty. Theoretically speaking, a horse should first be given a drink, then hay, and lastly oats. The capacity of his stomach is limited, and if fed oats, then hay, and then watered, some of the oats may be forced out of the stomach (especially if he is a heavy feeder), before they have been sufficiently acted upon

by its digestive juices, and consequently will pass off in the feces only partially digested. A horse should always be given a drink before a meal. It requires a little training to get him to drink before breakfast, especially in cold weather, but in such weather he is not likely to drink much even after his meals. In all cases, except when he has been a long time without water, and is very warm, he should be allowed all he will drink before the mid-day and evening meals, and also a drink after he has finished his meal. Where it is at all possible he should have water between his meals, especially in warm weather. Working horses in the field in warm weather, from 6.30 or 7 o'clock in the morning until noon without water, may truly be called cruelty to animals. At the same time this is the usual custom on the farm. Let the driver try going without a drink himself for that length of time while at hard work on a hot day, and he will have a good idea of the cravings of his team for water. He will probably answer "the horses are accustomed to it," but the fact that an animal is used to suffering does not justify his master in causing a continuance of the agony, but rather condemns him for allowing that state of affairs to exist. There are, of course, times when the horse should be allowed only a limited amount of water, for instance, when he is excessively warm and has been for a considerable time without drink. In such cases large quantities of cold water are apt to cause digestive trouble. The digestive apparatus of some animals is such that water given after meals will cause indigestion; but animals of this description are fortunately rare and must be used and watered accordingly. Regularity in feeding and watering horses is very essential.

A common mistake made by farmers, and one that causes many cases of acute indigestion (a disease that frequently proves fatal), is this, a horse or a pair that has been getting little or no grain and have been doing slow work on the farm, is required to go to market or some other place that necessitates a long drive, is given a large feed of grain in order to fortify for the journey, and then hitched and driven as soon as it has eaten its meal. The animal, not being used to either the grain or the road work, is very likely to suffer from indigestion. The better way is to let the animal do his work on his usual food, and then, after the journey has been gone and the horse is in his own stable and about to have some hours' rest, give him some grain. When possible, horses should not be put to hard or fast work soon after feeding, nor fed grain too soon after performing excessively hard or fast work.

As to grooming, a horse should be well groomed at least twice daily, not merely the dirt and sweat brushed off the surface, but the whole surface of the hair thoroughly agitated with a brush or dull curry-comb right into the skin. The collar and all harness should fit well and be kept thoroughly clean, the stable well ventilated and kept clean, and of course the food and water should be of the best quality. The feet well cared for; if shod, the horse's shoes should be removed at least every five weeks, and if not shod the feet should be kept in as natural a shape as possible by the use of the rasp and knife. If the weather be dry his feet should be soaked in water two or three hours daily, else they will become very dry and hard and liable to disease. Horses that are turned out to pasture at night will not require the soaking. For horses kept in the stable regular exercise is necessary, and when an idle time comes unless they get exercise the grain allowance should be materially reduced or else disease is very likely to follow.

Meal Rations and Making Food Palatable for Fattening Cattle

G. E. Day, B.S.A., Agriculturist, Ont. Agr. College

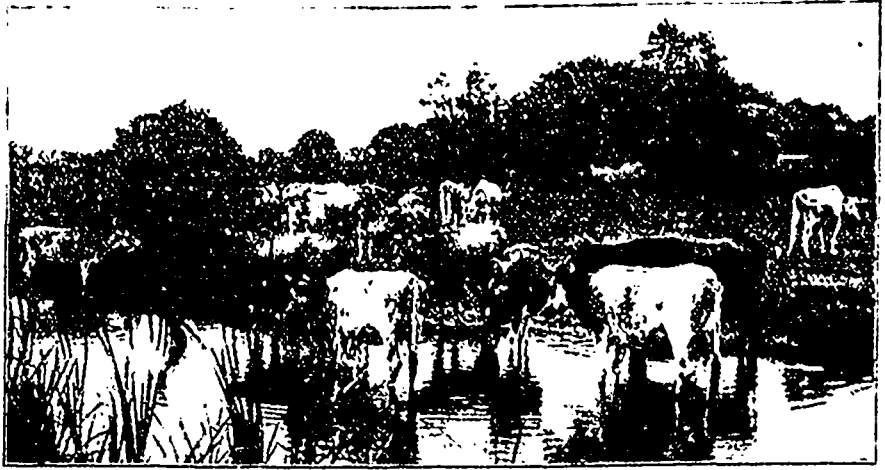
In the palmy days of cattle feeding, when there was a difference of two or three cents a pound between the buying and selling prices, comparatively little attention was given to the question of economical feeding, and the great object was rapid gain in weight. In these days of narrow margins, however, the question of economical gains comes

to the front, and though a rapid gain is a good thing in itself, and greatly to be desired, there is a danger of feeding away all profit to obtain it. Since the meal ration is the most expensive item in fattening cattle, some thoughtful feeders have been led to test the results of feeding less meal than is commonly regarded necessary. The results have been encouraging, but definite information is difficult to obtain from ordinary practice, and therefore it was deemed advisable to carry out some carefully conducted experiments in order, if possible, to throw more light on this subject.

Up to the present time two experiments with different quantities of meal have been made at the Ontario Agricultural College, in each of which nine steers were used, making three groups with three steers in each group. It was planned to start Group I. on a moderate meal ration and increase rapidly until it reached, as nearly as possible, one pound of meal per day per hundred pounds' live weight. Group II. was to receive two thirds of a pound per day per hundred pounds' live weight. Group III. was to be started on about one-third of a pound per day per hundred pounds' live weight, and increased as deemed advisable.

In addition to the meal ration, which consisted of equal parts by weight of peas, barley, and oats, the steers received roots, hay, and straw, all fodders being carefully weighed. In both experiments, however, it was found impracticable to get Group I. to eat on the average one pound of meal per day per hundred pounds of live weight, and in the second experiment it was thought advisable to increase the meal ration of Group III. more rapidly than was done in the first. The following table shows the approximate daily meal rations for each group, and the amount of meal actually consumed per day per hundred pounds' live weight throughout the second experiment :

	Group I.	Group II.	Group III.
December.....	5 lb. per day.	6 lb. per day	4 lb. per day
January.....	10 " "	8 " "	4 1/2 " "
February.....	11 " "	8 " "	5 " "
March.....	12 " "	9 " "	8 " "
April.....	13 " "	9 " "	9 " "
May.....	13 " "	10 " "	10 " "
Average amount of meal actually consumed per day per 100 lbs. live weight, during experiment.....	0.81 lb.	0.65 lb.	0.53 lb.



CONTENTMENT.

Thus it will be seen that Group I. averaged slightly over four fifths, Group II. slightly under two-thirds, and Group III. a little over one-half of a pound of meal per day per hundred pounds' live weight. In the first experiment the meal rations were practically the same, with the exception of Group III. already noted.

Difficulties always arise when an attempt is made to value fodders. For the sake of uniformity it has been thought advisable to apply fair average values to the fodders used each year, and, though they may hardly correspond with the fluctuating market prices, they do not make the comparison any less important. The values used are as follows: Meal, \$13; hay, \$6; straw, \$3; and roots, \$2 per ton. The following table shows the average daily gain and the cost of one pound of gain for the two experiments :

	Average daily gain.	Average cost of 1 lb. gain.
Group I. (heavy ration).....	1.74 lb.	7.03c.
Group II. (medium ration).....	1.68 lb.	6.42c.
Group III. (light ration).....	1.60 lb.	6.18c.

In these two experiments, therefore, the increased gain in weight due to the heavy meal ration did not pay for the extra meal consumed, the light meal ration showing an advantage in economy over the heavy ration of 85c. per hundred pounds' gain live weight, and over the medium ration of 24c. per hundred pounds' gain live weight. Thus, these experiments go to strengthen the position of the advocates of moderately light meal rations for fattening steers. The question, however, must not be regarded as settled, and further experiments are necessary to verify results obtained. It must be remembered that the experiments in question covered a period of six months. For shorter fattening periods a different arrangement of rations would probably be necessary.

It will be noticed that the gains of all groups were somewhat low, and this brings up another very important point. So much importance is usually attached to the meal ration that there is danger of overlooking the importance of the rough fodders used. If cattle are to make satisfactory gains, it is extremely important that the rough fodders should be made palatable. In the experiment of last winter it so happened that a considerable quantity of hay of poor quality had to be used. In order to have as much uniformity as possible in the rations of the different groups (exclusive of the meal) it was thought best to give all the steers the same quantity of roots and the same quantity of hay, making the straw the only variable part of the rough fodders. By this means, any differences in gains could with more safety be attributed to the meal. This plan neces-



AYRSHIRES IN SCOTLAND.

sitated feeding all the rough fodders separately, with the result that the steers ate the hay and straw very sparingly. The gains were unsatisfactory, as might be expected, but rather than change the plan of the experiment the method was continued for five months. The gains continued to grow more unsatisfactory in all the groups, so that a radical change was made in the method of feeding during the last month. The hay was cut and mixed with the pulped roots in the proportion of fifteen pounds of hay to twenty five pounds of roots, enough being mixed at one time for the next day's feeding. By the time the mixture was fed, the juice of the roots had materially softened the hay. The improvement in the appetite of the steers was remarkable, and the consumption of hay was increased in some cases more than twenty-five per cent. The gains during this last month were extremely satisfactory, and far ahead of those of any preceding month. The change in method rather detracted, if anything, from the value of the comparison of the meal rations, but it afforded a striking example of the importance of making food palatable. When the hay is of first-class quality, probably very little difference would be found between the two methods. Cutting and mixing fodders does not necessarily make them more digestible, but in many cases it makes them more palatable and thus gives very much better results. The more inferior the quality of a fodder, the greater the importance of striving to make it palatable.



Keep Our Export Cattle Up to the Mark

By G. W. Green

It has been the duty of FARMING, ever since its inception years ago as a four-page paper under the title of *The Canadian Live Stock Journal*, to urge on our breeders and farmers the necessity of breeding only from the best. As FARMING grew up from boyhood into manhood the attention of cattlemen was ever and again called to the same pressing need of improvement in their herds, as the competition in export stock to Great Britain with other countries grew yearly more severe, and never was the note of warning more necessary than it is to-day.

Let us briefly review the situation as it is at the present time. Among the countries outside of Ireland which ship to the Old Country fat cattle or dressed beef, the largest contributors are the United States, the Argentine Republic, Australia and Canada. Of these the only ones which concern us greatly are the United States and Argentina. Australia has made repeated efforts to increase her fat cattle trade with Great Britain, but her geographical situation, the heavy freight charges with the long sea-voyage, not to speak of the high proportion of losses on board ship, together with the terrible droughts which from time to time play such havoc with her herds, preclude Australia from becoming a very serious competitor with us in the markets of the Old World, except, perhaps, in dressed beef and mutton. With the United States, however, and the Argentine Republic the prospects are not so favorable for Canada. It is true that, in the case of the former, the rapid increase of population will not only cause a greatly enlarged home demand for beef, but will also result in the taking up by settlers of a good deal of the large cattle ranges in the West over which cattle now roam; but, yet, a considerable proportion of the beef total which will be cut off through the abolition of ranching will be made up by the

increased number of cattle raised all over the country, which will be possible under improved methods of farming. The United States, therefore, will, probably for some years to come, continue to be one of our principal competitors in the export trade.

As regards Argentina the case is different. A few years ago that country was in an apparently hopeless state, with gold at a very high premium, and exported no cattle. It was, indeed, this big premium on gold which induced the inhabitants of that country to go into the cattle exporting business, and simultaneously with this began the importation of thoroughbred stock for the improvement of the native cattle. This, of course, was gradual at first, but now large numbers of the best purebred stock obtainable are imported every year from Great Britain, while the exports of beef cattle thither are not only increasing by leaps and bounds, but, what concerns us most, the improvement in the quality of the stock so sent, thanks to the use of the bulls imported from Great Britain, is becoming very noticeable.

There, then, is a progressive country with whom we shall have to enter into severer competition in the markets of Great Britain every year. The breeders there know that it is only a waste of time to handle inferior stock, and, therefore, they do not hesitate to spend good money in Great Britain in order to acquire the best stock for breeding purposes that they can get their hands on. They are bound to succeed if they only continue in this line of grading up.

It has been feared by some that other countries in South America would follow the example of Argentina, and go into the cattle-raising business with an eye to export, but, so far as is known at present, none of the other South American Republics, with the exception, perhaps, of a part of Southern Chili, have suitable lands and climate for stock raising on an extensive scale. This is some consolation to us.

Inasmuch, then, as we are likely to meet considerably more opposition with our export cattle in the near future in the markets of Great Britain, what are our cattle owners doing to improve their stock so as to meet this threatened opposition? In a large number of cases, nothing at all. We have, it is undeniable, some of the best cattle and the most intelligent breeders to be found in the world, whose efforts are constantly directed to producing the best, but their work is not well seconded by many of the rank and file, and is, too often, quite disregarded by the ordinary farmer, whose chief aim seems to be to obtain the services of the cheapest sire he can get, instead of paying a little more and getting a calf that will be worth raising. An evidence of this is seen in the large excess of second and



HIGH CLASS BARN AND STABLES

third-rate stockers in the markets as compared with prime ones.

It is true that the present year has seen an improvement in the demand for thoroughbred sires of beef breeds, but this very demand has brought out the fact that not enough of the best kind of sires could be found in the country, and, to fill orders, cattle that were indeed thoroughbred, but yet not up to the mark required, had to be taken. A good many, too, of the best ones were bought for shipment across the line, and, consequently, their services are lost to Canada.

Now, there is no reason why we should not raise for export, either alive or in the shape of dressed beef, steers and heifers whose carcasses would fetch the highest prices in the British market. We have all the conveniences and plenty of good feed, and a judicious expenditure of money in Great Britain would ensure us a supply of first-rate sires to supplement the excellent ones already in the country. The chief work will be in the education of the farmer to use these sires when once they are secured. That is an easier task when choice beef cattle sell for good prices, as they are now doing, than when the demand for them is slacker.

Strong efforts must be made along this line. The task is not an impossible one. Look at the great strides in improvement made in our export dairy trade of late years, thanks to the educational efforts put forth by the dairy associations. These have realized that the British consumer will have the best only or none at all, and have set themselves resolutely to work to improve in every detail the dairy produce exported to the Old Country, even going to the lengths of fining patrons who send diluted or poor milk to the factories.

Then, again, the fruit growers are bestirring themselves to overcome the difficulties in the way of landing their fruits in first class condition across the Atlantic. Their efforts and those of the dairy associations are ably backed up by the Dominion and Provincial Governments, which assist them in their good work by money grants and by furnishing of cold-storage facilities.

It would seem that the work of educating our farmers in the line of breeding better cattle would lie within the province of the Dominion Cattle Breeders' Association, which organization has on more than one occasion, through its energetic secretary, Mr. F. W. Hodson, secured valuable shipping concessions from the railway companies as regards purebred stock. The object to be gained would be one greatly to the benefit of its members. Once the country was aroused to the necessity of improvement in the cattle raised for feeding purposes, a further step could be taken in the appointment of a special agent or agents in the ports of Great Britain where Canadian cattle are landed for slaughter, who could handle the cattle shipped by members of the association, and so secure for them the best returns possible. At any rate the exigencies of the situation require immediate attention.

The First Principles of Cattle Feeding

By T. C. Wallace (Wallace & Fraser), Toronto, Ont.

It is pretty generally admitted that in feeding cows for the dairy a balanced ration is essential to procure the highest production. Many are carefully attempting to balance the ration, and even those who make no special effort to do so really admit it to be the correct practice. Many do it without any particular knowledge on the subject other than that gained by experience in using certain food materials which they find give good results. Very many fail to get the best results when they think they are feeding a balanced ration. They have carefully consulted the average food values of various materials, and shaped the ration accordingly, but the results seem disappointing, and often the poor cow is blamed, though not always in fault. The real trouble comes by the farmer having overlooked the requirements of the land which produces the feed. The hay, the ensilage, the roots, and even the grains are all too frequently far below their proper value.

The land upon which they have been grown may have received copious supplies of the manure of the animals they are feeding, and perhaps all the straw litter they produce, but the growth and maintenance of these animals, the dairy products, and possibly a portion of grain sold, have surely absorbed and carried away the essential element of strength which makes bone for animals and people, gives ripening, and adds force and life to the dairy products. As a result, the rations they feed are but seldom the balanced ingredients they think they are. The only way to overcome this is to feed the land itself with a material which will insure properly balanced fodders and grains to make a properly balanced ration.

There are two ways of feeding cattle. One is to give large feeds about twice a day, and, by not allowing more exercise than is necessary to health, let the animal systems gradually dissolve and assimilate as much as possible of them. The other is to reduce the feeds to as small bulk as possible, or rather practical, and give them more frequently, with the idea that the digestive acids of the stomach will be more perfectly diffused through the mass and allow of more thorough dissolving. The latter method may be the more perfect, but it must also be the more laborious. It is by it, however, that the great butter tests have been made. It is well to remember that all the foods taken into the animal's stomach, not already dissolved, must be dissolved by the gastric juices before they can be absorbed and distributed through the system. If the animal takes into its stomach more food than the acids can penetrate and dissolve in a reasonable time, the balance is expelled undigested. If it remains too long it may form gases, which make trouble and possibly cause death. If the food given is not sufficiently succulent, or if it is too low in content of phosphoric acid, it will be made more difficult of digestion, and, consequently, though it may contain a certain portion of nutriment, the effect sought will not be gained. For this reason the highly phosphatic bran of the wheat is a most valuable aid to digestion, as well as being a rich bone and strength-giving food.

As it would make too lengthy an article to take in the whole range of this most interesting subject, I shall deal principally with the production of the feed stuffs. We must bear in mind that after all the plants feed on much the same general principle as the animals, except that while the animals carry around a mass of food, expelling what they fail to assimilate, the plants, fixed in the soil, push their roots through the earth, which is their food, acting upon, dissolving and absorbing what they come into contact with. If the soil within their reach does not contain sufficient portions of the food they require, *in such a condition that they can dissolve it with the acids their roots exude*, they cannot obtain a sufficiency of food to make them, in their turn, food upon which animals can give proper production, or even grow perfect forms. If the soil about them is itself unhealthy, by being out of balance, the acids being out of proportion to the bases, or *vice versa*, it cannot produce proper plants for food, though they may even grow to great size. As two-thirds of the ills of the human race are the result of improper feeding, so the diseases of plants may be traced to similar agencies. Unnatural production is possible, but so long as we war against the forces of nature we will suffer for our temerity, or shortsightedness. It is almost wonderful how plants and animals are enabled to throw off wasting diseases, or to withstand cold and the ravages of insects and bacteria, if they have access to strength-giving food. How often we see cows resorting to bone and rotten wood in their attempts to supply themselves with the phosphate which their food fails to give them. We often find farmers condemning clover hay as fodder simply because the clover needed a much greater supply of phosphoric acid than the manure applied to it contained, and was unable to make proper use of the nitrogen of either the manure furnished it or of the atmospheric air. How often iron, magnesia and phosphates are prescribed for the run down, out of balance human system, and how few take the cue and apply a similar tonic to the sick soil.

The first condition of success in the improvement of cattle is the procuring of rich supplies of really good hay, and there is a wide difference between feeding hay one hundred pounds of which contains only three or four pounds of digestible food and flesh-forming albumen, and hay which contains ten pounds and more per hundred pounds of these constituents, and correspondingly more fat and bone-making material. The milk, cheese, and butter from the superior fodder excels in taste, and the young animals develop better form, better bone and better dairy characteristics.

It is idle to talk of improving dairy stock with fodders containing only half the nutrition necessary to proper production. It is going backward to develop the feeding capacity of the animals for bulk, as some suggest, because your grasses and fodders are low in strength. That cows can be improved to the point of producing three hundred pounds, and more, of butter per year has been abundantly proved, but it can only be accomplished by supplying them with fodders rich in flesh, fat and bone-making elements. Only plants well supplied with phosphatic food can secrete the maximum store of flesh and fat-forming and bone-making constituents.

It is time farmers tore away the veil of mystery, which seems to puzzle them, and, sweeping the cobwebs from their minds, let common sense reasoning have full sway. Look this matter over, and you will find there is a sense of argument in it you cannot withstand. Think of bone as mostly phosphate of lime, and contemplate for a moment the tremendous supply of it soils need to keep pace with the production and maintenance of animal life in the world. Then look down at the ground you farm, and remember that most soils are deficient in it in comparison, and what is there is mostly in such an unyielding form that only the wild plants of nature can successfully feed upon it. Complete the circle of your thought and your work.

The most scientific farming is the rational application of natural laws, a knowledge of which we gain by observation and interpret by logical reasoning. Bring an open mind to bear upon the problems of your vocation, and you will find in yourself a much more practical mentor than any professor of subjects can possibly be for you. And just one word of caution—do not think that the error of years can be corrected in a season. It will take seasons to effect the cure, and this you must count on; consequently, begin now, for, while it is never too late to mend, it is always getting later.

The Export Bacon Trade in Danger

The Remedy and the Necessity of Applying it at Once

By Wm. Davies, President of the Wm. Davies Packing Co. (Ltd.), Toronto

Compared with the position that Canadian bacon held on the London market years ago, its present status is gratifying, though it is still in a very inferior position as regards the price obtainable, compared with that realized by the best Danish, Irish and Wiltshire, and, unless much greater care is taken in feeding hogs, it will retrograde in this regard. We have never, in our experience, met with such a large number of soft, oily, ill fed hogs as during the last three months. It has caused the export packers very serious losses, and has soured the trade in England, and commission merchants write that it is almost impossible to give the stuff away. But the mischief does not end there. It brings Canadian bacon into disfavor, and, although it is not shipped as the best, or even as a second grade, it is known as Canadian, and thus the good name of Canada is injured for the time being and seriously jeopardized for the future.

Leading farmers admit that for years past nothing has paid them so well on the farm as raising and feeding hogs. We are at this time paying two cents per lb. more for

Canadian hogs than similar animals bring in Buffalo. We have been enabled to do this because of the superior quality of Canadian, but it needs no argument to show that this cannot continue unless farmers do their share, that is, feed in the old way with a mixture of ground grain and dairy slops, because the best American is infinitely superior to the inferior Canadian.

The exports of Canadian bacon and hams have assumed very large proportions, and it would be an awful pity if such a profitable trade should be injured, not to say ruined, by wilful neglect or carelessness. It should be borne in mind that if this occurs it will be much harder to restore the trade to its present position than it was to build it up originally. Every one of extensive observation and knowledge of human nature knows that a good business which has run down by neglect and dishonest methods is much more difficult to build up than a new business.

There is another practice which causes the pork packers very serious loss and does much injury to the good name of Canadian bacon, and that is the rough handling of live hogs and beating them with whips and sticks. Every stroke leaves a bruise which injures the appearance very much and causes a good deal of waste, and very frequently, many sides of bacon which in all other respects are perfect have to be thrown out by the inspector into a second grade. Often the injury is more serious than this, and bruises and wounds are often found which involve a loss of nearly the whole ham or shoulder. This is inexcusable, criminal carelessness and often cruelty, and the remedy is easy. In England, Ireland, and Denmark the hogs are bought at a certain price, weighed and dressed. The farmers and dealers go to the factory to see the weighing after the hogs are killed. The packers can then detect badly fed, bruised or injured carcasses and deductions are made accordingly. If the practices we have named above are not stopped, the packers of Canada will have to adopt similar protective measures. Inspired wisdom has said, "A word to the wise is sufficient." As we have written so many words on this subject on former occasions, the only conclusion is that people are not wise. We earnestly hope that self-interest as well as humanity may lead to a great improvement in the above regards.

The Hog Industry

By C. C. L. Wilson, Manager Ingersoll Packing Co.

Every farmer worthy of the name has given some thought to the subject of raising and marketing hogs. Many take a very short-sighted view of the subject, and seek to make the greatest possible gain for the time being, without any special reference to the future of the trade, and to this end they go in for the hog that will make the most weight in the least time; and they look upon the oft-repeated instructions sent out by the packers as being without much meaning. This is all wrong. The interests of the farmer and the packer are identical, and, while some of the packer's wants may appear whimsical, it must be borne in mind that the packer only represents the consumer, and, as the said consumer pays the bill, he certainly has very strong claims for consideration, and is not as unreasonable as he is frequently supposed to be; he usually pays a good price for his bacon, and is entitled to an equivalent.

The consumer's chief demands are three in number, viz., good, firm meat, reasonably lean, and mild cured. There are other matters of detail, but the above are the cardinal points, and nearly every Canadian farmer makes similar demands when buying bacon for his own use. Now, why not *all* make a good honest effort to produce just what the trade requires? This can surely be done if the information now being distributed by the Government through the Farmers' Institutes, and by breeders and packers, is acted upon.

The trouble, past and present, is not so much the lack of knowledge as the want of good common sense. There is too much figuring to hit the right market, and so a good many hogs are sold *before* they are ready; and, again, a

good many are held until they are practically spoiled, being too fat for any use. Try the following plan and you will find it a winner: Get up the best hogs you know how, and sell them when you honestly think they are ready, and in the long run you will have more money than the smart fellows who always know just when to sell.

Some will ask, is the game worth the candle? It would seem to be. Hogs selling in Ontario to day (August 11th) at \$6.25 would only bring \$3.75 to \$3.85 in Chicago. Such figures require no comment. Remember, bacon hogs are wanted fifty-two weeks in the year; there is usually an over supply in the fall months. The hog deserves all the thought and care that can be bestowed upon him, and is the farmer's greatest money maker, and will so continue if only treated properly.

The Export Bacon Trade

By F. Chester Fearman, Hamilton, Ont.

There is no doubt that the bacon trade of Canada has grown very much during the past few years and now ranks as one of our most important industries. We can as a country congratulate ourselves upon this because it is a matter that particularly benefits every Canadian.

So much has been written upon this subject during the past couple of years, that it is just possible rather too much prominence has been given to it, and thereby some harm may have been done, but time will right that. In the first place, it may have created the impression among the farming community that any and all bacon that has been bred,



THREE YOUNG SOWS OF THE LARGE WHITE YORKSHIRE BREED

which won the first prize at the Royal Show, held at Birmingham, England, June, 1888. Two of these sows were purchased by Mr. J. E. Brethour, of Burford, Ont., and were among his recent importations.

raised and fed in Canada will class as the article that is giving Canadian bacon such a good name, when such is not the case. The article that has raised Canadian bacon to such a high standard is long in the side; is wide in the side; has an even thickness or width of fat along the back of one inch to one and three-quarter inches, and a good thick belly, not thin and poor, but *lean* and *firm*; above all things let it be *lean* and *firm*. Anything else will not do, but does harm.

Now, any kind of hog, fed in any kind of way, under any conditions, simply will not do whether it is raised in Canadian territory or not. Without speaking for or against any breeders personally, I have got to say that the breeds that are turning out the largest number of satisfactory hogs in our establishment are, first, the improved Yorkshires; second, Tamworths; third, a cross between these two; fourth, the Yorkshires and the long Berkshires crossed; fifth, Yorkshires and Chester Whites crossed; sixth, Tamworths and long Berkshires crossed; seventh, Tamworths and Chester Whites crossed. There are other breeds of hogs that it is a waste of time and money to feed. I have no hesitation in saying, and I say it positively, that the Duroc-Jerseys, the Essexes and the Suffolks never did and never will under any circumstances make the kind of hog that sets the price in Canada to-day.

Now if you have the right kind of hog feed it right on whey or skim-milk with shorts, middlings, barley, oats, or peas, boiled potatoes or pulped turnips, or any or all of the above grains, etc. Do not feed whey, skim-milk, or clover alone. Do not feed corn. Do not give more than the hogs will eat up clean at each feeding. Do not force the feeding. Do not fatten. It is growth you want, not fat. Get over as quickly as you can the old idea of forcing the feeding and piling on the fat. It is a sinewy, fleshy body that is wanted.

Do not pen up your hogs. Give them warm quarters in winter time, with a swinging door, and make them go out of doors as much as possible between feedings. In summer do not keep them in pens at all, but let them run up and down the lanes or over a ten-acre field. Feed twice a day, and let the hogs root for their living the rest of the day. Get over the idea that you cannot keep a hog until it weighs 180 to 190 pounds without its getting too fat. In short, start with the right kind of hog. Feed with a mixture of your own coarse grains, etc. Avoid corn. Do not stuff or force the hog, but substitute the word "growth" for "fattening." Do not pen up, but give plenty of exercise. Do not attempt to sell a hog until it weighs at least 170 pounds. Get over the idea that any kind of hog, of any kind of weight, or of any kind of condition, will do.

I cannot impress upon the farmer any too strongly the points as given above, and the sooner he realizes that this advice and information is given from sincere and patriotic motives, and also realizes that to maintain our position in the bacon market he must do his part, and do it well, the better.

Selection, Feeding and Caring for the Brood Sow

By R. R. Elliott, Herdsman, Central Experimental Farm, Ottawa

When selecting a sow for breeding purposes, the following are some of the points which would indicate special fitness for the purpose:

First, we might consider quality or breeding (indicating the infusion of more or less pure blood) of prime importance. This will be shown in the size, shape, quality of the bone and hair, and general appearance of the animal. The more "breeding" she has, the more prepotent she will be in transmitting her feeding qualities to her offspring. A vigorous, well-developed animal with a long deep body, having ten to twelve teats, well-developed muscles, bone of good quality, and a quiet and gentle disposition, should be selected. With such a sow a mature pure-bred sire should always be used, and not before she is eight to nine months old.

The care and attention the sow receives will in a large measure influence the future well-doing of the young pigs. It is not enough to simply give some attention after the pigs are farrowed; but the animal requires care and judicious handling from the time she is bred till the young pigs are weaned. I prefer to have the sow in good condition, even what some might term "fat," provided it is put on with the right kind of food, *i.e.*, green grass, roots (raw or boiled), skim milk or buttermilk, bran, shorts, with a little chopped oats, barley, wheat screenings, etc. This variety of food will keep her in good thrifty condition, and supply the necessary bone and muscle-forming material for the development of strong vigorous offspring. On the other hand, to have a sow fat from feeding much grain, such as corn, peas, or barley, would only be to court failure.

When possible provision should be made during the summer to give breeding sows the run of a small grass plot or field where they will be free from annoyance from other stock. In winter and early spring the barnyard might be used for this purpose, when the cattle and horses are not at liberty.

As farrowing time approaches the brood sow should be handled in such a way that she will become accustomed

to the presence of an attendant in the pen. Keep a record of the date of service and as the time approaches she should be looked after occasionally day and night, in order to be on hand when she farrows if possible. This extra attention will be amply repaid by saving all or nearly all the litter. The great risk for the first day or two is the danger of the sow crushing some of the pigs when lying down. This can be prevented to a large extent by placing a board about seven or eight inches wide horizontally around the pen about eight inches from the floor. This is a great safeguard and prevents the sow lying against the wall. It also forms a passage way underneath as a way of escape for the young pigs.

The sow while nursing requires liberal feeding, as the rearing of a large litter is a severe drain upon the system. The foods mentioned above should be continued in increased quantity and always fed sweet, and warmed during cold weather. Offal or sour fermenting food should never be given to nursing sows. With a little care and attention the young ones can be taught to drink a little at from two to three weeks old and thus lessen the demand on the dam. The best method is to put a shallow, flat-bottomed trough or dish in a small enclosure in one corner of the pen, allowing the young pigs access to it at will, but where the sow cannot reach it. For the first day or two a little fresh milk may be used, afterwards gradually changing to sweet skim milk warmed to blood heat. The trough will require washing out every day to keep it sweet and clean.

The above enclosure can also be utilized for another purpose, that is, a safe retreat for the young pigs to sleep in, and thus greatly minimize the chances of their being crushed while sound asleep by the sow rolling on them. To make it comfortable cover the enclosure with boards and long straw, making a bed of cut straw underneath. Drive the little fellows under this once or twice, and they will soon learn, and always go there to sleep. The straw and boards retain the heat and prevent the cold air from settling down.

When the pigs are five or six weeks old, and have learned to drink, a little shorts, ground wheat and boiled potatoes may be added, and the pigs taught to eat well before weaning at seven to eight weeks old, the latter period being soon enough. The boars should be castrated before they are three weeks old, as the operation is less painful then, and they recover more quickly while nursing.

Good sows are often ruined at weaning time by the pigs being suddenly taken away while there is still a large flow of milk. This will tend to produce inflammation or garget of the udder, and a number of blind teats may be the result. The plan of removing all the pigs with the exception of one or two is also objectionable. It is a sudden check to the ones removed, and the remainder will not, as a rule, take all the milk. Besides, the risk is run of spoiling the sow. The process should be a gradual one, taking not less than one week, and more if necessary. The pigs may be separated from the dam for an hour or two the first day, and the time gradually lengthened till the sow is dry. Feed the sow a spare diet, which will tend to arrest the secretion of milk, giving such foods as a little dry grain, raw potatoes, etc. Pigs that are penned up require a supply of fresh water, salt and hardwood ashes to keep the digestive organs in good shape. Another excellent plan is to gather a load or two of sods in the autumn and keep them to give to the sows that farrow in the early spring. It is amusing to see with what avidity the little fellows will go to work and tear them to pieces. The exercise is good for them, and the roots and vegetable matter in the soil have a beneficial effect upon their digestive organs



TYPICAL FARM BUILDINGS—OLD STYLE

Common Sense in Poultry Keeping System, Care and Management Required—Winter Layers and Early Pullets Wanted—Some Requirements of the Markets

A. G. Gilbert, Manager Poultry Department, Central Experimental Farm, Ottawa

Many people, unfortunately, are under the impression that any sort of care, management and feeding will do for poultry. Not so. There is no department of farm work which can be successfully conducted in a hap-hazard fashion, and poultry keeping is no exception to the rule. Systematically managed, poultry has been found to pay, and pay well. Indeed, there are not a few farmers who have stated that no branch of farm work has paid them a larger percentage of profit than their poultry. Ask them how they have treated their fowls, and you will be told that energy and intelligence had to be brought into play.

The statement has often been made that if every one went into poultry-keeping it would soon be overdone, and over-production would follow. But the feeding of poultry so as to obtain eggs in winter is one of the "exact sciences." Particularly is this so in the colder regions of our vast Dominion. Expert handling is necessary, so as to have the eggs when they are worth most, and for that reason not every one who tries will succeed. There will always be plenty of room at the top. We see the same in the making of gilt-edged butter. There is a great demand for the article of first quality, if not at home in all cases, at any rate in the English market. And there is a demand for strictly new-laid eggs at all seasons of the year. As I write this in August, I have people who come to me and say: "We would like to get some new-laid eggs from you. They are hard to get in the city." And such is really the case. Not only in our city, but in the larger cities of the Dominion. But we have to reply that eggs are very scarce with us at this time because we are making every effort to have our hens moult early so as to begin winter laying in October or November, when prices are higher. How then are new-laid eggs to be had during the moulting season? There can be only one way, and that is, to have early pullets, so that they will be laying when the old hens moult. I am at once met with the exclamation: "Oh, but that will necessitate the use of incubators." Just so. The market gardener has to use hot-beds in order to have his green stuff early on the market or he will have little or no margin of profit. When poultry-keeping is taken up in the same practical way as dairying and market gardening, all that is now difficult and dark will be made easy and plain. The cow did not come to the front as a revenue producer in a

day. Prejudice and many obstacles had to be overcome. Energy, vim, snap, push, and brains had to be called into operation, and who will dare to say to-day that "there is no money in cows?" Give poultry keeping the same treatment and there will be a sure increase in the profits of the farm and the wealth of our country. As a means to an end:

1. Get eggs in winter when they are high in price.
2. Have your hens moult in the months of July, August and September. If they have laid well in winter, and are under two years of age, they will do so.
3. Hatch out early pullets to lay, if possible, when the older stock are moulting.
4. In many cases that may mean artificial incubation. Well: you have got to come to it, or some one else will do it. There was never the demand in trade but the supply came.
5. Winter layers will make early setters, and their progeny will be correspondingly early. Moral *Have your hens lay in winter.*
6. As it is in most cases, the farmers' hens only begin to lay in spring and sit late. As a result their chickens are all late.
7. The market demands early chickens for eating purposes and for which a good price will be paid. The farmer should have early pullets for early layers.
8. Oh! you say all that means a great deal of thought, energy and system. Are the same not required in every branch of trade and commerce?



Fall Cultivation of the Soil

Wm. Rennie, Farm Superintendent, Ont. Agr. College

The success of our crops depends largely upon the preparation of the soil the preceding fall. To get the largest possible returns at the least cost we must cultivate the land intelligently, and according to the laws of nature. With the aid of science we can save ourselves a great deal of unnecessary labor in the cultivation of the soil.

To maintain soil fertility without the application of any commercial fertilizers we require to follow a systematic rotation of crops. A four-year rotation is followed at the Ontario Experimental Farm with very satisfactory results. The farm is divided into four sections by removing the cross fences, and using a portable fence when it is desired to pasture any portion. The rotation is as follows: first and second year, hay and pasture; third year, corn, roots, and peas (mostly hoed crops); fourth year, grain seeded down. This is varied on the richer portions of the farm by ploughing a portion of the clover sod after the first crop, and sowing with barley, instead of leaving it for hay or pasture a second year. After the barley is removed the land is given the same treatment as that accorded to clover sod, and the following year it produces a hoed crop.

First thing after harvest comes the preparation of pea land for fall wheat. As there are usually some grass and weeds after the peas, gang-plowing lightly is desirable. Then harrow and cultivate frequently until time to sow fall wheat (end of August or first of September). By thorough cultivation the vegetable matter of the soil is decomposed, and the plant food which it contains made available. Under no consideration should this vegetable matter be plowed under and replaced by the crude subsoil previous to sowing the wheat. Barnyard manure should be applied before gang-plowing, so that it may be thoroughly incorporated with the surface soil. A still better plan is to apply the manure in the spring, and gang-plow it in before sowing the peas. This saves time in the fall, and gives time for the manure to become thoroughly decomposed and available for the wheat plant to feed upon.

The sod land intended for hoed crops and peas the next season should be plowed about four inches deep, as early in September as possible, and harrowed immediately after to conserve moisture and hasten decomposition. In about two weeks, cross it with a disc or acme harrow, followed

by an ordinary harrow. Should any thistles or weeds of any sort start after this, they should be cut off about two inches below the surface with a broad-share cultivator. An efficient instrument for this purpose is a spring tooth cultivator fitted with wide points. About the middle of October, haul out all the manure that is available and spread it on this cultivated land. Then rib or drill with a double mouldboard plow, making the drills about 21 inches wide. This leaves the manure and rotted sod in the centre of the drills, and prevents leaching or evaporation of plant food. In the spring the drills will harrow and cultivate down like ashes. The clover sod and barnyard manure, thoroughly incorporated, make a complete fertilizer for any crop, especially corn and roots.

Our method of fall cultivation, after corn and roots, is as follows: The corn land is first cultivated with a spring-tooth cultivator which has the centre tooth removed so as not to disturb the roots of corn. After this the land is ribbed with the double mouldboard plough, leaving a row of corn roots in each alternate rib. The corn roots are thus kept soft, and give no trouble the following spring.

The root land is ribbed across the drills, so that the turnip and mangel tops are evenly distributed and thoroughly incorporated in the soil. Water furrows require to be run through the hollow places to carry off surface water. Land so prepared in the fall will be in the best possible condition for cultivating and seeding early in the spring, and, by keeping all the vegetable mould on the surface, we avoid the risk of missing a catch of clover.



Weeds

By Wm. Lorchhead, M.A., M.Sc., Professor of Biology and Entomology, O.A.C., Guelph

An authority has stated that weeds have been a blessing to the farmer and gardener.

Very few will care to acknowledge off-hand the truth of this statement, yet when we look into the matter carefully much can be said in its favor. The continuous warfare that every tiller of land must wage in his efforts to control or exterminate the weeds keeps the surface soil in better condition to withstand drought. The gardener must hoe, the farmer must plough, harrow and hoe, else his foes, the weeds, would soon get the upper hand and strangle the crop.

It is a well known fact that any loosening of the surface soil has the effect of conserving the moisture. The study of physics also reveals the fact that water rises in fine tubes or pores above the level of the water outside of the tube, and that the smaller or finer the tubes the greater is this difference of level. When a gardener works the soil the pores are made larger for the particles are made less compact than before, hence the subsoil water does not rise so high, and evaporation is not so rapid.

During seasons of drought this simple act of loosening the soil with a hoe and rake plays a very important part. Weeds compel this simple act, and hence are beneficial in this respect.

On the other hand, weeds, like other plants, require water, which is imbibed by the roots and carried to the leaves. The great bulk of this water, which has acted as a vehicle for the transportation of salts from the soil to the laboratory of the plant—the leaves—is again transferred, or evaporated into the air, and hence lost to the soil. It can be readily seen how very important is this question of weeds in a dry season, when the subsoil water requires to be looked after and conserved.

Again, weeds, like other plants, require nourishment, and, when they are allowed to grow, the salts, which should be absorbed by the crop, are taken up by the weeds. This piracy on the part of weeds can be stopped only on the death of the weeds.

Most farmers are able to recognize weeds. They can tell when one plant is interfering with the proper growth of some other plant which is of greater economic importance.

A weed has been cleverly defined as a "plant growing out of place." Nearly any plant may become a weed, but only a few hundred out of many thousand become weeds of any economic importance. According to the definition given above, weeds would include the lower plants, such as smuts, mildews, rots and moulds; but, popularly, weeds are looked upon as plants of considerable size, and the microscopic species are not considered.

A knowledge of the habits of weeds is the first essential in a scheme for their eradication. For example, the following habits should be thoroughly studied:

(1) Is the weed an annual, biennial, or perennial? If the weed is annual destroy it before it seeds.

(2) Is its seeding capacity great or small?

(3) How are its seeds disseminated or distributed by wind, water or by animals? Many a farmer finds his fields full of thistles through the carelessness of a neighbor, who neglects to cut his thistles before they seed.

(4) Is its root system extensive? The thistle propagates itself by its extensive root system. The common bind weed has an enormous system of roots, which is almost impossible to eradicate. Kill the weed when it is young, before it becomes deeply rooted.

(5) Is the weed a parasite? The dodder fixes itself to the clover stem, and imbibes food from it through roots which it sends into the plant. The only remedy in this case is to destroy the clover crop, and to be extremely careful in the selection of clover seed.

Farmers must insist on pure seed, if they wish to keep a check on weeds.

A knowledge of weed seeds is nowadays necessary to the successful farmer.

The Botanical section of the Experimental Union is now making up sets of weed seeds, which will be distributed in due time to those who are interested in weed eradication.

Experience has shown that the following bad weed seeds are very frequently found in timothy seed: Ox-eye daisy, yarrow, chamomile, thistle, and fox-tail. Clover seed has heal-all, dodder, white and yellow mililot, pepper-grass, none such, narrow-leaf plantain, and houncing bet. These are all most miserable weed seeds, which should be carefully looked after.

Eternal vigilance is the price of freedom from weeds.

Handling the Apple Crop

By J. E. Starr, Starr's Point, N.S.

In picking, packing and marketing the apple crop great care, honest purpose and sound judgment are necessary to success.

First, then let us suppose that kind Providence, supplemented by skill and industry on the part of the grower, has given you a fairly good lot to handle (for no man, however great his skill or honest his intentions, can possibly make good apples out of bad ones). True, that in off seasons, when both quality and quantity are wanting, the increased demand enables the shipper to obtain good prices for even poor stock that could not be sold for enough to pay the freight charges in a year of plenty. Yet even here, in selecting, grading, packing and marketing, it is a pity that a uniform standard of excellence cannot always be maintained. So that when a barrel of apples is marked "No. 1," the salesman, as well as the purchaser, can feel assured that they know the quality of the article they are dealing in. This, of course, would make a large increase of the second quality, or of those marked No. 2, but I think on the whole the grower would receive quite as much money for his crop, and all parties dealing in them would have more satisfaction.

But to return—let us begin at the beginning. In picking the apple from the tree let care and skill be exercised. Our Nova Scotia Gravenstein, as well as our Kings, should be handled quite as carefully as eggs. The picker should have his basket hung close by his side, so that he may easily place (not drop) the apple carefully in the basket. Let

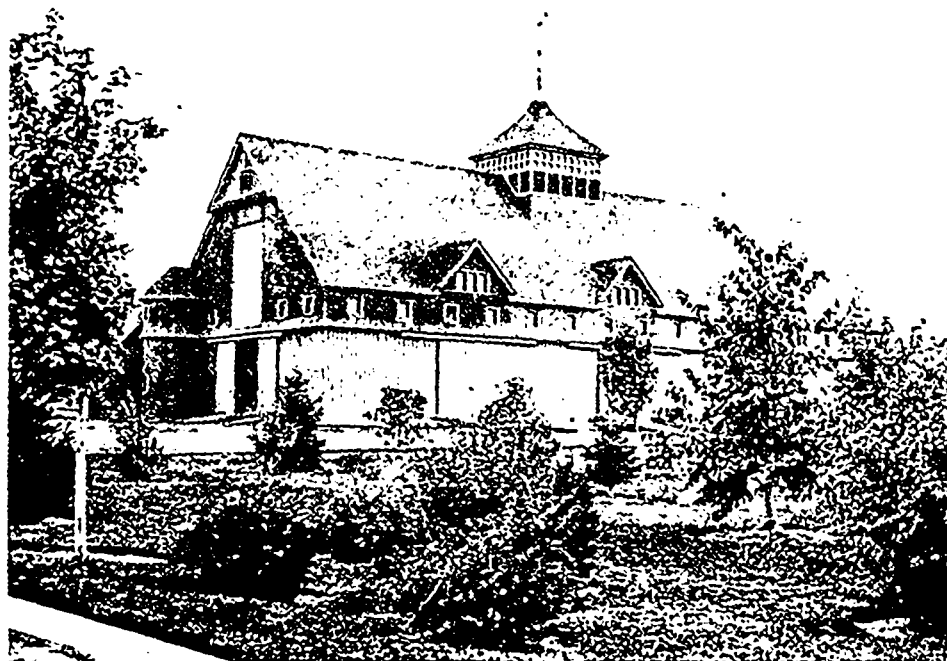
these be gently poured upon a table placed near the tree where all the grading should be done, and the apples placed carefully in the barrels. In doing this select good specimens, of fine color and uniform size, to place carefully, stem downward, on what should be the head of the barrel. One or two layers placed in this way and the barrel may be filled by pouring from a small basket that will easily go down inside the barrel and turn. Shake gently as each basket is emptied, fill full, and set away in your cool apple cellar for a few days to cool off, and they are ready to head up if needed for shipping at once; if not leave the heads out of the barrels until you wish to ship them—always endeavoring to store in cool places, remembering always to both pick from the tree and ship from the cellars before the fruit gets too soft and ripe. The advantage of good color often tempts the grower to delay picking, but in so doing the fruit arrives in market soft and somewhat off in flavor. A fatal mistake has been made—they have lost that crispness and firmness of flesh and flavor for which our Canadian apples are so celebrated.



A SEVENTY-YEAR-OLD APPLE TREE

In heading up apples for a foreign market great care should be taken to get the barrel full and tight to prevent any rattle. Shake barrels well, fill about one inch above the crease, press the head into place with a screw press, and nail it carefully, so that each nail goes into the head and not inside. A careful, skilful workman is invaluable in all this, while a stupid, careless fellow is as fatal as "a bull in a china shop." Let each grower and packer stamp his full name on the head of each barrel, with No. 1, No. 2, as the case may be, marked equally distinct on the same head. A lot of x's are unintelligible, and may mean anything or nothing.

And now comes the important questions of transportation and ventilation, the most important because, while vital to success, they are the least under our control. In insuring upon better storage, in order to secure better ventilation, you have to contend, not only with the interests of the ship owners, where long usage has permitted them to stow cargoes as closely as it is possible to pack them, but the insurance companies also come in with their stipula-



BARN OF THE CENTRAL EXPERIMENTAL FARM, GLEWING, ONT.

tions, which are very like confirmation of the practice of the ships. All that good, sound, well-packed fruit requires to cross the Atlantic in safety during the ordinary passage of from twelve to fourteen days is plenty of the good fresh air of the ocean free circulated through every part of the cargo. Let means be adopted to secure this, and the whole difficulty is overcome. Wanting this, all other means to success are liable to result in wretched failure, whenever an unusually large crop comes forward for transportation across the Atlantic. Cold storage may remedy the evil to a very small extent, but it is too expensive and too limited to be available for the principal portion of the crop.

Fearing to trespass too much upon your space I will drop this subject just here, with the possibility of resuming it some day.



The Farmers' Apple Orchard—How to Take Care of it

By H. L. Hutt, B.S.A., Horticulturist, O.A.C., Guelph, Ont.

The four cardinal points upon which the successful management of an orchard depends are: cultivating, manuring, pruning, and spraying.

To begin with, it is, of course, important that the orchard be worthy of care. There are plenty of so-called orchards that are not worthy of the name, and upon which labor would be lost. That an orchard may give profitable returns for the labor expended upon it, the soil must be suitable and well drained, the trees must be healthy and vigorous, and the varieties should be saleable and adapted to the locality.

CULTIVATING.

Thorough cultivation is one of the finest requisites to success in the management of an orchard. Intimately connected with the question of cultivation is that of cropping between the trees. This is where the majority of farmers fail in the treatment of their orchards. The trees, which should be of first importance, are often relegated to second place, are frequently encroached upon, and in some cases choked out, by a grain crop. Cropping in a young orchard is for various reasons desirable, but the crops grown should be of such a nature that they will permit of good cultivation about the trees. Even a grain crop may be grown, if an ample space is kept cultivated on each side of the trees.

In cropping an orchard, however, it should not be forgotten that the roots of a tree extend as far below ground as the top spreads above it, and that the roots should be the sole occupants of the ground as far as they extend. The space for cropping, then, will gradually decrease as the trees increase in size, and cropping should cease altogether as soon as the trees fully occupy the ground.

Cultivating is much cheaper and better than plowing. A plow should never be used about the roots of a tree, except to turn under lightly a cover crop of clover. One of the chief objects in cultivating is to retain soil moisture. This is accomplished by breaking up the microscopic capillary tubes, which naturally form in the soil and convey the moisture to the surface. The cultivator breaks up the crusted surface, from which the water is readily evaporated, and leaves a few inches

of fine mellow soil acting as a mulch, to retain soil moisture where the roots can make use of it. Cultivation should begin as early in the spring as possible, should be repeated as soon as possible after every rain, and should continue until about the middle of August, after which the trees should not be excited into growth, but should be allowed to mature their new wood, that it may be able to withstand the rigors of winter.

MANURING.

Good cultivation is the most economical substitute for manure, but it will not entirely take the place of it. Trees in making their annual growth, take up a certain amount of fertility from the soil. Crops grown in, and removed from, the orchard take away considerably more, and in



CHRYSANTHEMUM

Grown at the Ontario Agricultural College, Guelph, in 1907.

some cases a depletion of soil fertility occurs, by leaching or washing when the soil is bare of growing crop. It is evident, therefore, that an effort must be made to maintain the fertility of the soil, if paying crops are to be expected.

The three elements which have usually to be considered in maintaining soil fertility are nitrogen, phosphoric acid, and potash. These may be obtained in nicely-balanced proportions in many commercial fertilizers, but, as a rule, such fertilizers cost more than they return to the grower. In our opinion the cheapest and best fertilizers the farmer can buy are unleached wood ashes and clean clover seed. Unleached wood ashes contain all the elements which a tree in growing takes from the soil, hence they are particularly valuable in the orchard, and may safely be applied in liberal quantities, especially on light soils, which are usually most lacking in potash. Unlike barnyard manure, they tend rather to promote fruitfulness than excessive wood growth. Barnyard manure is a general fertilizer, valuable under almost all conditions, and should be withheld only when there is none to be had, or when the growth of the trees is too rank.

The time for applying fertilizers is not so important as the liberality with which they are applied, and the manner in which they are left upon the surface. If one time is more desirable than another it is the early spring, as a vigorous growth is then stimulated early in the season. All fertilizers should be spread evenly over the ground, and not banked about the trunks of the trees, as is often foolishly done. Shallow cultivation then incorporates them with the soil, and the showers carry their soluble fertility down to where the small feeding roots can make use of it.

The value of clover as a fertilizer is now becoming more generally realized, and of late years considerable attention has been given to the growing of crimson clover in the orchard as a late cover crop, to be turned under early in the spring. The seed is sown at the rate of 12 or 15 lbs. per acre about the middle of July, and, in a favorable season, the crop often makes a growth of six or eight inches before frost comes. It cannot as a rule be depended upon to live through the winter, although in some cases it comes through uninjured and makes a brilliant display of bloom early in the spring. But whether the plants live through or not, a valuable contribution has been made to the supply of nitrogen and humus in the soil, and soluble plant food, which might have otherwise been lost in the drainage water, is retained, to be gradually given up to the trees as the clover crop decays.

PRUNING.

By pruning is meant the removal of superfluous wood; training is guiding growth, to give the trees desired form. In the management of an orchard a combination of pruning and training is necessary. Most of the training should be done when the trees are young, by starting the tops all at a uniform height, leaving but three or four well-placed limbs to form the framework of the tree, and maintaining a uniformity of growth throughout the parts of the tree. Much can be done in directing the new growth by cutting back to a bud pointing in the direction we wish the new branch to take.

After the tree is formed, about all the pruning necessary is to cut out crossing branches and thin out the new wood wherever the head is likely to become crowded. This admits of a free circulation of air, facilitates spraying, and admits plenty of sunlight, all of which is conducive to sound and well-colored fruit. The best time for pruning an orchard is in March or April, after the severe frosts are over and before growth has commenced.

SPRAYING.

In an orchard well cultivated, liberally manured, and regularly pruned one might expect good crops of fruit, but now-a-days one thing more is needful: we must fight insects and fungous diseases. With the improvements in spraying outfits, and simplifying of spraying mixtures, the



CHRYSANTHEMUM

Grown at the Ontario Agricultural College, Guelph, in 1897.

once dreaded work of spraying has been made very easy, and it now resolves itself into a regular orchard operation, quite as important as cultivating, and no more difficult.

The combination of the Bordeaux mixture and Paris green gives a mixture which destroys the whole host of leaf-eating insects, and prevents the development of the scab and other injurious fungi. The time and number of applications is, in a way, dependent upon the season, but, as a matter of insurance, it is well to spray at least five or six times, the first application being made before the buds open, the second before the blossoms open, and the third shortly after they fall, and the following sprayings at intervals of ten days or two weeks.

With more attention to the points above-mentioned, more profit might be made out of the little block of trees known as the orchard.

The Farmer's Garden

By W. T. Macoun, Horticulturist, Central Ex. Farm, Ottawa

No man enjoys good food, and plenty of it, more than the farmer, but as a rule most of it consists of such material as he produces for market purposes, and it is seldom that he grows fruit and vegetables for his own consumption only. The result is that if he is some distance from a market he is likely to think it not worth while growing fruit and vegetables that he cannot sell. For this reason his family is often deprived of the luscious strawberry, the rich and juicy raspberry, the gooseberry, the grape, the cherry, and the plum. Nor does he often grow the tender asparagus, the delicious sweet garden pea or corn, the radish, lettuce, bean or beet, and often that wholesome and popular vegetable, the tomato, in an unknown quantity, in a fresh condition, on the farmer's table. With a little labor all this might be changed and the farmer could have an abundant supply of all those fruits and vegetables which he is so capable of enjoying.

Proximity to the house is one of the essentials to the success of the farmer's garden. The housewife and children can then assist to keep things in order, and without much trouble and loss of time procure what is required for the table. A farmer's garden under the care of himself alone would probably soon run to weeds.

The soil shou'd be rich and well drained. Proper preparation of the soil before planting will well repay all the labor put upon it, and after cultivation and manuring will not produce the best results unless this has been done. A good friable soil, well drained, given a heavy dressing of manure ploughed, subsoiled and harrowed thoroughly, should be in prime condition for the reception of trees and bushes, and frequent applications of manure from time to time in the future will cause it to produce fruit and vegetables of the finest quality.

On a quarter of an acre of land a farmer could produce sufficient small fruit to supply his family during the summer, as well as having a surplus to preserve for winter consumption, thereby enjoying the fruit of his toil at all seasons of the year; and at the same time have room to raise for his table enough of those vegetables which are not grown in the field.

The garden should be so planned that a large amount of the labor could be done by a horse. For this reason, the length of it should be at least twice as long as the width. The rows of most of the vegetables should be far enough apart to permit of the use of the horse cultivator. When the farmer is cultivating his field crops (and if he is a good farmer this would be done frequently), he could make a point of cultivating his garden at the same time, the little hand-weeding which would be required being done by the children or by himself, if necessary.

The best time to plant fruit trees and bushes is in the spring. Fall-planted fruits sometimes heave, through the action of frost, often causing the death of the young trees and bushes, which, if planted in the spring, become established before winter sets in. A larger proportion of them also would probably grow when planted in spring, as they would begin to take root at once; whereas those planted in the autumn have to lie dormant, and are thus more easily affected by change of temperature. It takes money to plant a place, and it pays to do it at the proper time.

If the farmer decides to plant a garden, say, next spring, he should give his land as much preparation as possible this fall. The better the conditions of the soil the greater will be his success in raising his fruit and vegetables.

For the assistance of those who contemplate raising, in the future, the best and hardiest fruits and the choicest vegetables, the following list of names is submitted with the hope that it may prove helpful in choosing varieties. The distance apart of the rows at which the different classes of fruit should be planted is also given, but in a limited area the smaller growing bushes should be judiciously mixed among the larger, so that these measurements are only given as a guide. The fruits and vegetables enumerated in this list, after several years' test at the Central Experimental Farm, Ottawa, have proven among the best for the farmer's garden in this part of the country. Further South and West, other and finer varieties of fruits should be, in some cases, substituted, but this must be left to the judgment of the reader, whoever he may be.

For convenience when using a horse cultivator in the garden, the distance apart of the rows is made as uniform as possible without undue waste of land. The saving of labor is usually more important to the farmer than a little soil, and it will pay him well to lay out his garden in such a way that as much of the work can be done with a horse and a cultivator as possible. The horse is made for man's use, and what he can do should not be done by hand.



AN ONTARIO APPLE ORCHARD IN BLOOM

Varieties	Rows, Distance Apart.	Plants, Distance in Rows.
FRUIT,—		
Plums: De Soto, Glass Seedling	15	15
Grapes: Moore's Early (black), Lady (white)	8	8
Vergennes (red), Moyer (red)	8	8
Currants: Lee's Prolific (black), Victoria (black)	6	4
Wildor (red), White Grape (white)	6	4
Raspberries: Older (blk. cap), Hilborn (blk. cap)	6	3
Gregg (blk. cap), Cuthbert (red)	6	3
Marlboro' (red), Golden Queen (yellow)	6	3
Blackberries: Snyder, Agawan	6	4
Gooseberries: Downing, Pearl, Whitesmith	6	4
Strawberries: Wilson (bsl.), Wm Belt (bsl.)	3½	1
Warfield (pistl.), Buback (pistl.)	3½	1
VEGETABLES,—		
Asparagus: Connover's Colossal (each row four to five feet wide)	2	9
Beans: Wardwell's Kidney Wax, E. J. Refugee	2	2
Beets: Egyptian turnip	2	5
Cabbage: Early Jersey Wakefield	2	18
Henderson's Succession	2	18
Carrots: Chantenay, Guerande	2	3
Cauliflower: Early Dwarf Erfurt	2	18
Celery: White Plume, Paris Golden yellow	3	6
Corn: Early Cory (early), Perry's Hybrid (med. late)	3 hills	3
Stowell's Evergreen	3 hills	3
Cucumbers: White Spine, Cool and Crisp	4	4
Lettuce: Black Seeded Simpson (curled)	1	12
Perfected Salamander (cabbage)	1	12
Onions: Large Red Weather-field	1	3
Yellow Globe Danvers	1	3
Pease: Nott's Excelsior (early), Heroine (med.), Improved Strategem (med.)	2	2
Juno (late)	2	2
Potatoes: Burpee's Extra Early, Everett	2½	12
Earliest of All	2½	12
Radishes: Rosy Gem French Breakfast	1	not thin
Rhubarb: Victoria	3	36
Tomatoes: Dwarf Champion	3	36
The Stone	4	48
Turnips: Early Milan, Red Top Strap Leaf	2	6

In conclusion, buy plants or seed from reliable dealers, patronizing local firms when possible. Test the germinating power of all seeds before sowing. Plant and sow in good season. If to this advice is added the proper preparation and cultivation of the soil success should be almost certain.

Make the Farm Attractive

By Thomas Southworth, Clerk of Forestry for Ontario

The cause of the exodus from the country to the cities, which is so marked a characteristic of modern life, has of late years excited much discussion among students of political economy and social science. Various reasons have been assigned for this tendency on the part of young people to forsake the old homestead and the vocation of agriculture for the crowded centres of population and the illusory chances of success in business, the professions, or the ranks of mechanical industry. The apparently greater profits and less arduous toil of sedentary and intellectual callings, the attractions of the stir and bustle of the streets and markets in contrast with the dulness and monotony of rural life, have been regarded as material factors in the problem. No doubt each of these causes has had a considerable influence in promoting the flow of population cityward, but it may fairly be questioned whether any one of them has stimulated the movement to so large a degree as the failure on the part of farmers to make the homestead attractive and furnish those pleasant associations of childhood and youth which have so strong an influence on the after life. The boy or girl who can only look back to memories of unremitting toil with a lack of those reasonable pleasures and relaxations which sweeten labor, amid sordid and unattractive surroundings, can not be censured for seeking pleasanter associations and resolving to bring up his own family under more pleasant and refining influences. Life in the cities in these days of electric cars, open parks, and shaded avenues is so much pleasanter in many ways that the duty which farmers owe to themselves and posterity of making the farm life pleasant and agreeable as an offset to city attractions cannot be too strongly emphasized.

It would be beyond the scope of this article to touch upon many aspects of this problem or to indicate the numerous directions in which the social spirit and the sense of good taste and beauty might advantageously be cultivated. There is just one feature out of many which I wish especially to refer to as a most important influence in brightening and beautifying the homestead and making it a spot to be remembered in after years with pleasurable associations. Nearly all the charm and poetry of a country landscape lies in the trees; a treeless area, however fertile in grain or pasture, excites no such feelings of admiration as are involuntarily aroused by the sight of a picturesque, well-wooded expanse with its lofty trunks and spreading, luxuriant foliage. The terrible sense of loneliness and desolation experienced by so many settlers on the prairies where the land spreads around them on every side meeting the horizon without a break, is due entirely to the lack of trees. A well-clothed plain, where the vista is broken and diversified by stretches of woodland or groups of trees, excite no such painful feeling of dreariness and isolation. A treeless farm is a very unattractive place. The buildings are exposed to heat and storm; there is no grateful shade to furnish a refreshing coolness during the intervals of rest, and the sun glares down, heating the whole house so that it remains hot and close, even through the night, when it is cool out of doors. The ugliness of a building unbroken by porch or verandah, as is often the case, may be redeemed and

the place made handsome and picturesque by a background of trees. The absence of trees about the house and fields gives the locality a hard, bare, unfertile aspect, even though the soil may be rich and yield good returns. It is no wonder that children reared in such a home are anxious to leave it, that the natural sense of beauty is repelled by such bare and bleak surroundings, and that after a visit to the city, with its leafy avenues and well kept lawns, they seek to leave a place which has become the more unendurable by contrast.

The absence of trees upon the farm is so easily remedied that the farmer who allows his homestead to be without them is much less excusable than for other deprivations which cannot be supplied except at considerable expense. Trees, in most cases in Ontario, cost nothing except the labor incurred in transplanting them from the nearest bush; and the returns, not merely in comfort and attractiveness, but eventually in actual cash value, would justify a much larger outlay. A well-shaded farm is more valuable than one destitute of trees. Even the man who is too lazy or neglectful to plant, or shrinks from the task because "there's no money in it," would instinctively give the preference to a farm with ample shade around the house and outbuildings, and rows of maples or evergreens along the lanes or between the fields, over one destitute of this natural adornment. He might not perhaps know why he did so, but the look of comfort and the homelike air of the well-shaded farm would surely turn the scale in its favor. In planting trees, either for shade or for ornament about the farm there are a few points which should be carefully borne in mind.

In transplanting young trees from the bush it is always advisable to obtain them from the edge of the wood, or where it is comparatively open, as trees growing in such situations are much hardier than those growing in dense shade. The trees selected should not be too large. The smaller the tree the easier it will be to secure the roots comparatively uninjured, and when the roots are much cut or torn the crown of the tree needs to be pruned to a corresponding degree, which retards the growth. Even seedlings a foot or less in height make rapid growth, and in the course of a few years will often be better developed than trees moved when seven or eight feet high. A time in the spring or fall, when the ground is wet, should be chosen for the work, as the trees can then be taken up in better condition and with less chance of their roots being dried up or broken before replanting, and so losing their vitality. To prevent the roots from drying it may sometimes be necessary to moisten and keep them covered if brought



VIEW OF MIXED FOREST BELT
at Central Experimental Farm, Ottawa, July, 1897, showing growth of trees planted in spring of 1888.

from any distance. It is unnecessary to say that nursery-grown trees will afford the desired shade and ornament much sooner than the saplings taken from the forest, but the cash expenditure will of course be greater.

Trees should not be planted too close to the house, but at such a reasonable distance as not to exclude the sunlight and cause dampness. It is a very common mistake to plant trees within a few feet of windows, overlooking the fact that when the tree attains any considerable size the light will be completely shut out. Those who plant should have in mind the space the tree will occupy when fairly developed and make their calculations with regard to distances accordingly.

If broad-leaved trees are preferred, no species is more suitable for general planting than the hard or sugar maple, which is a clean, graceful tree and of fairly rapid growth. Where the fields are large, as fields should be, maples may be planted along the boundaries. When they attain a sufficient growth they will serve instead of fence posts by stringing wires from tree to tree. Where there is no sugar bush on the farm a sufficient number of maples planted in this manner or in other situations can be made to yield good returns in sugar or syrup.

In planting for ornament or shelter, apart from shade, spruce trees and Norway pines are good varieties. The evergreens give the house a cheery, comfortable aspect in the winter season and are an effective protection against the violence of the wind. They make desirable wind-breaks, either by themselves or interspersed with hardwoods, especially if planted to the north or north-west.

Care must be taken in planting, especially if the soil is sterile and poor, to see that the roots are properly spread in the hole instead of being simply jammed in, and are not crushed or broken by being violently stamped down. If the ground is at all dry the trees should be freely watered until well established. It is well to remember that trees require nourishment just the same as any other crop, and some good rich soil should always be put in the hole if the land is not naturally good. If soil from the woods is not readily obtainable well-rotted stable manure should be mixed with the soil taken from the hole or placed about the tree after planting as a mulch. Unrotted manure should not be allowed to come in direct contact with the roots.

Young trees, properly planted and well looked after, will attain a respectable size much sooner than is generally supposed. At the Experimental Farm at Ottawa, young pines ten inches high, planted in 1889, had reached a height of over fifteen feet in eight years, and elm had grown from ten inches to over eighteen feet high in the same time. Of course if a "whip stalk," a slender sapling

eight or ten feet high with a tuft of leaves on the top, is planted in poor soil and unprotected from the wind, it will remain in that condition for years, if it does not die, but a smaller, thriftier tree, carefully planted and protected, will astonish the planter, in a very few years, by its growth. It takes but a short time to convert a dreary, barren-looking farmstead into a charming country residence, pleasant to the eye of the traveller and a source of continual delight to "them that dwell therein."

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Some Practical Notes on Winter Butter-Making

By J. A. Ruddick, Supt. Kingston Dairy School

When the pioneer winter creameries of Canada were started in the fall of 1891, at Woodstock and Mt. Elgin, even the most sanguine friends of the movement did not expect that the production of butter in the winter season would reach its present proportions in so short a time. Most of the supposed obstacles and difficulties in the way of the successful operation of creameries during the cold weather have disappeared as fast as approached, and what seemed at first to many to be a more than doubtful undertaking is now plain sailing. When the writer was sent by Prof. Robertson in the fall of 1891 to take charge of the Woodstock Creamery, he did not realize the importance of the movement which was being inaugurated, or the prominent part it was destined to play in the full development of the dairy industry of Canada.

It would now seem as if a very large proportion of our output of creamery butter would be made during the winter months. This being so, it is apparent that the quality of this butter will be a very important factor in establishing a reputation for our butter as a whole. It has been argued in this connection that Canadian butter-makers will be handicapped in their struggle for supremacy in the British market; but I do not think there is much to be afraid of if Canadian dairymen only make a proper use of their opportunities. I believe that, compared with the summer months, the possibilities of placing a fine article of butter in the hands of consumers in Great Britain are equally as great during the winter months. It is true in some respects that the conditions are more favorable during the summer than they are during the winter for the production of a fancy article, particularly in the matter of food; but, on the other hand, we have the winter temperature, which is much more favorable for the manufacture, transport, and preservation of butter. Butter will, undoubtedly, deteriorate more from the factory to the consumer during the hot

weather than it will during the winter. We must not lose sight of the fact that it is the condition in which the butter goes on to the table of the consumer which is important, rather than its quality at the time it is made.

I do not wish to be understood as trying to boom winter butter making at the expense of the summer creameries. I only desire to assure the latter that they have nothing to fear; while I hope to encourage the winter butter maker to continue his efforts. Of course, anyone who knows anything of the situation also knows that we have a good deal to learn and much improvement to make before we have reached our best. No doubt this applies to butter-making the year-round.

Having been actively engaged



CROP OF RYE AND CLOVER

Grown on Col. D. McCrae's farm near Guelph, Ont., in 1897, yield $4\frac{1}{2}$ tons per acre.

in winter creamery work ever since its inception in this country, perhaps I may be pardoned if I venture to suggest what I think are the pressing needs of the situation at the present time. In the first place, speaking generally, we need better trained and more experienced butter-makers. Unfortunately the idea seems to be quite common that very little experience or teaching is necessary to qualify a man to make first-class butter. As a result we find men engaging to manage winter creameries after a few weeks spent at a creamery or perhaps at one of the dairy schools. If they prove failures the blame is thrown on the dairy school. A large number of the makers have turned out only second-rate goods. Others have made the finest of butter, and all can do so with proper qualification.

Owing to the scarcity of butter-makers, creamery managers have often been obliged to accept the services of inexperienced men, but that sort of thing will not last long, as the supply of butter-makers is increasing faster

than the number of creameries. For this reason makers should hasten to qualify themselves, and drop the idea that butter-making can be learned in a few weeks.

In this connection, too, I think there should be some provision made for instruction during the winter. For the reasons which I have already stated, there certainly is much more necessity for instruction during the season of the year that the winter creameries are in operation than there is during the summer months. Not one, but several, instructors could be very profitably employed for a few years at least, and it is to be hoped the cheese and butter associations will take the matter up.

Another drawback which should be remedied as soon as possible is the poor facilities for heating many of the creameries in very cold weather. The temperature should not go lower than 50° while the butter is being made. If it does, the butter will be worked at too low a temperature, which means it will be hard and dry and much injured in quality. When the working room is not properly heated the place soon becomes saturated with moisture, to the injury of the building and the machinery. Of course the difficulty generally lies with the building itself, which is not constructed in a manner to keep out the cold.

I believe also that the practice of pasteurizing the cream should be generally adopted, *but not before makers understand the principles of the system.* Pasteurization has passed the experimental stage, and the verdict is quite unanimous that there is much to be gained by it if carried out with intelligence and care. In careless or incompetent hands it is apt to be disastrous.

There is need for having the milk delivered in better condition, and much might be said on this point, but, as this paper does not pretend to deal with that aspect of the case, I pass it over by saying that I would urge all creamery managers to insist that milk should be delivered at least three times per week. I know it is the practice at many creameries for patrons to keep their milk just as long as they can without having it turn sour. The milk deteriorates very much when held so long, and, apart from the effect on the quality of the butter, it is not possible to return the skim-milk in good condition for raising calves. The raising of calves in the winter time is certainly one of the most important features of winter dairying, and nothing should be allowed to interfere with it.

During the past winter the patrons of the Kingston Dairy School were obliged to deliver milk at least three times per week. The result was that they were able to have sweet skim-milk for their calves all through the winter, and winter dairying with them has taken on a new and



FARM SCENE IN ONTARIO

added importance in consequence; and we were able to make a much finer article of butter. When we allowed our patrons to deliver their milk only twice a week we were not often able to give them back skim-milk which would keep for any length of time, and certainly not until they came again with milk.

Looked at from the standpoint of those who have put in the creamery plants and otherwise invested money in the business, winter dairying cannot be said to be generally satisfactory, inasmuch as they are not making a fair return for their investment. In some cases the charge for manufacturing is too low; but more often it is lack of sufficient patronage. The promoters of the winter dairying movement hoped that cheese factories, centrally located, would put in the plants, and that the patrons of neighboring factories would contribute milk to such an extent as to insure a margin of profit. This plan has succeeded very well in some places, while in others the intense rivalry and insane opposition existing between factories have practically defeated the scheme. When one factory has gone into the butter-making business, the others in the neighborhood have followed suit, and there are two or more factories being operated at a big expense where one ought to do the work.

As a remedy for this condition of things, I am a strong believer in the plan of having winter creameries organized on an independent basis, and not in connection with any cheese factory. To be sure this looks like unnecessary expense when there are so many cheese factory buildings idle at that season of the year, but, after all, the great majority of cheese factories are unsuitable for butter-making, and the cost of fitting is quite considerable. As for the location, I would put it right in the centre of the largest town or village in the district. The larger the town the better the location.

The good roads (if there are any) always lead to the towns. These are more apt to be kept open in stormy weather. Everyone has business "in town" frequently, so that the trouble and time used in hauling milk to the creamery is minimized.

If the town has a waterworks and a sewerage system the creamery may be connected with both, and thus two very common difficulties, drainage and water supply, are effectually disposed of. I hope before long to see every town having from 2,000 to 10,000 of a population with a flourishing winter creamery. It would be a good investment for the city or town as well as the surrounding country. The citizen would then be able to secure good creamery butter at his own door, which is an important consideration.

Some Needs of Canadian Dairymen

By H. H. Dean, Professor of Dairy Husbandry, O. A. C.,
Guelph, Ont.

Among the urgent needs of Canadian dairymen are:

1. A MORE EXTENDED KNOWLEDGE OF THE PRINCIPLES OF DAIRYING.

The chief of these are the laws of breeding, feeding and management of a dairy herd, the secretion of milk, the art of milking, the proper care of milk for cheese factory and creamery, the essentials in creaming milk, ripening of cream, churning, the outlines of cheese-making, and the general rules of trade and commerce.

This knowledge of the principles of dairying may be got through reading, and by attending Institutes and dairy conventions, but the greatest permanent good will result from educating the young people of the farm, factory, and warehouse. The public school would be a favorable place in which to teach simple lessons on dairying. If this were not convenient, then hold a public meeting to which young people are specially invited. Into the schoolroom or public hall take a pound of butter. Ask, "where did the butter come from?" They would probably answer, "from the churn." "How did the churn make butter?" "From cream by dashing it." (Here a lesson on the simplicity of churns may be enforced and thus they will become fortified against purchasing needlessly expensive and complicated churns.) "How did the farmer's wife get the cream which she put into the churn?" "By skimming it from pans, crocks, cans, or by running the milk through a cream separator." "Why does the cream rise on milk when set in pans or cans and how does a separator take the cream from milk?" (Here some careful yet simple explanation of the creaming of milk would be necessary and the essential points might be emphasized.) This probably would be sufficient for one lesson.

At another, the milk itself would form the basis of a lesson. Questions like the following would cause the young people to think: "Where did the milk come from?" "How did the cow make it?" "What is needed in order that a cow shall produce lots of milk?" (Here the main points to observe in feeding cows may be dwelt on, and the great need of kindness made clear and plain.)

A sample of cheese could be used as the basis of another lesson. "How is cheese made?" "What is rennet?" "Why is the curd cut?" "Why cooked?" "Why pressed?" "What is the difference between cheese and butter?" These, and many other questions which would present themselves to the mind of the teacher, would open up the minds of "budding" dairymen as well as those not yet in the "sere and yellow leaf," though the most good will come to the young, for mature men and women are usually "set in their ways," while the young are as clay in the hands of the potter.

None but experienced teachers should be assigned to this work and they would be a valuable aid to the dairy schools who are doing similar work, but reach only a few persons owing to the expense of remaining away from home for from one to three months.

2. THE SECOND NEED IS BETTER COWS, FED ON BETTER AND CHEAPER FOOD, HANDLED IN A BETTER AND MORE KINDLY MANNER.

The possibilities of the dairy cow are almost unknown to the average farmer. When we consider that some of our dairymen have herds averaging 7,000 to 10,000 lbs. of milk per cow per year, and who have individual cows giving nearly 18,000 lbs. in a year and over 700 lbs. of butter, and then contrast this with 3,000 or 4,000 lbs. of milk and 125 to 150 lbs. of butter as the product of an average cow, it may well cause us to stop and ask if something cannot be done to get better yields from the dairy cows of Canada. There is no doubt but what the present cows are capable of much better things with proper food and care, but their capacities may be much improved by introducing more *dairy blood*.

Feeding may be very much improved. The end of July, 1898, sees the pastures brown and bare. Many cows are gazing vacantly into space and using all their surplus energy fighting flies, so that when the owners milk them they say, "You ask for milk but we give you little or nothing—same as that which you give us." Green peas and oats and corn together, with two to four pounds of meal per day, would assist materially in maintaining the milk flow, and at a very small cost.

The law of kindness is not practised so much as it might or should be on dairy farms. An ill tempered man will never get the best results from his herd.

3. LESS PRIVATE DAIRYING AND MORE CO-OPERATIVE OR FACTORY WORK.

The losses in skim-milk and the lower price for dairy butter will more than pay the cost of manufacturing milk in creamery or cheese factory. In special cases where dairies are properly equipped, and where private customers are supplied, this method of dairying may be advisable, but for the large majority of our dairy farmers it pays to co-operate.

4. FEWER SMALL FACTORIES AND CREAMERIES.

The small building, poorly constructed and poorly furnished, having a poor maker, will make poor patrons. These little places operated at a loss are a hindrance to the development and improvement of the dairy industry. The large, well-equipped and well-manned factory is in a position to produce goods of more uniform quality, which will bring a higher price, and at less cost for manufacturing than can the small establishments.

5. PROMPT SELLING OF DAIRY PRODUCTS AND PROMPT RETURNS TO PATRONS, ACCOMPANIED BY A SATISFACTORY AND DETAILED STATEMENT OF THEIR BUSINESS.

For this prompt business method and satisfactory statement patrons should be willing to pay a reasonable sum. There can be no satisfactory results where this is not done. The time is fast disappearing when manufacturers may thrust a cheque or a sum of money into the hands of patrons with a "take this and ask no questions!" Dairymen are becoming educated and want to have their business transacted in a business-like manner.

6. HONEST DEALING BY ALL HANDS ACROSS THE MILK PAIL, CHEESE VAT, BUTTER TUB AND TRYER.

7. A MORE ECONOMICAL USE OF DAIRY BY PRODUCTS—SKIM MILK, BUTTERMILK AND WHEY.

The chief value of these at present is as food for the lower animals. We have much to learn regarding the proper use of these waste products in manufacturing cheese and butter. Creamerymen should pasteurize the whole milk, or skim-milk, before returning it to patrons, and whey should either be sold outright to some one, or be properly handled at the factory so that it would not do so much harm when returned to the farm. When these by-products are fed to bacon hogs, which sell for 6¼ cents per lb. live weight, as at present, they add very materially to the revenue of the dairy farmer.

In the arts and manufactures, skim-milk and whey seem likely to play an important part. Skim-milk is valuable in the making of bread, as it produces a bread more palatable and contains more nutriment. For the sizing of paper, for thickening and fixing colors in calico printing, for cementing purposes, and as a fertilizer skim-milk is valuable. In the United States, "there is at least one establishment which converts the casein of skim-milk into a form so hard as to be a good substitute for ivory, bone and celluloid. Billiard balls, backs for brushes, combs, checks and buttons are among the articles made."

The manufacture of milk sugar from whey is carried on in several factories in the United States. These factories pay from four to seven cents per hundred pounds of whey. The finest quality of milk sugar sells at seventeen cents per pound wholesale, while the lower grades range from ten to sixteen cents. A Canadian factory might be a profitable investment.

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No. 2.....	1,500	300	320	No. 7 ¹ / ₂	400	110
No. 3.....	850	205	215	No. 8.....	300	90
No. 3 ¹ / ₂	700	155	170	No. 11 ¹ / ₂	250	80
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A substance called "faracurd" has been recently put on the market. It is made from skim-milk, and is used largely by bakers and confectioners as a substitute for eggs.

S. CHEESE SIX MONTHS, AND BUTTER SIX MONTHS OF THE YEAR.

It would seem as if we had pushed our cheese production to about the limit of profit. We are supplying over 60 per cent of the British imports of cheese but less than three per cent. of her butter imports. All our cheese districts should aim to produce fine creamery during half the year.

By a careful study of our needs and a wise application of all our resources we may improve the position of Canadian dairymen very much before the close of the nineteenth century.

Sanitation of Milk—Advice to Milk Sellers

By J. de L. Tache, Montreal, Que.

Unwholesome milk may come to be so from two sources.

(1) The cow may be unhealthy, and the germs of her disease may be carried through her organs into the milk.

It is believed by a number of authorities that, unless the udder be at all diseased, the chances of such infection are slight. But this can only be partially comforting as nobody seems to deny that such a danger exists. Some diseases of the cow are communicable to man, conspicuous amongst which is tuberculosis or consumption.

(2) The germs may be carried into the milk through the air, or the vessels used in the handling of milk. However perfect an article of food cow's milk may be in itself, it is, at the same time, an eminently fit medium for the propagation of germs of all classes, purely innocuous, desirable or deadly. Under such conditions, the consumer cannot be too exacting, and the milk seller too careful, as to the handling of milk and its products. Public opinion is being gradually aroused to this state of affairs, and there is money ahead for any milk producer or seller who will realize it and act accordingly. The sanitation of milk should be the subject of the closest study by every progressive farmer.

How can thoroughly pure, palatable, clean, and practically unobjectionable milk be offered to the consumer? Let us first go over the ordinary means generally at the disposal of the milk producer: (1) The selection of cows, by the discarding of any one showing the least symptom of health disorder. (2) The selection of food. (3) The utmost cleanliness in the stables, and the care of the animals. (4) The utmost cleanliness also in the care of the vessels and utensils, and of persons handling milk.

We do not wish to underestimate the value of the above precautions, even though they have been, generally speaking, the only protection of the consumer in the past. But they are wholly insufficient, or at least, only part of the practical means applied in certain countries or towns to secure the sanitation of milk. It has been scientifically

demonstrated that milk drawn from healthy cows, in such conditions as to preclude the possibility of its being sown from external sources, is germ-free; and that such milk, put in sterilized and sealed vessels, will keep for an indefinite length of time, quite as well as specimens of milk for preservation. But germ-free milk is not to be found in every-day practice. It is practically impossible, at all times, to prevent the seeding of milk from atmospheric sources. The air around the cow and around persons, in the stable at feeding and cleaning time especially, and in living rooms, is populated with the spores of the invisible world of microbes. Add to this the frequent possibility of the infection of milk from diseased cows, with or without the knowledge of the owner, and the consumer stands staring because of the fact that the ordinary means cannot possibly affect the sanitation of milk.

What means should then be adopted that would be practical in every way?

(1) *Centrifugal separation* or the use of a cream separator, hand or power style, to remove immediately after milking all that separation under centrifugal force has been found to eradicate from the milk. The actual handling of cream separators helps one to appreciate the thorough and wholesome cleansing of milk, effected by separators. A look at the slimy and sickly deposit accumulated during

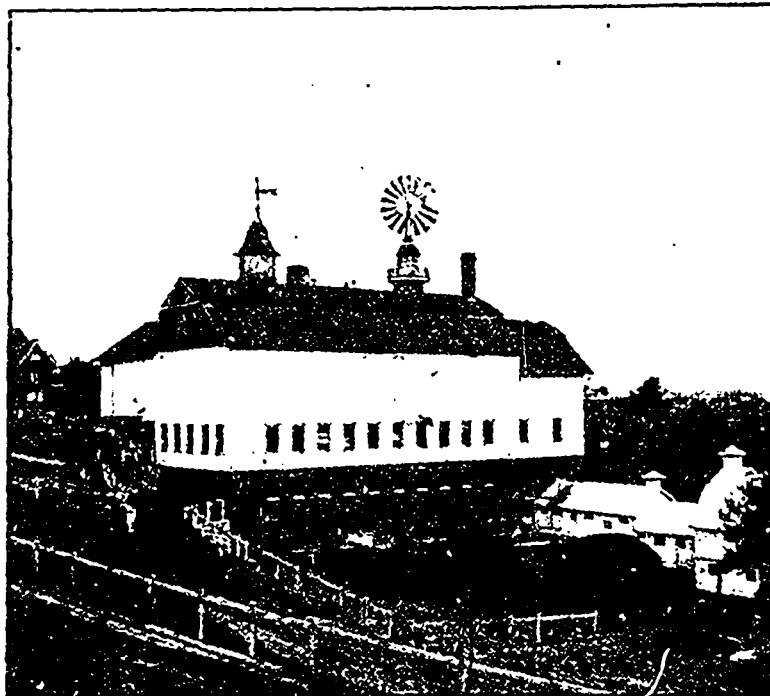
the separation inside of the bowl of a separator tells a long tale. This deposit, as found by experimenters, contains: Hair, manure, sand, blood, skin pellicles, and millions of microbes. Tuberculosis bacteria—the most dangerous of all—is almost exclusively to be found in the slime, and not in the skim-milk or cream. The most perfect strainers will retain nothing but the visible foreign bodies or matter which have found their way into the milk and have been washed into it. In addition to this mechanical sanitation the separator effects a chemical one by the aeration or oxygenation of milk. The milk and cream fly

out of the separator in a thin cloud and are thus thoroughly aerated. In a separator with 700 lbs. capacity 1-220th pound of milk and cream is distributed over a distance of 500 feet; this on an inch wide is only about 1-220th of an inch in thickness. The beneficial action of oxygen will, therefore, reach every part of the milk run through a separator. Separated milk and cream may again be mixed together by careful stirring.

(2) *Pasteurization or sterilization* of milk.—Heating the milk to, and keeping it for a few minutes at, 235° will absolutely kill all developed microbes or their spores; this is called *sterilizing*. Heating it to only 170° will bring the milk to a state of relative safety, well within the limits of sanitary requirements edicted anywhere. This is called *pasteurizing*. Sterilization is not practicable without costly apparatus; in fact hardly within the reach of milk producers; while pasteurizing apparatus are now sold at reasonable prices.

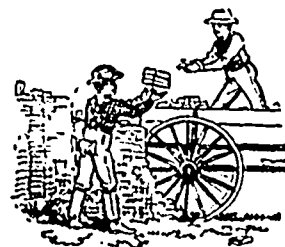
Our advice to progressive milk-sellers desirous of taking the lead in their specialty is, therefore, summed up as follows:

(1) *Ordinary precautions*: Utmost care in inspection of



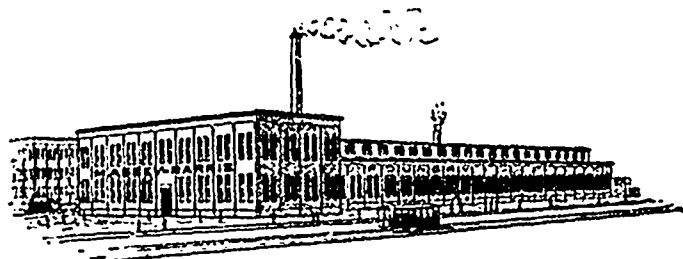
Barns of the Dentonia Park Farm—rear view. W. E. H. Massey, Proprietor.

Three Million Bricks



will be used in completing the large extensions and additions now being made to the MASSEY-HARRIS Factories. Amongst other Buildings is a great Foundry—the largest in Canada—which is to be 320 feet long by 95 feet wide, with a two-storey Core and Cleaning Room, 150 by 60 feet. The present large Foundry will

be devoted to the manufacture of Knife Sections and Knives for Farming Implements.



New Foundry in course of Erection.

Other new buildings are being erected for the extension of various departments.

EVERY EFFORT is being made to meet the unprecedented demand which comes from every quarter of the globe for MASSEY-HARRIS MACHINES, they being everywhere recognized as the standard of excellence.

The Company exceedingly regrets that, notwithstanding the enormous output for the season of '98, so many thousands of customers had to be disappointed.

The works will, with the additions now being made, have a 50 per cent. greater capacity, and with these greatly increased facilities, be in a better position to cope with the ever-growing demand.



Massey-Harris Co., Limited,
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cows as to their health, and the absolute discarding of suspicious cases. Careful selection of foods. Perfect cleanliness all around.

(2) *Additional and up to date means*: The use of a separator to cleanse and aerate the milk. Pasteurization, to render the milk a thoroughly and uniformly reliable article of food. Distribution of milk in steamed clean glass bottles immediately after pasteurization; closing or sealing while hot, then low cooling.

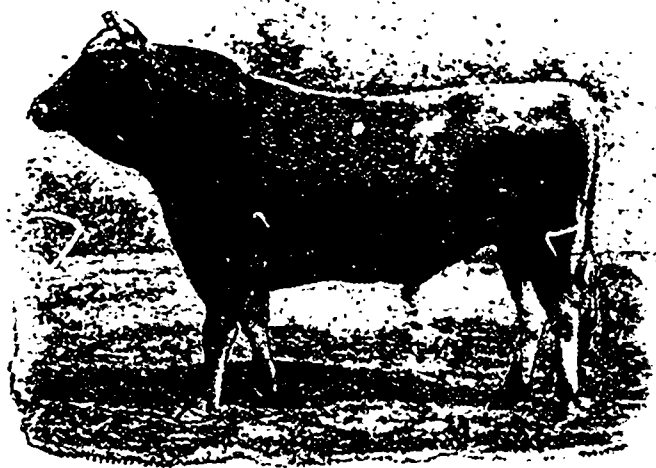
Agriculture in British Columbia

By G. H. Hadwin, Duncan, B.C.

The climate and soil vary so quickly in British Columbia that it is difficult to treat of general conditions in a short article. It may be said, however, that the province is generally divided into three sections, the coast, the lower mainland, and the interior. The changes, however, are so frequent and the conditions so different from one valley to another and from one valley to the bench above it that you may find practically two climates within a mile or two.

On the coast (I am referring only to the more settled districts) we find a climate which is often compared to parts of the south coast of England. Little or no snow in winter and a good deal of rain in November and December. The rainfall on the south-east end of Vancouver Island is not heavy being from thirty-five to forty inches; on the west coast four times as much as this is recorded. The summer months on this south-eastern portion are generally too dry and unfortunately there are no thunderstorms to refresh plant life during the hot weather. In fact I think I am not overstating the case if I say that they have rarely five inches of rain between the 1st May and the 15th October.

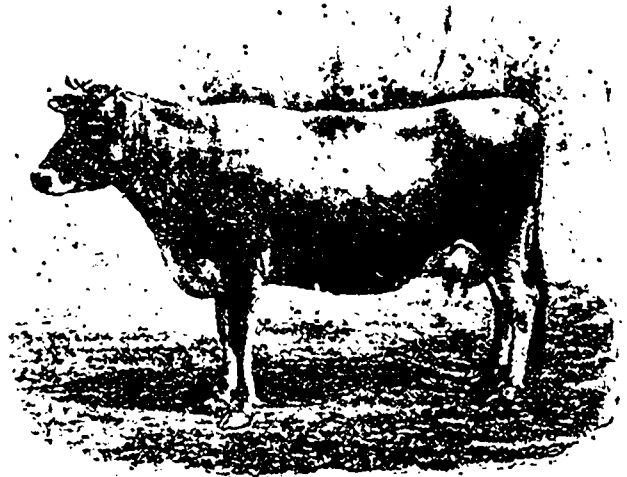
The settlements on the lower mainland are principally along the rich alluvial lands of the Fraser and the rainfall is generally a little heavier than on the island. The crops produced on these rich lands would not be credited by anyone who has not seen them; nevertheless, four tons of timothy hay to the acre and over seventy-five bushels of oats to the acre are really common occurrences. The bench lands are now being taken up along the river. These consist of a very deep sandy loam and appear to be very well adapted to fruit, but are covered with timber which has to be removed. The interior is the dry belt. East of the Cascades is where cattle ranges and grain growing with the aid of irrigation are the principal features, although fruit growing is taking a fairly prominent part.



Jersey Bull, Lord of Dentonia A.J.C.C. 50166, owned by Mr. W. E. H. Massey, Dentonia Park Farm.

The dairy industry is growing rapidly on the island and on the lower Fraser. Three or four creameries have been established, two of them co-operative, and are making a great success. There is, in view of the importation

of butter from the south and from Manitoba, a good market in British Columbia for butter, and the mines which are being steadily developed demand an increasing supply of butter and condensed milk. The shipments of butter



Jersey Cow, Phenomenon of Dentonia A.J.C.C. 134365, owned by Mr. W. E. H. Massey, Dentonia Park Farm.

to the coast have, I understand, nearly ceased this summer, which shows that the local supply is getting stronger.

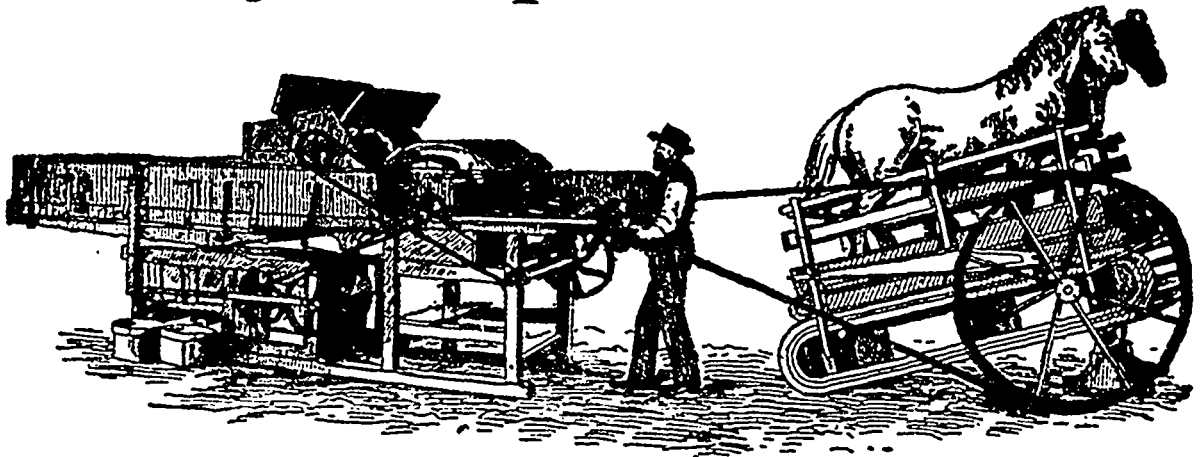
The lower or south eastern portion of the province is the home of the clover, and does remarkably well. Red clover is here a perennial, and produces a large amount of seed. Hay fields which were laid down in grass and clover twenty years ago, and that I know well, consist mainly to-day of common red clover; while in waste places and along the roadsides clover finds its way in a very short time. For this reason alone I believe that the lower province will be a great dairying country, more especially on the delta lands of the Fraser. Several thousand acres have been, or are now being, securely dyked, which should prove, I firmly believe, the best dairying country in Canada.

The export of fruit from British Columbia to the Northwest is becoming an important industry. This has been promoted entirely by co operation. The British Columbia Fruit Exchange, a purely co operative concern, shipped last year some \$30,000 worth of fruit east, and the figures this year will be considerably larger. Rhubarb and early vegetables, strawberries, gooseberries, cherries, plums, apples and pears are being sent through as far as Winnipeg in good shape, and although experience was a little expensive to pay for at first the fruit growers have held together, and will, I believe, make the exchange a very large and important shipping concern.

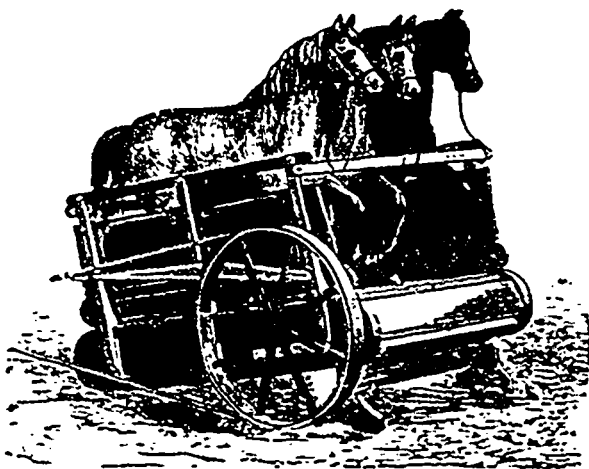
In conclusion, one word as to the settlers in British Columbia. A great number of these came out in the early sixties to the gold fields, stayed on and took up land after the C.P.R. was built; others have come in from all parts of Canada, and from the United States and the British Isles. But of all these very few were farmers, and with the high prices that were prevalent a few years ago I must say British Columbia methods of farming were too easy-going to last. I think we are all beginning to feel that more economical methods must be adopted. We must study what is most profitable on our own particular land, and such questions as rotations of crops, selection of stock, the use of ensilage, etc., are important.

Population of a kind is wanted, but to any who wish to come to British Columbia to settle I would advise them to come out and examine the situation for themselves. Men have come out here without money, and have by sheer enterprise and perseverance made a comfortable home for themselves and families. Others have come here with money, and are now working on a farm which virtually does no longer belong to them. Hence no man can advise another whom he does not know to try a new country, but without doubt British Columbia has many advantages, and has, I am sure, a magnificent future before her.

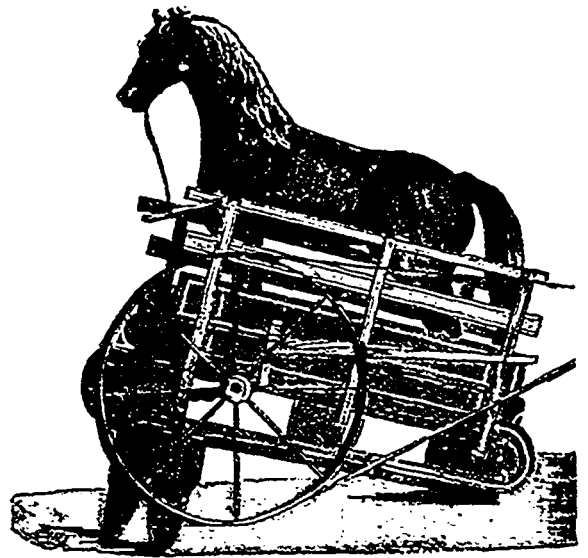
An Eye-Opener



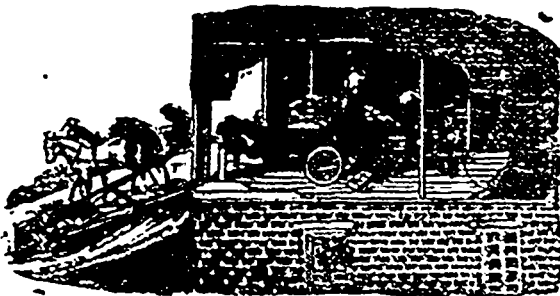
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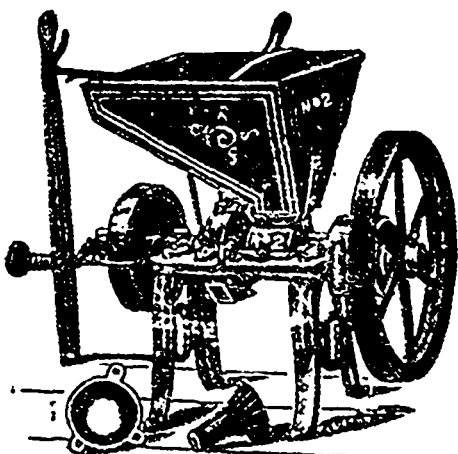
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A Visit to the Royal Show at Birmingham, Eng.

By J. E. Brethour, Burford, Ont.

Having visited the Royal Agricultural Society's Exhibition held at Birmingham this year, I thought perhaps some of your readers might be interested in having a short report of the exhibits, and a few comparisons with our own great Fair held annually at Toronto. A point which struck me forcibly upon first entering the show grounds was the entire absence of "special attractions" outside of matters purely agricultural. I thought what a relief it was to be able to devote one's whole time to an agricultural exhibition, without the temptation to go and see some of the so-called "special attractions." I am of the opinion that some of the boards of directors of our exhibitions in Ontario are devoting too much attention and money to these attractions, forgetting the objects which these exhibitions are intended to benefit. I notice this year that one of our largest exhibitions has reduced the sum of money appropriated for prizes, but I do not see that they have curtailed their appropriation for the "special attractions."

The exhibits of live stock at the Royal were very numerous in almost all the classes, and it did not appear to me that in any of the various classes there was a "walk over" for any exhibitor. In all the classes there appeared to be plenty of competition for the honors. In the sections of the different breeds of horses the exhibits were very superior, and they were all shown to the best advantage; but no trials of speed were given in any case. The spectators had a splendid opportunity of inspecting the animals on exhibition, as the horses and cattle were each day brought out on parade, and upon each animal a number was exposed, and full particulars could be ascertained as to owner, pedigree, etc., by reference to the catalogue. This parade was, without doubt, the most interesting part of the show. All the animals, whether prize-winners or not, were compelled to take part in the parade. I counted as many as fifty Short-horn bulls in one section, and any one of them good enough to head a herd. All the English, Irish, and Scotch breeds of cattle were equally well represented together with those of the Channel Islands.

The sheep department was where the highest degree of development was achieved, the various English breeds being well represented. I was surprised to find so many different breeds, being, in all, sixteen, and they were all brought out in the highest state of perfection. The prices that were realized for the prize winners in the different sections would be a surprise to many of our Canadian farmers. I was informed that eighty guineas was a common price for single animals, and from fifteen to twenty guineas was the common price for lambs. Several prize-winners were sold to go to Canada. The Argentine Republic was a strong competitor for high-priced sheep. Shropshires and Lincolns appeared to be selling at the highest prices.

But it was the pig department in which I was mostly interested. Taking the swine exhibit as a whole, I do not think that it was equal to that of the Toronto Industrial. There was not the same variety of breeds. The American breeds, viz.: Chester Whites, Duroc Jersey or Poland China, are not bred in England. I was very much disappointed in the exhibit of Berkshires, the number of hogs and the quality not being as good as those shown in Toronto, the large white or Yorkshire breed being the largest exhibit and the best quality of any of the breeds exhibited. The Tamworths came next in point of numbers and quality. In all the exhibits of the different breeds of hogs they were shown in breeding condition, and not so highly fitted as is the practice at Canadian shows. One of the conditions of winning a prize in the breeding sow section was that the sow had to produce a litter of pigs within three months from date of exhibition; failing this she would forfeit the prize awarded. I did not consider the classifications as good as at our shows, there being only two sections for each sex, viz.: boar farrowed previous to 1898, and boar farrowed in 1898; also sows

farrowed previous to 1898, and sows farrowed in 1898. With a classification of this kind a proper comparison of the animals cannot be made, owing to the difference in age of the animals shown in the same sections. Upon summing up the entire exhibits I was impressed with the fact that Canada could hold a creditable position in comparison with the "Great Royal" in point of quality of exhibits of live stock.



Shall the Average Farmer Keep Bees?

By R. F. Holterman, Apiculturist, Ontario Agricultural College

Having been asked by a reader of FARMING to deal with the above subject, I shall take it up in a general way. We must take it for granted that the questioner wants to know if it will pay the average farmer to keep bees. Now, if the question were asked, Does it pay to keep bees when care, attention and experience is put into the business? I would not hesitate to say, Yes.

My views are perhaps peculiar, but I think that the average farmer is undertaking too much now. Take a business man, or, as I prefer to put it, a man in any other business—for farming should be a *business*—and, if he invests one third or double the capital he can work, he is almost sure to go to the wall. The average farmer, or at least a great many farmers, do not work their land—their capital—to secure the most out of it; less land, more thoroughly cultivated, and a better selection of seed, less stock, or the same stock better selected and kept, is what is wanted. Then the average farmer divides his attention equally among too many departments, and the result is that he lacks that love, enthusiasm, and consequently, energy and skill, which is so desirable at the present day, and for that reason I say do not let the average farmer *spread* himself any more than he is already doing.

Now the above might at first glance appear to indicate that the average farmer better leave bee-keeping alone or that bees may be kept without entailing labor, time, and thought, but such is not the case.

If the average farmer does not look upon farming as a business he should, business principles should be brought in from start to finish. He must study his farm, his locality, and the times, and plan as far ahead as he can, and in doing this he will not be rushing into something new all the time and, when a product is high in price, rush into it with a lot of others just in time to catch the down grade. If a field by cultivation, selection of seed, etc., can be made to produce ten dollars' worth more of crop at an increased outlay of \$5.00, he must study to secure this result. If he has a mortgaged farm of 50 or even 100 acres, and is paying \$150.00 or more interest and he is only raising two-thirds of what he might do with a little more care, cultivation and thought, he might consider if it would not pay best to sell half the farm and work the balance to better advantage.

To come down to departments, and here it touches bee-keeping. Many a man gets into a rut; or, rather, a young man drops into a rut made by some one else. He never thinks what may pay him best, but just follows on blindly and unthinkingly. Of course, a man must consider his knowledge, and, to a certain extent, his tastes, in following a business. I say, to a certain extent his tastes, because I hold that we should be governed by reason rather than blind instinct or whim, for in many cases that is all that *taste* and liking means. And now we get down to the difficult question of the merits of bee-keeping as compared with other branches of agriculture. To the economic, intelligent, and energetic farmer, when the subject is once presented, bee-keeping will give food for careful consideration. If I am asked if the average bee-keeper is making bees pay, my answer is, I do not know. He is probably making bees pay as well as any other branch of the farm, and none of them as well as he should. I have often said, bees displace no crop on the farm; they avail themselves of the flowers, which exist without having the bees in view.

Practical Illustration Of The Differences Between Separators.

There are two types of cream separators. The older is the "plain" or "hollow" bowl machine, in which the milk is subjected to centrifugal force practically in solid bulk. This form of bowl was invented and used by the De Laval makers up to five years ago. The protecting patents have expired, and several of the concerns which the De Laval Company has forced to abandon making gravity creamers have taken up the manufacture of imitating cream separators with bowls of such pattern.

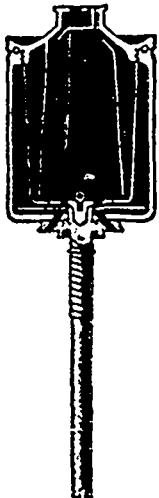


FIG. 1.
"HOLLOW" BOWL.
Capacity 350 lbs.
Speed 9,000 rev.
Recovery 95%

The later and greatly more improved type of separator is the "Alpha" disc or milk-strata bowl machine, in which the milk is subjected to centrifugal force in a series of 25 or more thin layers. The difference is all-important in its bearing upon every feature of separator practicability. The separation is more complete, capacity increased, necessary size of bowl lessened, speed may be less, temperature may be lower, and variation in operating conditions is much less material. Strong patents protect the De Laval makers in the exclusive use of the "Alpha" disc principle.

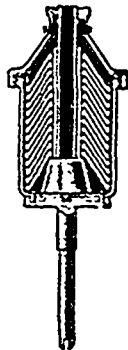


FIG. 2.
"ALPHA"
Disc Bowl.
Capacity 400 lbs.
Speed 6,500 rev.
Recovery 99%

A few comparative illustrations tell the story of these differences, as thus briefly outlined, in plainer manner than words can well convey understanding to one unfamiliar with separators and mechanical descriptions.

Compare it with Fig. 2. This is an "Alpha" disc bowl of the "Baby" No. 2 size. It now has a capacity of 400 lbs. per hour, at a speed of 6,500 rev. per minute. It recovers 99 per cent. of the butter-fat in milk, with any consistency of cream, lower temperature, and greater operating variation.

Fig. 3 is another well known type of "hollow" bowl separator. It has a capacity of 300 lbs. per hour, at a speed of 8,000 rev. per minute. Under favorable conditions it is capable of recovering about 92½ per cent. of the butter-fat in milk. At lower temperature or lower speed the loss is relatively greater.

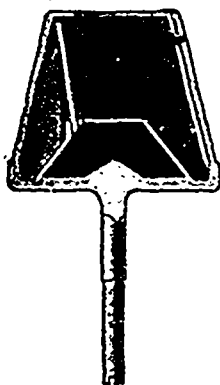


FIG. 3.
"HOLLOW" BOWL.
Capacity 300 lbs.
Speed 8,000 rev.
Recovery 92½%

Compare it with Fig. 4. This is another "Alpha" disc bowl, of the "Baby" No. 3 size. It now has a capacity of 750 lbs. per hour, at a speed of 6,000 rev. per minute. Its efficiency is equally as great as that of the "Baby" No. 2.

Compare these differences in relative size and construction and you have the whole theory of separator differences in principle and practice before you. Compare the differences in capacity, speed, and results. Consider that size, and particularly diameter, is the dominant factor in determining the power necessary to operate a separator, and the resulting wear and tear on its mechanical construction.

Consider that the De Laval machines are made solely from the standpoint of superior excellence, with fifteen years of experience and the best of every conceivable facility, and that the inferiority of imitating machines is as marked in almost every feature of mechanical construction as in separating bowl principle—that they are incapable of easy hand use and do not possess one-third the durability of the De Laval machines.

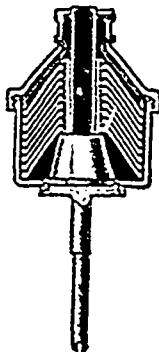


FIG. 4.
"ALPHA"
Disc Bowl.
Capacity 750 lbs.
Speed 6,000 rev.
Recovery 99%

Are you going to put your money, your labor, and a great part of your business success into a cream separator? Can you see the differences between the machines—to you? If you would have such differences explained in greater detail send for now "Dairy" catalogue No. 263.

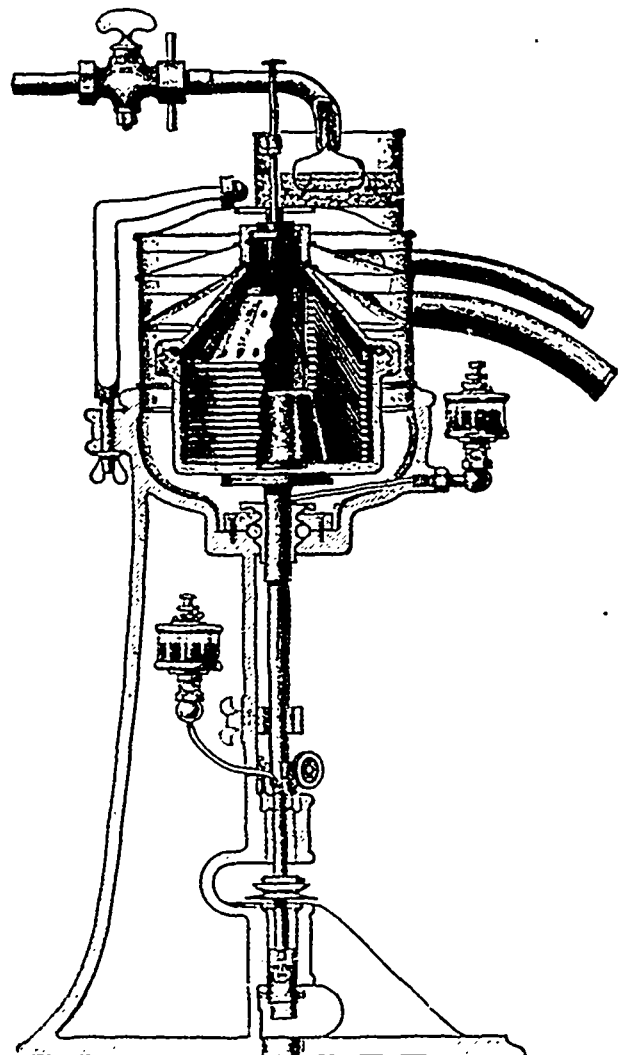
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3. Its new capacity is much the greatest.
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19. Its bowl is not too cumbersome to handle.
20. Its very largest bowl is of less diameter than other machines of one-third the capacity.
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23. It costs least in proportion to actual capacity.
24. It embodies in its construction fully double the values in material, workmanship and finish found in any other machine.
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It is sold subject to the Guarantee of its Superiority in every Material Respect over any other Machine made.

They help to fertilize the blossoms which exist for other crops. Honey takes nothing from the fertility of the soil. Then the amount invested in bees is small when you consider the returns they will give. You grow a crop more quickly than most, if not all, the departments of the farm. If poorly kept the bees will yield nothing; if properly cared for, and in a fairly good locality, bees will yield, one year with another, a good profit. The prices of honey have been fairly steady and unchanged for the last ten years. I speak not of locality, but honey could be bought in Canada as low ten years ago as it could when last year's crop was marketed. We have, during the same time, learned to produce for less money, we winter our bees better. One important item in cheap production, we buy for less money, and can buy the same necessities of life for less money. If this be the case are we not more fortunate than almost any branch of agriculture? I know many claim that there is not enough money in bees, and that honey is produced at a loss; but are they our most successful men? Of course, we would all like to make more money, but that is aside from the question. The farmer who will keep bees; giving that department as much care as any other, he will likely have the same measure of success. If I were a farmer, and had no intention of producing honey for sale, I would have two to four swarms of bees to produce what honey I wanted for my own use. Honey is the most valuable and healthful of sweets, and it should have the preference every time. Swarming can now be controlled to such an extent, and if the bees swarm the danger of loss can be so reduced, that bees can be kept without watching for swarms.

There are portions of the province of Ontario where bee-keeping can be made to pay better than any other department of the farm. I have not written this article to please anyone, but simply to give, to the best of my ability, plain facts. Do not make a business of bee keeping unless you are prepared to care for them. If you will do this it will pay at least as well as any other department of the farm. You can keep a few to secure honey for yourself with little care, but in this latter case your success will depend much upon the season, and you may strike a very adverse season when you fail altogether.

Packing Fruit and Preserving Eggs

Extracts from the Agricultural and Dairy Commissioner's Report for 1897

PACKING FRUIT.

It is essential that the fruit should be picked at the proper condition as to ripeness. When pears are full grown they appear to ripen so as to yield a better flavor when ripened *off* the tree than when ripened *on* the tree. Care should be taken in the handling of all tender fruits to prevent bruising. The sorting and wrapping should be done in such a way as to involve the least possible handling of the fruit. If the fruit can be cooled before it is sorted and wrapped, so much the less will be the risk of injury.

The packing of the fruit should be done in such a way as to keep it firm in the package. An excess of packing, in so far as that prevents circulation of air, is objectionable. Some kinds of packing are liable to become mouldy from the dampness caused by evaporation from the fruit. Paper and excelsior packing are of that sort.

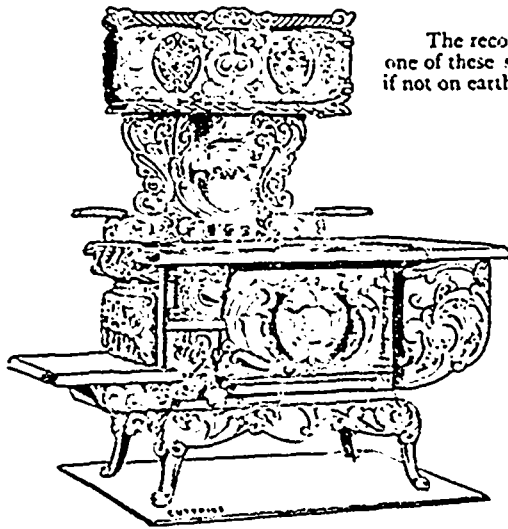
Only such fruits should be packed as are sound, of regular shape, and of fairly large size. Tomatoes are the exception in the matter of size. Medium and small-sized tomatoes sell for about one-half more per case than large-sized tomatoes.

COOLING FRUIT.

All tender or soft varieties of fruit should be cooled as quickly after they are picked as is practicable. For long keeping they should be cooled to a temperature between 36° and 40° Fahr., as warm fruit generates heat by the changes which proceed in it. It is thus much more difficult to cool than inert products, such as meats, eggs, etc. If the fruit can be even partly cooled before it is wrapped the risk of spoiling will be lessened to that extent.

Packages containing warm fruit should never be loaded close in a railway car in warm weather. If a refrigerator car be used, well iced, the generation of heat in cases of warm fruit will more than counterbalance the cooling power of the ice. The fruit will continue to ripen, and decay will begin.

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will be given. There will be four cash prizes of \$30.00, \$25.00, \$25.00 and \$20.00—for the four best essays, open to anyone, and a cash prize of a \$40 Souvenir Range, open to a farmer's wife or daughter only.

We have published a tasty booklet that you will like for its own sake, giving very full particulars of the Souvenir Range, especially the aerated oven, and also a circular setting forth in detail all conditions of the essay contest. These will be sent free to anyone on application, and can be obtained from any agent of Souvenir Ranges, to be found in almost every town and city in Canada. If you own a Souvenir Range the information in the booklet will help you to write your essay. If you do not own one a study of the booklet, combined with the demonstration of the value of Souvenir Ranges that will be given you by any agent, may make you a prize winner.

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*CAPACITY: 300 lbs. to
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In construction UNIQUE.

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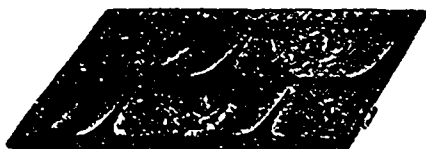
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They interlock one another on all four sides, leaving no ends to stick up, consequently give a roof a neat and finished appearance. We guarantee Safe Lock Shingles to be absolutely weather proof on all roofs having a fall of one foot in six. They render buildings fire-proof and are not liable to be struck by lightning.

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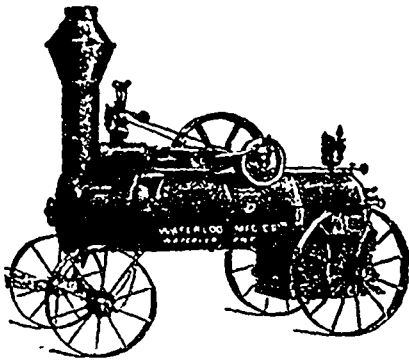
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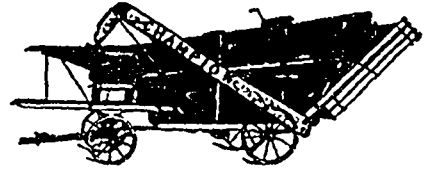
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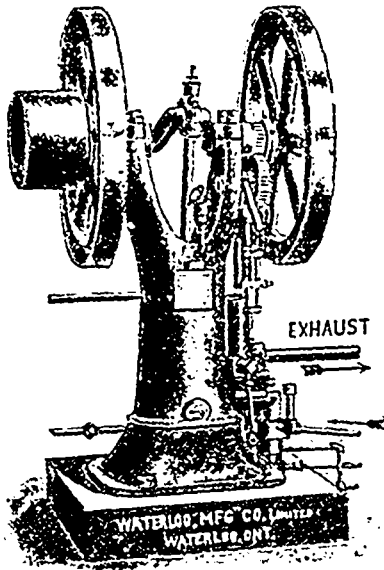
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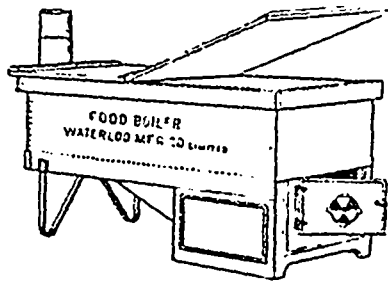
GASOLINE ENGINE



GASOLINE ENGINES

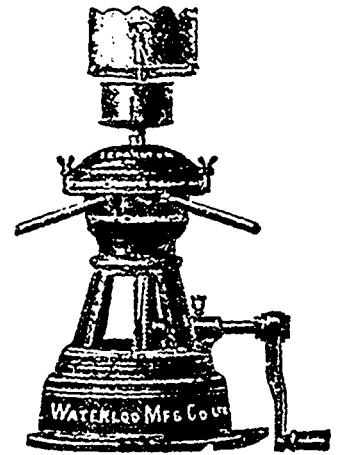
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Cost of fuel very low
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F. C. ROBINSON, Port Hope, Ont., says:—"Two ordinary workmen, who never worked at draining before, took the plough and in one day threw out ready for the tile 46 rods of ditch, 32 inches deep. The soil was a hard, dry clay subsoil, the day a hot one in July. I have employed experienced drainers before, and they never averaged more than six rods a day at the best through the same ground. The plough has proved perfectly satisfactory in every way." WRITE

R. G. SCOTT

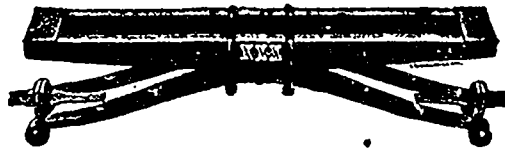
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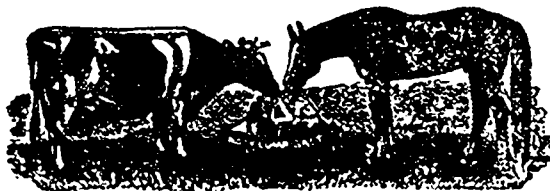
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For horses and cattle, car lots or less. 500 lbs., \$3.00 here. Cash with order.



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DENTONIA PARK FARM.

This farm is located near York Station on the G.T.R., a few miles east of Toronto and in a very short space of time will, undoubtedly, be one of the finest stock farms in the Dominion. The proprietor, Mr. W. E. H. Massey, of the Massey-Harris Co. of this city, is sparing neither time nor money to make it such. It is only about one year since Mr. Massey came into possession of this farm and the change wrought in that time is almost marvellous. What at that time consisted of a number of small farms somewhat run down and neglected is now being rapidly replaced by fertile fields, green pastures and the most modern farm buildings and driveways. To one well acquainted with the locality a year ago it seems almost incredible that so much could be accomplished in so short a time. It is, however, only a proof of what can be done by business ability, intelligence and push applied to farm work.

It is not our purpose in this article to give a full description of what Mr. Massey is doing at Dentonia Park Farm, space would not allow us. We hope, however, later on to be able to give our readers the benefit of the many improvements and conveniences in farm buildings, etc., which are to be found in and around this modern farm. The barn, a good view of which is given in this issue, is built on the side of a hill and is four stories high. In the top story, the floor of which is level with the high ground, is located the barn proper, where the hay, grain, etc., are stored. On this floor one is near the top of Mr. Massey's twin silos. These are built round, are 12 feet in diameter and 30 feet high, and hold 65 tons each. They are fitted up with doors along one side so that the ensilage can be taken out at any place from the top to the bottom. Immediately below the barn proper is the horse stable, carriage and drive house. Below this are the cow stable, and the dairy, and on the bottom floor are located the pigpens and stables for fattening cattle. The barn is so situated in relation to the hill side that there is a driveway onto each floor. The floors of the stables are made of cement and are perfectly water proof so that there is not the least danger of leakage from the stable above to the one below. Mr. Massey has adopted a splendid system of ventilation for all his stables. It consists of a large pipe one foot in diameter, extending from above the roof right to the bottom of the barn. From below the air passes up in front of the cows and horses and keeps the stables well ventilated throughout. All the buildings are lighted by electricity got from a dynamo in the building.

But it is of Mr. Massey's recent importation of high-class Jersey cattle of which we wish to speak more particularly in this article. Since coming into possession of Dentonia Park

THE ATTENTION OF FARMERS AND DAIRYMEN

Or others having occasion to put up

BUTTER, HONEY, JAM, ETC.

For shipment or for storage is particularly directed to the utility for this purpose of our

Antiseptic Ware

It is perfectly sweet and odorless and does not become rusty or corroded under any circumstances. Write for catalogue and prices to

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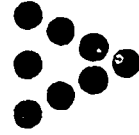
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and Vancouver, St. Johns, Nfld.

Farm, Mr. Massey has purchased a number of purebred Jerseys from leading Canadian breeders, among which are some cows of very high breeding indeed. His Canadian-bred Jersey, Nora II., of Glen Duart, won over all Canadian-bred animals last year at the Industrial in the two-year-old class. But, being desirous of making the Dentonia Park Jersey herd one of the best on the continent, Mr. Massey decided this summer to make a number of importations of high-class animals from the fountain head, the Island of Jersey. These were taken out of quarantine a few weeks ago, and we must say that they are, without doubt, one of the best lots of Jerseys that have come to this country for many years back. Each animal, so to speak, is a specialist in his or her line, and if they are not heard from at the Industrial Fair, where Mr. Massey will exhibit twenty-five head, we shall be greatly disappointed.

Among the animals imported may be mentioned *Phenomenon of Dentonia*, AJCC 134365 (PS 3855, JIIB). Sire, Leonidas (PS 881, JIIB); dam, LeCoins Rose 3rd (PS 2479, JIIB). This little wonder of a cow was pronounced the grandest dairy cow in the Island, with a record of twenty-two quarts of milk per day. Mr. F. S. Peer says he considers her the greatest cow of her inches he ever saw, and declares she has no equal in America of her size. She was regularly milked three times

a day. The manager of Mr. William Rockefeller's farm sought on two occasions to buy this cow while in quarantine at New Jersey.

Dentonia's Island Queen, AJCC 134366 (PS 4094, JIIB). Sire, Noble (PS 1177, JIIB); dam, Orleanaise (FS 7160, JIIP). This cow won the certificate of merit in the butter test held in the Island of Jersey, and also holds a bronze medal for the largest quantity of butter produced in a given period. She has most wonderful milk veins, which we had the privilege of examining on a recent visit to the farm. Both Mr. Rockefeller's manager and Mr. Vanderbilt's manager sought to purchase this cow while in quarantine. One of the leading officials of the AJCC says she could not be duplicated in America for \$1,000. She is the dam of *Lord of Dentonia*, the bull at the head of the Dentonia herd; also of *Tister Dot* and *Quarantine*, two fine heifers at Dentonia.

Brilliant of Dentonia, AJCC 134367 (PS 5917, JIIB) is another fine cow. Sire, Mourier Boy (PS 1641, JIIB); dam, North Villa Prime (PS 2635, JIIB). She is the winner of several prizes on the Island, including one of the Royal Jersey Agricultural Society.

18 Carat of Dentonia (4837, JIIB) is also a winner of many Island prizes. Sire, Clemenceau (1988, JIIB); dam, Black Lady (8065, JIIB).

Dentonia's Good Fortune, AJCC 134369.

Sire, Uncle Peter (PS 2115, JIIB); dam, Pretty Girl (5460, JIIB). This is a fine yearling from a very famous cow, the champion over the whole Island, who was purchased for a very large sum last year by Lord Rothschild. She was pronounced the very best yearling on the Island, and should make a fine record.

Expatria of Dentonia, AJCC 130358. Sire, Una's Boy 2nd (PS 2070, JIIB); dam, Nymphia (PS 5609, JIIB).

Quarantine of Dentonia. Sire (a noted bull on the Island); dam, Dentonia's Island Queen, AJCC 134366.

Tister Dot of Dentonia, AJCC 134370. Sire, Ruler (PS 7324, JIIB); dam, Orleanaise 2nd (PS 4094, JIIB).

Sensation of Dentonia, AJCC 134368 (7000, IIC). Sire, Clemenceau (PS 1988, JIIB); dam, Theresa (PS 3983, JIIB).

Ruth's Hobby of Dentonia, AJCC 134371. Sire, Lord of Dentonia (AJCC 50166); dam, Theresa 2nd (PS 7000, JIIB).

Lord of Dentonia, AJCC 50166 (PS 2415, JIIB). Sire, Clemenceau (PS 1988, JIIB); dam, Orleanaise 2nd (PS 4094, JIIB). This animal is at the head of the Dentonia Park herd, and is certainly worthy of a place among the best of his class. He was calved in February, 1896, and is one of the finest Jersey bulls we have seen for some time. He will no doubt make a record.

(Continued on page 46.)

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PURE WATER

AMPLE FUEL

MOST desirable lands suitable for mixed farming can be obtained in the Old District along the line of the Calgary and Edmonton Railway, about fifty miles North of Calgary. Most desirable lands can be obtained in Southern Alberta in close proximity to the Calgary and Edmonton Railway and the Crow's Nest Pass Railway, suitable for mixed farming and ranching on both a large and small scale. North Saskatchewan also affords a splendid opening for intending settlers in the Prince Albert, Duck Lake and Rosthern Districts, on the line of the Qu'Appelle, Long Lake and Saskatchewan Railway.

For full information concerning these districts, maps, pamphlets, etc., apply to

OSLER, HAMMOND & NANTON,

Land Office, 381 Main Street, WINNIPEG

You don't believe 

that clover will result on your poor meadows and pastures
as a consequence of a fall top-dressing of

ALBERTS'
Thomas - Phosphate Powder
(REGISTERED)

Then try it for yourself now, and we will guarantee the results.



Use the same manure

for your fall grain, and you will reap a benefit, both in the
wheat and in the following crops for about four years.

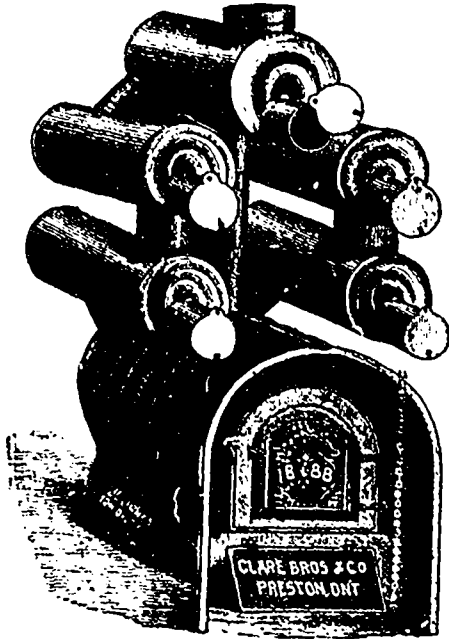
The sales of ALBERTS' THOMAS-PHOSPHATE POWDER are nearly
equal to those of all the phosphates sold in the world beside. The only
pure phosphate known to science and agriculture.



WALLACE & FRASER

Masonic Block,
St. John, N.B.

Canada Life Building,
Toronto, Ont.



The Hilborn Wood-Burning Furnace.
Our Catalogue Explains.

We make a

Specialty of Heating

And have placed many thousands of our "Hilborn" Wood Furnaces in country homes. Farmers use only rough and unsaleable wood, and in this way soon save cost of a furnace, to say nothing of the comfort.

We can also give you furnaces suitable for coal or coal and wood, or if you want to heat with hot water we refer you to the

PRESTON HOT WATER BOILER AND STEEL RADIATOR

We guarantee every furnace to work satisfactorily. Would you like to see a list of the homes that we are heating?

We prepare free estimates, send catalogues and full information upon application, and invite correspondence.

CLARE BROS. & CO., Preston, Ont.
Branch at Winnipeg, Man.

(Continued from page 44.)

Island of Dentonia, AJCC 130357. Sire, Hackbeam (PS 1958.JIIB); dam, Hightflyer 3rd (PS 5831.JIIB).

Visitors to the Toronto Exhibition should make it a point to see Mr. Massey's exhibit of Jerseys. They will bear inspection, and are of good quality. Besides Jerseys, Yorkshire and Berkshire swine and Shropshire sheep are kept at Dentonia Park Farm. Elaborate poultry buildings are now being fitted up. Besides these, Mr. Massey has several fish ponds. One pond contains 5,000 three-year-old fry, another 2,000 two-year-old fry, and there are 150,000 of this year's fry in another pond.

CHANGES IN THE O.A.C. COURSE.

IMPORTANT TO FARMERS' SONS.

Important changes in the course of the Ontario Agricultural College are announced in the new circular which has just come to hand. The two years' course for an Associate Diploma remains pretty much the same as it was, excepting the fact that it has been made more practical and has been adapted especially to the wants of those who do not intend to proceed to a degree in the University. The additional time required for the B.S.A. de-

gree will be two years for students who enter in October and thereafter.

The Christmas vacation has been reduced by two weeks, and the college year will now be from the 26th September to the 15th April, instead of the 30th of June. The change has been made to enable farmers' sons to return home in time for seeding and spring work. This change will, no doubt, be welcomed by many who want to attend the college during the fall and winter, but have to be at home for seeding.

Hereafter the professors will go out on farmers' institute work during the first two weeks of June, instead of in January as heretofore.

Publishers Desk.

Washing Machines.—We can speak with confidence of the merits of the washing machines made by Chas. Kreuziger, of Waterloo. There are certainly none better made in Canada.

Lump Jaw Cured.—Read the advertisement of W. J. Mitchell & Co., of Prince Albert, N.W.T., on page 2 of this issue. This firm guarantees to effect a cure or refund the money. Surely nothing could be fairer than this.

A Good Fence.—There seems to be something unique about the Cyclone Fence advertised on page 3 of this issue. It bears every appearance of strength and solidity. If we were buying a fence we should certainly investigate this one.

Fleming's Lump Jaw Cure.—This remedy has been before the public for some time and is claimed to have stood the test. At all events, the makers of it give a positive guarantee to cure or refund the money. See their advt. on the first page of this number.

An Old Friend.—We advertise in this issue St. Jacob's Oil, the great remedy for pain. (See page 1.) This is an old friend, that has stood the test of nearly a quarter of a century, and it is always a pleasure to greet the old Monk, who has done so much for the pains and aches of suffering humanity.

Mr. T. A. Cox, the owner of the famous Golden Link Herd of Berkshires, is one of those whose portrait adorns the page on which his advertisement appears. Mr. Cox is tolerably well known as an exhibitor and successful breeder. The portrait which we have inserted in his advertisement is taken from last year's programme of the Toronto Exhibition, having been selected by the management as that of one of the foremost Canadian exhibitors.

Vessot's "Champion" Grain Grinders...

WILL BE SHOWN AT THE FAIR

Don't fail to see how they do the work.

The "big fellow" will surprise you. **IT'S NEW**

Our men will be at your disposal to tell you all about us and show you a test of our machines.

S. VESSOT & CO.
JOLIETTE, QUE.

Mr. Norman M. Blain, the well-known breeder of Tamworths, of St. George, Ont., has a special announcement on page 5 of this number. A very good portrait of himself adorns that page also and is an evidence of his desire that people should not only become acquainted with his sock, but with himself as well.

Farms.—Mr. J. L. Scarth, of Toronto, is advertising a number of exceedingly cheap farms for sale in this issue (see page 3). Those looking for lands either for settlement or as an investment for their money should write for particulars. These farms are all in Ontario, and seem to be in very desirable locations.

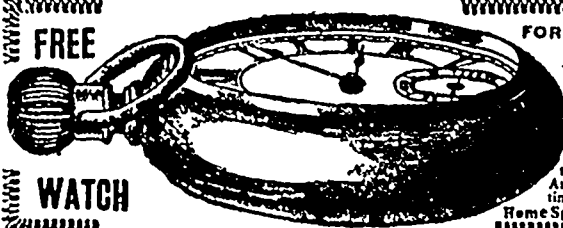
The Farmers' Supply House.—The Bailey Donaldson Co., of Montreal, whose advertisement appears on page 2 of this issue, make quite an attractive display. Their sewing machines, windmills, repairing outfits, seem to be just about what the users of such things want, and the prices are certainly reasonable enough.

The National Cream Separator.—Attention is called to the advertisement of the Creamery Supply Co., of Guelph, Ont. There is no question but that everyone who keeps cows should have a separator, and the "National" is claimed to fulfil all the requirements and to be the only one that does. Send for descriptive catalogue and testimonials.

Free Lands for Settlement.—In another column will be found the advertisement of Osler, Hammond & Nanton, of interest to the farmer and farmer's son. This firm are agents for the Calgary & Edmonton and the Qu'Appelle, Long Lake & Saskatchewan Railway lands, as well as other lands in Manitoba and the Northwest Territories, and furnish free information to intending settlers whether they propose taking a free homestead or buying, for everyone who homesteads will eventually buy land. The people of Manitoba and the Northwest have a good country, and settlers are all they want to make it a great one. It is justly claimed that as long as a settler comes it does not matter in what part of the country he locates. If he is a farmer, and one of the right sort, he will add to the wealth of the country whether he makes a home in Manitoba or in Alberta, and a man must indeed be hard to please if he cannot find a home to suit him in either.

Wood Preservative and Preservative Paint.—To arrest the process of decay in wood is one of the problems of the day. On page 3 of this issue will be found the advertisement of The Finch Wood Preservative and Paint Co., who claim to supply a wood preservative and paint which has completely and entirely solved the problem. They will cheerfully furnish evidence of the fact to anyone desiring information on this subject.

FREE
WATCH



FOR One Day's Work
We give this fine Watch for selling two dozen packages of Exquisite Perfume at ten cents each. Send your address and we forward the perfume, postpaid, and our Premium List. No money required. Sell the perfume among your friends, return the money, and we send the watch, prepaid. This is a genuine American Watch, and guaranteed a good timepiece. In writing mention this paper. Home Specialty Co., 60 Victoria St. Toronto

Good Butter Making

Do you want to make your churning sure, safe, profitable? And easy, too? Do you want to find a quick market for your butter?

Then try WINDSOR SALT—the salt that is pure and dissolves so easily. It has no bitter taste—successful buttermakers recommend it, and they ought to know.

Progressive Grocers Sell

Windsor Salt

The Windsor Salt Co. Limited, Windsor, Ont.

THE GERMS OF

Contagious Abortion OR Hog Cholera

Cannot exist where WEST'S FLUID is properly used. It is also one of the very best SHEEP DIPS on the market. Full instruction upon application.

THE WEST CHEMICAL CO., TORONTO, ONT.

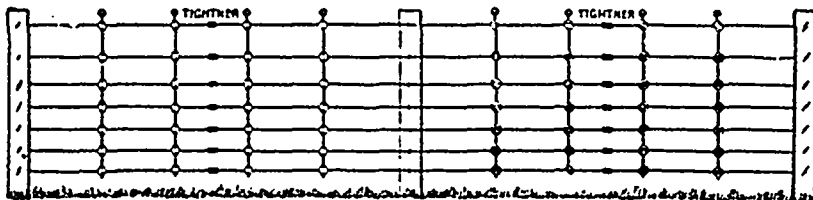
Agents wanted in all counties.

THE 'Century's Period'

THE WESTMINSTER, the great Canadian home paper, makes an extraordinary "End of the Century" offer. Illustrated announcement number just issued. Sample copy free. It's worth having. Send name on post-card. Address,

THE WESTMINSTER, Toronto.

FENCE MACHINE GIVEN AWAY



To introduce the best Fence made into new localities we will give a Fence Machine at Wholesale Cost Prices and License FREE to any person buying material for 100 rods of Fence. See our Diamond Grip Fence at Toronto and London Fairs. Get particulars from



CANADA FENCE CO., - LONDON, CAN.

.... Ask Your Grocer for

E. B. EDDY'S

Indurated Fibreware

Tubs, Pails, Milk Pans, Wash Basins, Etc.

THE NEATEST, CLEANEST, SWEETEST, AND MOST INDESTRUCTIBLE WARE IN THE MARKET. IT HAS NO EQUAL.

THE E. B. EDDY CO., LIMITED

HULL

MONTREAL

TORONTO

Quebec, Hamilton, Kingston, London, St. John, N.B., Halifax, Winnipeg, Victoria and Vancouver, St. Johns, Nfld.

Thorold Cement. We suggest that those of our readers who contemplate building should write to the estate of John Battle, Thorold, Ont., for an estimate of the cost of this cement. We have every confidence in recommending this old established firm as well as the material manufactured by them.

The Larimer Ditching Plow.—We had occasion more than a year ago to call attention to this remarkably useful farm implement and have much pleasure in again recommending it to the notice of those who are in need of such an implement. The advertisement which appears on page 43 sufficiently describes its uses and if any further information should be required it will be cheerfully furnished by the manufacturer, Mr. R. G. Scott, of Martintown, Ont.

Protection from Lightning.—Among the many advantages gained by using Eastlake steel shingles is the protection they offer from lightning. Many valuable buildings are destroyed every year by being struck during severe storms, and the farmers all through Canada are learning to appreciate the safety gained by using Eastlakes. They are not only lightning, fire and rust proof, but have a patent side lock not found on other shingles, which makes them the quickest laid on the market, and allows for all contraction or expansion of the metal. That Eastlakes make "the tightest roofs to be had" is the claim of The Metallic Roofing Co. of Toronto, and their claim is justified by results wherever Eastlakes are used.

An Opportune Simile.—In view of the discussion which has been taking place in FARMING of late respecting the value of Thomas Phosphate Powder as a fertilizer, the following extract from an article in *The Field* on "The Lincolnshire Long-wools," will be of interest. The writer says: "Alford is situated in the heart of the district where the true old Lincolnshire Long-wools seem to be indigenous—springing up spontaneously, as clovers appear to do on land dressed with Thomas Phosphate Powder."

A Double Root Cutter.—Tolton Bros., of Guelph, Ont., are to be congratulated upon the success which they have achieved with their No. 1 Double Root Cutter, having won all the first prizes last year, and succeeded in demonstrating to every one the superiority of the machine. The fact that it will do the work of two separate machines—a pulper and slicer—is sufficient alone to give it a decided advantage; but, when it is considered that in either capacity it is superior to any single machine, that advantage is enormously increased. In fact, it is without a rival.

The Lancaster Machine Works.—Special attention is directed to the advertisements of the Lancaster Machine Works, appearing in this issue. A representative of FARMING visited the firm's works recently, and found things "booming," more business having been done for the first three months of the present year than at any time during the previous three years. The business is still carried on by the Messrs. Stafford, who make a specialty of the following, viz.: Feed cutters, circular saws, and all kinds of dairying utensils and machinery. In the latter line the Messrs. Stafford manufacture several different machines under special patents. There has been a constant demand for their curd mill, milk crane, and cheese presses, some of the largest dairying establishments in the county and Dominion having placed orders with them. They ship frequently as far as British Columbia in the west, and Prince Edward Island in the east. At all exhibitions where they have had an exhibit they have carried off many prizes, medals, and diplomas, notably those at Sherbrooke, Toronto, Ottawa, and Montreal, in the latter place securing the bronze medal for their dairying machinery. Readers of FARMING who desire goods such as this firm manufacture cannot make a mistake in getting their catalogue and prices. The firm are thoroughly reliable in every respect. As an instance of the esteem in which Mr. W. J. Stafford is held by the townspeople, that gentleman was elected a member of the town council for the present year.

Central Canada Exhibition

OTTAWA, ONT.

SEPTEMBER
16th to 24th, 1898.ENTRIES CLOSE
TUESDAY, SEPT. 13th.

Over \$75,000 expended since last Exhibition in extending and improving the Grounds and erecting New Buildings.

Prizes increased in all the principal Live Stock Classes including Poultry and Pigeons, also new classes added to the Horse, Cattle, and Swine Departments.

Special Prizes for Milk Test. 32 Gold Medals as Sweepstake Prizes for Horses and Cattle.

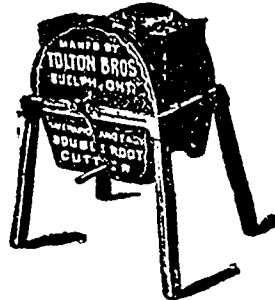
New Main Building, 210 feet long, constructed of iron. Agricultural Implement Hall and Poultry Building enlarged. New Dining Halls. All buildings reconstructed and enlarged.

Live Stock Accommodation Unsurpassed.

Evening Entertainments and "SPECTACULAR" as usual.

Special low rates on all lines of travel. For all information address
WM. HUTCHISON, M.P., President. E. McMAHON, Secretary.

TOLTON'S No. 1 Double Root Cutter



Points of Merit

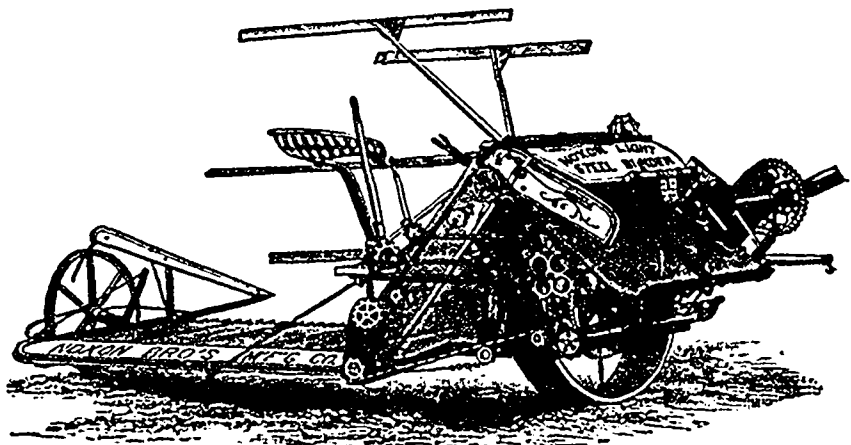
1. To change from pulping to slicing is but the work of a moment.
2. There are two separate wheels, one for pulping and the other for slicing.
3. The united force of both wheels is always used in doing the work in either capacity.
4. The hopper is between the wheels and does not choke.

THE LATEST AND BEST AND THE ONLY
DOUBLE ROOT CUTTER MANUFACTURED

Do not fail to see our exhibit at the Toronto and London Fairs.

TOLTON BROS., Guelph, Ont.

Noxon Steel Binder



The Binder THAT DOES IT ALL
AND DOES IT RIGHT

Noxon Bros. Mfg. Co., Limited
INGERSOLL ONTARIO.

The Spramotor.—This excellent apparatus has been in practical use for a number of years and been proved to be the best spraying machine yet invented. Over sixty outfits have been used by the Ontario Government for demonstrating their experimental work, and they have also been used for similar purposes by five different governments in America and Europe, and it was awarded the first place by the judges at the contest held under the auspices of the Board of Control of the Fruit Experimental Stations of Ontario on the 2nd and 3rd of April, 1896. The apparatus is now used for oil painting, whitewashing, and cement covering, for disinfection and the prevention of contagious and infectious diseases among cattle and for spraying fruit trees.

Messrs. R. A. Lister & Co., of Montreal, representing the Melotte & Alexandra Cream Separator, are, without any argument necessary to back them up, *par excellence* in butter machinery of America to-day. The firm are always prepared to meet their competitors at any place or time under any conditions, and an actual test will be given each afternoon during the Toronto Fair. Any information or correspondence will meet with prompt attention if addressed to their representative for Western Ontario, Mr. P. J. Loughrin, 10 King street west, Toronto, or for any other creamery supplies.

Richardson & Webster, of St. Marys, Ont., have, without doubt, one of the finest displays of dairy and creamery supplies ever seen on the Exhibition grounds, comprising everything necessary for dairying purposes, from the milk cooler to the butter print. Their exhibit of American Cream Separators, of which they are sole Canadian agents, is particularly fine, being under the direct supervision of Mr. Thos. Collins, the inventor of the "American." It is made in three sizes, suitable for any sized dairy, and for ease of operation, simplicity, durability, clean skimming, capacity, and price they are unrivalled. The whole exhibit is very creditable, and is bound to attract attention.

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

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.

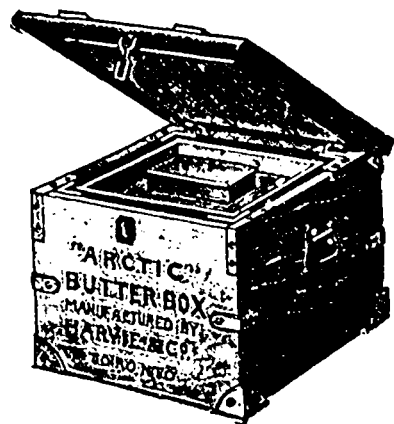
Sold by all Druggists. Send for Pamphlet.

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



PROTECT and beautify your lawn with one of our Iron Fences. Send for Catalogue to

Toronto Fence and Ornamental Iron Works,
 73 Adelaide Street West (Truth Building).
 Manager. JOSEPH LEE.



Harvie's "Arctic" Butter Shipping Box

Made of spruce lumber, with galvanized iron ice tank, malleable iron hinges, handles, basps, and corner plates, almost indestructible. Made in sizes to hold

40 lbs. in Summer, or 48 lbs. in Winter	—\$3.00.
60 " " " 72 " " "	—\$3.50.
80 " " " 96 " " "	—\$4.00.
100 " " " 120 " " "	—\$4.50.

HARVIE & CO.

223 QUEEN ST. EAST. - TORONTO.

CANADIAN OFFICE & SCHOOL FURNITURE LIMITED
 PRESTON ONT.
 FINE BANK OFFICE, COURT HOUSE & EDUC. STORE FITTINGS.
 OFFICE, SCHOOL, CHURCH & LODGE FURNITURE.
 SEND FOR CATALOGUE



Paint

RAMSAY'S

Unicorn Pure Mixed Paints

are made for house and home. They are Pure Paints. They beautify everything they touch and fight off sun and storm. When you Paint your house use Unicorn Brand and be assured of a good Paint.

RAMSAY'S

Outside Paints for Farmers'

Barns, Bridges, Fences, Outhouses, etc. Farmers should use Ramsay's Outside Paints for all rough work. They are superior even to many of the so-called First-class paints put on the market.

RAMSAY'S

Wagon Paint

This paint is a delight to the Farmer. Clean up your wagon, and apply the paint with an ordinary brush. It is painted and varnished at one stroke, and the wagon is ready for the road the next day.

...USE...

- RAMSAY'S VARNISHES
- RAMSAY'S PURE COLORS
- RAMSAY'S WHITE LEADS
- RAMSAY'S KALSOMINES

Everything bearing our Trade Mark is guaranteed

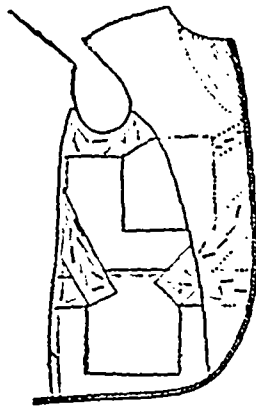
A. RAMSAY & SON,

Established 1842

Paint Manufacturers, MONTREAL

The Beams and Rafters

are to a building just what the staying is to



Shorey's Ready-to-Wear Clothes.

The inside of one of Shorey's coats is here illustrated by a drawing made from a photograph. The great advantage of a coat properly stayed is that it keeps its shape until it is worn out, and does not

look like an old garment after a few weeks wear. An ordinary ready-made garment may look well at first, but it is made to sell not to wear.

Shorey's make all have a guarantee card in the pocket.



heating apparatus. Their wood heaters are just the thing for the farmer, as they will consume the roughest kind of fuel. For cheese factories and creameries the heating appliances turned out by this firm are unequalled in this country. We have great pleasure in recommending the firm to anyone requiring their appliances.

The Waterloo Manufacturing Co.—FARMING is pleased to be able to call attention to this company's advertisement on page 42. The threshing machines made by them have become so popular that it is almost impossible, with their present facilities for manufacturing them, to keep up with the demand. Their feed boilers, we have reason to know, have also given great satisfaction. The other implements which they make, including their new gasoline engine, will, we believe, be found equally reliable and satisfactory.

PNEUMATIC ENSILAGE AND STRAW-CUTTER.

The simplest, the strongest, the fastest and the lightest-running ensilage and straw-cutters in the market are those made by the Wilkinson Plough Company, Limited, of Toronto. Threshers have threshed all morning and cut and delivered the straw in the mow in the afternoon. Capacity is only limited by the quantity which you can get to the machine. If you come to Toronto, London or Ottawa Exhibitions, be sure and see them, as one will be found running at each of these during the progress of the fair.

AGRICULTURAL COLLEGE

GUELPH, Ont.

Will reopen on the 26th September of this Year

Full courses of lectures with practical instruction in subjects needed by young men who intend to be farmers. Send for circular giving information as to course of study, cost, etc.

JAMES MILLS, M.A., President.

Guelph, July, 1898.

Auction Sale of Live Stock.—The attention of horse and cattle dealers and breeders is called to the auction sale of live stock to take place at the Southern Fair, Brantford, Ont., on Wednesday, September 21st, 1898. A large number of high-class stock will be sold without reserve.

Metal Shingles.—The goods manufactured by the Metal Shingle and Siding Company, Limited, of Preston, Ont., have been found satisfactory in a high degree. Their goods are durable, attractive in appearance, completely weather-proof and economical. A roof covered with these shingles will last a life-time and cost but very little more than one covered in the old-fashioned way.

Heating Apparatus.—The Cleb Bros. Co., of Preston, Ont., have made an enviable reputation for themselves as manufacturers of

The reason why your buildings are not painted is because the cost was too much. If you are interested in knowing how it can be done at one-quarter the brush price, send us word or see our

SPRAMOTOR EXHIBIT

At Toronto, London and Ottawa.

You will then be anxious to form the Painting and Spraying habit because it pays.

DEPARTMENT OF AGRICULTURE OF ONTARIO

Toronto, August 25th, 1898.

W. H. HEARD, Manager of Spramotor Co., London, Ont.

DEAR SIR,—I have great pleasure in stating that the Spramotor ordered from your Company this season has given entire satisfaction. It works easily, and is very effective in its operation. Your Company deserves much credit for placing so excellent a pump on the market.

JOHN DRYDEN,
Minister of Agriculture.

Fruitland, April 21, 1898

W. H. HEARD, Esq., Manager Spramotor Co., London, Ont.

DEAR SIR.—Your favor of yesterday just received. Am glad to learn that the fourteen pumps ordered for Provincial Experimental Spraying have gone forward so promptly.

Please ship me a No. 2 outfit, complete, for my own use.
Yours truly, W. M. ORR.

CERTIFICATE OF OFFICIAL AWARD

This is to Certify that at the contest of Spraying Apparatus held at Grimsby on April 2nd and 3rd, 1898, under the auspices of the Board of Control of the Fruit Experimental Stations of Ontario, in which there were eleven contestants, the SPRAMOTOR made by the Spramotor Company, London, Ont., was awarded FIRST PLACE.

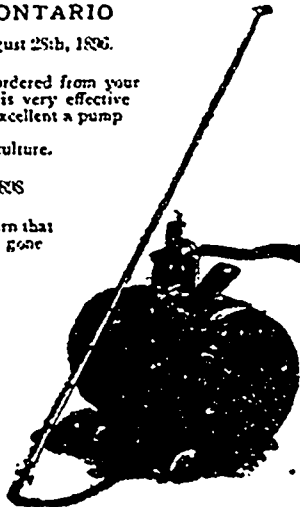
H. I. HUTT,
M. PETTIT,
Judges.

Send for 76-page copyrighted edition of Catalogue and treatise on the diseases affecting fruit trees and their remedies.

SPRAMOTOR CO.,

357 Richmond St.,

LONDON, ONT.



Woodstock Steel Windmills

FOR POWER AND PUMPING



Get a

DANDY

WITH

GRAPHITE BEARINGS

They Run without Oil.

Steel Towers, Pumps, Tanks, Saw Tables and Watering Troughs, etc.

WOODSTOCK WINDMOTOR CO., Limited

Woodstock, Ont.

BUY

Coleman's Salt

THE BEST

For Dairy or Table Use

IT IS UNEQUALLED.

Salt on the Farm

for wire worm, joint worm, army worm and all insects that destroy crops. Salt is the best insecticide. It is also a fertilizer.

TRY IT.

R. & J. Ransford,
CLINTON ONT

OUR TWO PUBLICATIONS BALANCE OF THE YEAR



FOR *TWENTY-FIVE* CENTS

We will mail *THE LADIES' HOME JOURNAL*, beginning with the next issue (October number), to January 1, 1899, also *THE SATURDAY EVENING POST*, every week, from the time subscription is received to January 1, 1899, for Twenty-five Cents, for the purpose of introducing our weekly with our well-known monthly.

The regular subscription price to *THE SATURDAY EVENING POST* is \$2.50 per year. It was founded in 1728, and published by Benjamin Franklin up to 1765, and has been regularly published for 170 years—the oldest paper in the United States. Everybody knows *THE LADIES' HOME JOURNAL*, with its 800,000 subscription list. The *POST* will be just as high a grade of literature and illustration, but entirely distinctive in treatment and in kind.

The best writers of the world contribute to both of our publications, and the illustrations are from the best-known artists.

The Curtis Publishing Company, Philadelphia

Stock Notes.

W. & G. TELFER, of Paris, Ont., breeders and importers of Southdown sheep, and successors to the business of A. Telfer & Sons, report that they have recently made the following shipments, amongst others: To A. N. Carr, a fine show lot consisting of four rams and six ewes; to J. N. Smith, of Fremont, Ohio, another show lot of ten head. Both of these lots will no doubt give a good account of themselves at the leading shows in the United States. They have also sold a shearing ewe and ewe lamb to A. J. Elliott, of Danville, Que., and a shearing ram to S. M. Cason, Thorp, Ont. Thus the celebrated Springfield flock of Southdowns are scattered over the continent. But there still remains a small flock which, it is to be hoped, will be found at Toronto and other leading Canadian fairs.

MR. JOHN CAMPBELL, of Fairview Stock Farm, Woodville, Ont., reports business brisk, shipments frequent, and the expressions regarding the black faces sent out per order very gratifying to the seller. His flock is in a good, thrifty condition. Those who want to see good rams or ewes can find them at Fairview Farm.

WM. STEWART & SON, of Lucasville, Ont., write: Our young stock sired by Oxford King are turning out good ones. Our cows never looked better. It is our intention to exhibit at Toronto and other leading fairs, and shall be glad to meet our old friends and customers, as well as many new ones. We invite inspection of our herd by anyone, and claim it is second to none in Canada in breeding. Come and see.

MR. C. R. DECKER, of Chesterville, Ont., reports that his Berkshires are doing exceedingly well. He has over forty head, of which three are aged bears fit for service, of good quality and length and plenty of bone, well haired, and with deep sides. The demand for this type of hogs is good, and Mr. Decker reports a goodly number of sales. His herd has been established for eighteen years.

MR. H. J. DAVIS, of Woodstock, Ont., writes: The present season has been the earliest known here. Crops of all kinds are excellent. The stock business in all lines is very active. Have sent out a large number of Yorkshire boars to different parts, and the animals still on hand are the lengthy, straight type which the present demand requires. The Shorthorn bulls and Shropshire rams I am offering are a very fine lot and fit for show purposes in any company.

MR. D. H. RUSSELL, of Bonnie Burn Stock Farm, Stouffville, Ont., says: My stock is progressing nicely although the pasture has dried up very badly. My young stock bull, Kinellar 2nd, is proving a sure getter and is improving immensely. My two heifers, sired by Kinellar (imp), are going to be beauties, and are safe in calf to Old Northern Light (imp). I have not as large a crop of bull calves this year as usually, but have an exceptionally good lot of heifer calves sired by four different bulls.

TATERNOCK STOCK FARM: Mr. James Bolen is again on hand this year with a fine exhibit of high-class Ayrshire cattle. He will be found at Toronto, London and Ottawa as usual, and will no doubt have his usual success.

A GREAT AUCTION SALE

LIVE STOCK

ALL WE HELL AT THE

SOUTHERN FAIR, BRANTFORD, ONT.

FARMERS' DAY

WEDNESDAY, SEPT. 21st, 1898

Among the entries already received is one from the Park Co., Brantford, Ont., for 78 head, of which 60 head will be sold absolutely with out reserve. All horse and cattle dealers and breeders interested should communicate with the Secretary.

C. W. YAPP, President

GEO. HATELY, Brantford, Ont.

Horse Owners! Use

GOMBAULT'S



Caustic Balsam

A Safe Speedy and Positive Cure

The Safest, Best BLISTER ever used. Takes the place of all liniments for mild or severe action. Removes Bunches or Hemishes from Horses and Cattle. SUPERSEDES ALL CAUTERY OR FIRING. Impossible to produce scar or Dermatitis. Every bottle sold is warranted to give satisfaction. Price \$1.50 per bottle. Sold by druggists, or sent by express, charges paid, with full directions for its use. Send for descriptive circulars. THE LAWRENCE-WILLIAMS CO.

W. C. EDWARDS & CO. Breeders and Importers

PINE GROVE STOCK FARM, Rockland, Ont.

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.

Ayrshires, Jerseys, Shropshire Sheep, and Clydesdale Horses.

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

JOS. W. BARNETT, Manager.

LAURENTIAN STOCK and DAIRY FARM, North Nation Mills, Que.

Ayrshires, imported and homebred herd headed by Imported Tam Glen 2nd, No. 1210 D. A. H. B. Jerseys all of the celebrated St. Lambert family; herd headed by Edgar Potts of St. Anne's 23704 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.

A. E. SOHRYSER, Manager.



DENTONIA PARK FARM

EAST TORONTO (Colman P.O.)

W. E. H. MASSEY, Proprietor.

Dentonia Jersey Herd Comprises twelve head of imported cattle direct from the Island, many of them noted Prize Winners; also some thirty cows carefully selected from the best Canadian Herds. Heifer and Bull Calves; also some good cows offered for sale.

Dentonia Poultry Yards S. C. Brown Leghorn and Light Brahma Cockerels for sale.

Dentonia Trout Ponds 100,000 healthy fry ready for delivery this fall. Prices reasonable. Trout Eggs in season. Market Trout supplied on short notice.



Dr. Leavitt's DEHORNING

...CLIPPERS

Are the BEST in use. More of them in use than all other kinds combined. For list, giving full particulars, address the owner of the Canadian Patent.

S. S. Kimball,

577 CRAIG STREET.

MONTREAL, P.Q.

JERSEYS.

BRAMPTON JERSEY HERD.

Full stock of A.J.C.C. cows, heifers, heifer calves and bulls. Ask for what you want. A number of young Berkshires.

B. H. BULL & SON, Brampton, Ont.

J. H. SMITH & SON, Willow Grove Farm, Highfield, Ont., Breeder St. Lambert and St. Helen's Cattle. Prize herd at the Industrial.

DOHT. REESOR, Locust Hill, Ont., Breeder Jersey Cattle and Shetland Ponies. Young stock for sale. Locust Hill is 20 miles from Toronto on the C.P.R.

WM ROLPH, Glen Rouge Farm, Markham, Ont., Breeder of Jersey Cattle. Herd nearly all pure St. Lambert. Young stock always for sale.

WM WILLIS, Pine Ridge Farm, Newmarket, Ont., breeder of St. Lambert Jersey Cattle, Cotswold Sheep.

WALTER NICHOL, Plattville, Ont., Breeder of Ayrshire Cattle and Leicester Sheep. Choice young stock for sale.

NORMAN G. MOODIE CHESTERVILLE, ONT.

Breeder of Barred Plymouth Rocks

FOR SALE—10 good, thrifty breeding Cockerels, choice mark, \$2.00 each. Also, 10 extra fine exhibition specimens, \$5.00 each

INCUBATORS Our Machines are the best manufactured in Canada, both hot water and hot air. Surest, simplest, and best system of regulating. Every machine warranted. Prices \$10 up.

EGGS FOR HATCHING from Silver, Golden, Barred Plymouth Rocks, and Pekin Ducks only \$1.50 per setting. Stock unsurpassed.

J. E. MEYER, Box M, Fossouth, Ont

Large English Berkshires



and Barred Plymouth Rocks Foundation Stock of Berkshires selected from herds of Arthur Johnson and Snell's Gold Medal Herd.

I have for sale: Young sows bred to a Small Bear. Young pigs by Tom Lee, -1131- Also pigs of both sexes, sired by (imp.) British Flag -1132-; dam, a show sow of Snell's. These are lengthy pigs with quality and size, sure to please. Prices to suit the times.

JOHN LAHMER Carrville P.O.

Richmond Hill, G.T.R. and Metropolitan Railway.

AT LAST

Our laborious experiments are completed, and, as a result of these and the adoption of the most perfect form for the administering and preservation of remedies, we offer the following new-style medicines for dogs (and cats):

- Tonic and Condition Tablets 50 cents
 - Lauzice Cure Tablets "
 - Vermifuge Capsules "
 - (Puppy) "
 - Alternative Cooling Tablets "
 - Laurium Ointment "
 - Lincture for Sprains, Rheumatism, etc. "
 - Hair Stimulant Ointment "
 - Herema and Mange Cure (only) "
 - Mange Cure (not oily) "
 - Anti-Rickets Tablets "
 - Eye Lotion Tablets "
 - Cough Pills "
 - Distemper Cure Tablets 75 cents
 - Veterinary Antiseptic Soap (dark), 50 cents per tablet.
 - Dog Soap (white), 20 cents per tablet
- And everything for dogs and poultry. Send for Catalogue to Spratts Patent, Limited, 215 East 50th st., New York. (San Francisco Branch, 1220 Valencia st.)

The Ontario Agricultural Gazette

The Official Bulletin of the Dominion Cattle, Sheep, and Swine Breeders' Associations, and of the Farmers' Institute System of the Province of Ontario.

LIST OF STOCK FOR SALE.

THE DOMINION CATTLE BREEDERS' ASSOCIATION.

Ayrshires.

Anderson, J. A. R.	Hamilton, Ont.	6 heifers, 1 month to 2 years.
Brook, Thos. & Sons	Brantford	Bull calves, 2 to 10 months; yearling heifers.
Caldwell Bros.	Orchard, Ont.	4 bulls, 2 to 14 months; 5 heifers, 12 to 16 months.
Davies, Robert	Toronto, Ont.	Yearling bull; bull calf.
Guy, F. T.	Bowmanville, Ont.	Bull, 2 yea. 5; 2 bull calves; heifers.
Hodson, F. W. & Co.	Myrtle, Ont.	6 imp. cows; 14 cows and heifers; imp. bull.
Nichol, Walter	Plattsville, Ont.	4 bulls, 2 months to 2 years; 5 heifers, 2 to 9 months.
Peterson, Chas. W.	Regina, Ass.	Stock, both sexes.
Reid, R. & Co.	Hintonburg, Ont.	5 bull calves, 1 to 6 months.
Smith, W. M.	Fairfield Plains, Ont.	3 bulls, 1 to 12 months; 1 heifer, 2 years; 2 cows.
Sorby, D. & O.	Gourock, Ont.	Stock, both sexes.
Stacey, R. G.	Brockville, Ont.	6 bulls; 4 heifers.
Vuill, J. & Sons	Carleton Place, Ont.	3 bulls, 4 to 10 months; females, all ages.

Polled Angus.

Howman, Jas.	Guelph, Ont.	2 bull calves; females.
Hurt, J. W.	Corningsby, Ont.	Young stock.
Hall, W.	Washington, Ont.	Young bulls and heifers.
Sharp, J.	Rockville, Ont.	3 bulls, 8 to 19 months; bull, 8 years; 2 females.
Stewart, Wm. & Son	Lucasville, Ont.	5 heifers; 3 bull calves; cow.
Vance, J. A. S.	Carlow, Ont.	5 bull calves; 10 females, 4 months to 5 years.

Galloways.

McCrae, D.	Guelph, Ont.	3 bulls and bull calves; 30 cows and heifers.
Shaw, R.	Brantford, Ont.	3 bull calves; 3 heifers, 2 years and under.

Holsteins.

Hallman, A. C.	New Dundee, Ont.	2 yearling bulls; 2 bull calves, 6 weeks; 3 females, 2 years and upwards; young stock.
Rice, A. & G.	Curties Crossing, Ont.	8 bulls, 1 week to 10 months; females, all ages.
Willis, R., Jr.	Glen Meyer, Ont.	Bull, 3 months.

Guernseys.

Butler, W. E. & Son	Dereham Centre, Ont.	Bulls and heifers.
McNish, W. H. & C. H.	Lyn, Ont.	9 bulls.

Herefords.

Smith, H. D.	Compton, Que.	Bull calves.
Stone, F. W., Estate	Guelph, Ont.	3 bulls, 2 years; 6 bull calves.
Stone, A.	Guelph, Ont.	3 bulls, 3 years; yearling bull; cows and heifers.

Devons.

Harper, Samuel	Colourg, Ont.	Stock, all ages, both sexes.
Rudd, W. J.	Eden Mills, Ont.	Stock, all ages, both sexes.

Jerseys.

Bull, B. H. & Son	Strampton, Ont.	7 bulls, 1 to 2 years; 4 bull calves; 9 cows and heifers.
Caldwell Bros.	Orchard, Ont.	3 bulls, 4 to 14 months.
Davies, R.	Toronto, Ont.	3 bull calves.
Wood, W. J.	Cornwall, Ont.	Bull, 2 years; bull and heifer calves.

Shorthorns.

Harley, L.	Port Hope, Ont.	3 bulls, 6 months to 3 years; 2 heifers, 1 year.
Bowman, W. R.	Mount Forest, Ont.	5 bull calves.
Bonnycastle, F. & Sons	Campbellford, Ont.	6 bull calves; 20 cows and heifers.
Bright, Jno.	Myrtle, Ont.	3 bull calves.
Calder, C.	Brooklin, Ont.	5 bull calves.
Campbell, Jno.	Woodville, Ont.	2 bull calves.
Cooper, J. V.	Pictou, Ont.	3 bulls, 10 months to 2 years.
Davies, J. F.	Tempo, Ont.	Cows, heifers and bulls.
Douglas, James	Caledonia, Ont.	16 bulls, 5 to 12 months; cows and heifers.
Elliott, W. R.	Hespeler, Ont.	5 bulls, 6 to 10 months; 2 heifers.
Ficht, Val	Oriel, Ont.	5 bull calves; 10 heifers.
Fleming, J. S.	Gill, Ont.	2 bulls, 7 months.
Fried, J.	Roseville, Ont.	3 bulls, 2 years; 8 bull calves, 1 to 7 months.
Gardhouse, J. M.	Highfield, Ont.	5 young bulls; cows and calves.
Goswill, S. B.	Fanshawe, Ont.	5 calves, both sexes.
Grainger, G. & Son	Londesboro, Ont.	5 bulls, 4 to 8 months; females, all ages.
Johnston, A.	Greenwood, Ont.	19 bull calves; 15 yearling heifers; older females.
Jeff, E.	Bond Head, Ont.	7 bulls, 8 to 16 months.
Leak, Jas.	Taunton, Ont.	30 cows and heifers, 1 to 5 years; 4 bulls, 5 to 9 months.
McCallum, J. R.	Iona Station, Ont.	6 bulls, 4 to 12 months; cows and heifers.
Miller, Robt.	Brougham, Ont.	20 bulls and heifers.
Milroy, D.	Paris, Ont.	4 bulls.
Oke, J.	Alvinston, Ont.	Bulls and heifers.
Pettit, W. G. & Son	Freeman, Ont.	2 yearling bulls; 10 bull calves; 12 heifers, 2 and 3 years.
Rusnell, D. H.	Stouffville, Ont.	2 bulls, 7 and 16 months; 4 milk cows; 4 heifers, 12 to 20 months.
Scott, F. W.	Highgate, Ont.	3 bulls, 5 months to 1 year; females, 1 to 4 years.
Sibbald, F. C.	Sutton West, Ont.	40 cows; 35 bull and heifer calves.
Smith, A. W.	Maple Lodge, Ont.	10 bulls, 5 to 14 months; cows and heifers.
Smith, H.	Hay, Ont.	6 young bulls; 6 heifers.
Stone, F. W., Estate	Guelph, Ont.	Bull, 2 years; 3 bull calves.

THE DOMINION SHEEP BREEDERS' ASSOCIATION.

Shropshires.

Brethour, J. E.	Burford, Ont.	2 imp. shearing rams; 5 ram lambs; 7 shearing ewes.
Bright, J.	Myrtle, Ont.	13 ram and ewe lambs.
Bowman, R. W.	Mount Forest, Ont.	20 ram and ewe lambs.
Calder, C.	Brooklin, Ont.	20 lambs, both sexes.
Campbell, J.	Woodville, Ont.	10 shearing rams; 50 ram and ewe lambs.
Copeland, W. E.	Teeswater, Ont.	2 shearing rams; ram lambs.
Davies, R.	Toronto, Ont.	20 head, both sexes, all ages.
Ewing, J. H.	Dartford, Ont.	2 aged rams; 1 shearing ram; 6 ram lambs.
Ganton, D. G.	Saurin, Ont.	2 aged rams; 3 shearing rams; 5 ram lambs.
Gurney, C. W.	Paris, Ont.	25 ram lambs; shearing rams.
Leak, J.	Taunton, Ont.	7 yearling ewes.
McFarlane, J.	Clinton, Ont.	60 ewes, 1 and 2 years; imp. rams, 1 year; ram and ewe lambs.

TO STOCKMEN.

A car of purebred live stock for Manitoba and the West will leave Ontario the last week in September. Persons having stock they wish delivered to western customers are respectfully requested to communicate at their earliest convenience with F. W. Hodson, Parliament Buildings, Toronto, Ont.

LONDON AND OTTAWA FAIRS.

F. W. Hodson will be at the Western Fair, London, September 15th and 16th, and will make his headquarters at the Tecumseh House, where he will be pleased to meet Institute officers from 7 a.m. to 12 noon, on the above dates, and from 2 p.m. to 4 p.m. he may be found at the secretary's office on the fair grounds.

He will attend the Central Ontario Exhibition, September 22nd and 23rd, making his headquarters at the Windsor Hotel, Ottawa, where he may be seen from 7 a.m. to 12 noon; and from 2 p.m. to 4 p.m. he may be found at the secretary's office on the fair grounds.

The Ontario Agricultural College will be represented at the Industrial Exhibition August 30th to September 9th. Mr. Zavitz, Mr. Jarvis, and Prof. Dean will all make exhibits, and Mr. Day will also be there conducting a dairy test. Mr. G. A. Putnam will be present at the tent of the superintendent of Farmers' Institutes, where he will distribute a quantity of circulars and other information concerning the Ontario Agricultural College. Persons wishing information concerning the college are invited to call on any of the above-named gentlemen during the time of the exhibition.

Farmers' Institute Department.

Reports concerning the work of the Farmers' Institutes in Ontario will be published weekly under this head; also papers prepared for this department by Institute workers. Secretaries and officers having announcements to make are invited to send full particulars to the Superintendent.

FARMERS' INSTITUTE AND LIVE STOCK ASSOCIATIONS' TENT AT THE INDUSTRIAL EXHIBITION.

Arrangements have been made by Henry Wade, Registrar of Live Stock, and F. W. Hodson, Superintendent of Farmers' Institutes, to occupy a tent, as an office, on the grounds of the Toronto Industrial Exhibition from August 30th to September 9th. It

Miller, R.	Brougham, Ont	250 head, both sexes.
Milloy, D	Paris, Ont.	20 ram lambs; 20 ewes and ewe lambs.
Pettit, W. G.	Freeman, Ont	Yearling ram; 15 ram lambs; 12 yearling ewes; 10 ewe lambs.
Sorby, D. & O.	Guelph, Ont	Ram and ewe lamb.
Wren, C	Uxbridge, Ont	Ram lambs; shearling and aged ewes.
Yull, J. & Sons.	Carleton Place, Ont	7 ram lambs; shearling ram, 2 years; females, all ages.
Dorsets.		
Bowman, J.	Guelph, Ont	2 shearling rams; ram lamb; ewe lambs.
Harding, R. H.	Hornfale, Ont.	15 head, all ages.
Hunter, J	Wyoming, Ont	2 yearling rams; 14 ram lambs; ewes and ewe lambs.
Richardson, J. A.	South March, Ont	1 ram; 2 ewes.
Oxfords.		
Arkell, H	Arkell, Ont	Yearling rams; ram lambs; yearling ewes and ewe lambs.
Birdsall & Son	Birdsall, Ont	Stock, both sexes, all ages.
Cooper, J. V.	Picton, Ont	Ram, 2 years; 3 shearling rams; 10 ram lambs.
Coombs, J. & Son	Harrison, Ont	1 two-shear ram; shearling ewes; ewe and ram lambs.
Dickson, W.	Midway, Ont	Aged imp. ram; 18 ram and ewe lambs; 12 aged ewes.
Elliot, A.	Podg Mills, Ont	14 ewe lambs; 8 ram lambs; shearling and aged ewes.
Elliott, W. R.	Hespeler, Ont	Ram lambs; shearling ewes and ewe lambs.
Evans, S.	Gourcock, Ont.	Aged imp. ram; 2 shearling rams; ewes, all ages; ram and ewe lambs.
Jull, I. H. & Son	Mount Vernon, Ont	Yearling ram; 25 ram and ewe lambs.
Wright, H.	Guelph, Ont	Aged and yearling ewes; ram and ewe lambs.
Southdowns.		
Bake, G. A. S. & Sons	Simco, Ont	Stock, all ages, both sexes.
Jackson, J.	Abingdon	4 aged rams; imp. ram lambs; 3 shearling rams; 20 ram lambs.
Leeson, S.	Kettleby, Ont	4 ram lambs.
Smith, W. M.	Fairfield Plains, Ont	2 rams.
Telfer, W. & G.	Paris, Ont	Ram lambs; 2 shearling rams.
Cotswolds.		
Allen, G.	Oriel, Ont	Stock, all ages, both sexes.
Bonnycastle, F. & Sons	Campbellford, Ont	Ram; 15 ram lambs; 20 ewes and ewe lambs.
Ficht, V.	Oriel, Ont	10 shearling ewes; 40 ram and ewe lambs.
Honey, R.	Brickley, Ont	1 two-shear ram; 7 ram and ewe lambs; shearling ram; 2 shearling ewes.
Linton, W.	Aurora, Ont	7 shearling rams.
McCrae, D.	Guelph, Ont	2 shearling rams; 12 ram lambs; 24 ewes and ewe lambs.
Park, J. & Son	Burgessville, Ont	15 ram and ewe lambs; 19 shearling ewes and rams; 10 two-shear ewes.
Thompson, W.	White Rose, Ont	4 yearling ewes; 6 ram lambs; 2 ewe lambs.
Leicesters.		
Armstrong, G. B.	Teeswater, Ont	Shearling rams; aged ewes; ewe lamb.
Bennett & Pardo	Claring Cross, Ont.	Ram, 2 shears; 3 shearling rams; 6 ram lambs.
Currell, F. S. & Son	Fulford, Ont.	30 head, all ages, both sexes.
Gardhouse, F. M.	Highfield, Ont	2 rams, 1 and 2 shears; 5 shearlings; 10 ram lambs; ewes and ewe lambs.
Smith, Jas. S.	Maple Lodge, Ont	50 ram lambs; shearling rams; 50 ewe and ewe lambs.
Wood, C. A. F.	Freeman, Ont	Yearling and ram lambs.
Lincolns.		
Stevens, R. W.	Lambeth, Ont	Ewes and ewe lambs.
Suffolks.		
Rudd, W. J.	Eden Mills, Ont	Stock, all ages, both sexes.

THE DOMINION SWINE BREEDERS' ASSOCIATION.

Tamworths.

Bate, E. H.	Brighton, Ont	6 sows, 1 month; 3 boars, 1 month; sow, 2 years.
Bain, N. M.	St. George, Ont	Hogs and sows, 3 to 10 months; young stock.
Brandow, A. W.	Walsingham Centre, Ont.	Stock, both sexes, 1 to 5 months.
Brethour, J. E.	Burford, Ont	2 imp. boars, 2 to 6 months; 3 imp. sows.
Brown, Wm.	Parsley, Ont	Boars and sows, 3 months.
Brooks & Son, I.	Brantford	Boar, 6 years; 6 boars, 6 weeks and 5 months; 6 sows, 5 to 12 months.
Caldwell Bros.	Orchard, Ont	11 boars, 3 to 14 months; sows all ages.
Carter, E.	Rayham, Ont	Stock all ages.
Dixon, Wm. L.	Dromore, Ont	Sow, 1 year; 5 pigs, both sexes, 3 months.
Dunn, A.	Ingersoll, Ont	3 sows, 3 to 7 months; 5 boars, 3 months.
Elliott, A.	Pod Mills, Ont	6 pigs, 2 to 3 months.
Fulton, J., Jr.	Brownsville, Ont	Young stock.
George, I.	Mt. Elgin, Ont	8 sows and boars, 6 months; 25 head, 6 weeks.
Golding, H.	Thamesford, Ont	6 sows, 5 months; young stock, both sexes.
Hallman, A. C.	New Dundee, Ont.	8 boars, 6 weeks to 1 year; sows, 6 weeks to 6 months.
Holland, F. F.	Dereham Centre, Ont.	8 boars and sows, under 6 months; boar, 2 years, 2 sows, 1 year.
Hord & Son, J.	Parkhill, Ont	11 boars, 4 and 6 months; 10 sows, 4 and 6 months; 25 pigs, 6 weeks.
Hawthorn & Sons, W. S.	Glanworth, Ont	16 boars and sows, 1/2 and 5 months.
Hosier, P. R. & Son	Green River, Ont	Stock, all ages, both sexes.
Johnson, F. P.	Moscow, Ont	4 sows, 4 months to 1 year; 3 boars, 4 months; young stock, both sexes.
Laurie, R. J. & A.	Wolverton, Ont	4 boars and sows, 9 months; pigs, 2 months.
Livingston, J. A.	Grattan, Ont	Boar, 18 months; 4 sows, 5 months; young stock.
Majar, W.	Whitevale, Ont	2 boars, 3 and 21 months; stock, 2 months, both sexes.
Morrow, R. O.	Hilton, Ont	14 boars and sows, 2 and 5 months.
Nichol, J. C.	Hutber, Ont	4 boars, 5 and 10 months; sow, 8 sows, 5 months.
North, Geo.	Marden, Ont	4 boars, 5 months to 2 years; 2 sows, 5 months.
Odeil, W. H.	Belmont, Ont	11 boars, 3 to 20 months; 25 sows, 3 to 12 months.
Prouse & Son, W.	Ingersoll, Ont	Stock, both sexes.
Reid & Co., R.	Hintonburg, Ont	Stock, both sexes, all ages.
Richardson, J. A.	South March, Ont	Stock, all ages.
Row, F.	Belmont, Ont	20 pigs, 4 1/2 months, both sexes.
Row, W.	Avon, Ont	10 boars; 20 pigs, 6 weeks.
Shipman G. H.	Caunington, Ont	Sow, 1 year; 2 sows, 3 months.
Smith, H. D.	Compton, Que.	Boars, 5 months; sows, all ages.
Simonton, J. H.	Chatbam, Ont	24 sows, 3 months to 1 year; 17 boars, 3 to 6 months; 45 head, 6 weeks.
Stratford, J.	Brantford, Ont.	10 young boars.
Tierney, J. H.	Norham, Ont.	Stock, all ages.
Trevorton, C.	Belleville, Ont	Sow, 2 years; boar, 14 months; 7 pigs, 6 weeks.

Berkshires.

Bonnycastle, F. & Sons	Campbellford, Ont	30 head, 2 to 4 months.
How Park Co.	Brantford, Ont	100 head, both sexes, all ages.
Bowman, W. R.	Mount Forest, Ont	10 boars and sows, 3 and 7 months.
Brien, E.	Ridgetown, Ont.	Hog; 4 yearling sows and boars, 4 sows and boars, 5 months; 20 pigs, 1 to 3 months.
Boyes, J. Jr.	Churchill, Ont	Sow, 5 months, 2 boars, 3 and 5 months; young stock, both sexes.
Brethour, J. E.	Burford, Ont.	1 imp. sow, 10 months.
Bull, B. H. & Sons	Brampton, Ont.	4 boars, 6 and 9 months; 7 sows, 6 months; 20 pigs, 2 months.
Clark, J. B.	Wenheim, Ont.	11 boars, 2 to 13 months; 19 sows, 2 to 8 months.
Coswill Bros.	Newcastle, Ont.	6 boars and sows, 2 months; 2 young sows.
Cook, F.	Parkhill, Ont	13 boars and sows, 3 and 9 months.

will be located east of the cattle ring and just in front of the horse and cattle sheds, on the site occupied last year.

Officers and members of Farmers' Institutes, of live stock, dairy, poultry, fruit growers, and kindred associations, exhibitors of live stock, poultry, agricultural products, etc., are cordially invited to make this tent their headquarters during the time of the exhibition. Associations connected with agriculture are at liberty to use the tent free of charge, for holding public meetings, for which ample accommodation will be provided. The superintendent will be pleased to meet there Institute officers and members, also members of kindred associations, to discuss the best means to advance the work of the Farmers' Institutes in their respective districts. A table and writing materials will be available at any time.

AN ABRIDGED REPORT OF ENGLISH AND EUROPEAN EXPERIMENTS WHICH ARE OF VALUE TO CANADIAN FARMERS.

THE CLEANING OF MILK.

The important question of the removal of dirt from milk has been attracting the attention of German experimenters. In *The Milch Zeitung* Backhaus gives the results of numerous experiments in this direction. He found that the germs contained in the milk were, practically, in proportion to the amount of dirt found therein. As about one half of fresh cow dung dissolves in milk it is impossible to estimate the amount present in the milk by the amount of dirt contained in it. In order to determine this Backhaus recommends allowing the milk to settle and then filter it through glass wool. Sieves and strainers were found unsatisfactory for cleaning milk, but cleaning by centrifuge proved satisfactory from a mechanical and bacteriological standpoint, the bacteria, for the most part, passing into the separator slime. The germ content of the milk examined ranged from 302,000,000 per gram in ordinary milk to 1,013,000,000 in dirty milk. The cream showed a higher number of bacteria than the skim milk. There was found a disadvantage, however, in cleaning by centrifuge, in that, apart from being troublesome, the milk thus treated does not throw up as much cream as milk otherwise handled, which causes customers to regard it as being poorer in fat.

The author of the article did not find filtering through paper or filter presses satisfactory. Filtering through sand removed the dirt but not the bacteria. Filtering through cellulose was successful from both a mechanical and bacteriological standpoint. In conclusion he says: "The fact that the impurities of milk are largely dissolved and that the undissolved portion is removed either imperfectly or

Davis, H. J.	Woodstock, Ont.	24 boars and sows.
Day, N.	Powles Corners, Ont.	Stock
Decker, C. R.	Chesterfield, Ont.	40 head, both sexes, all ages.
Ewing, J. B.	Dartford, Ont.	50 head, all ages.
Ferguson, J. J.	Smith's Falls, Ont.	8 sows, 4 to 6 months; young stock.
Graham, D. A.	Parkhill, Ont.	11 boars and sows, 5 months; 3 sows, 1 year.
Harris, G. N.	Lynden, Ont.	Aged boar; boar, 10 months; 5 sows, 4 to 11 months; young stock.
Hawkins, D.	Woodville, Ont.	7 boars, 1 year and under; 24 sows and boars, 4 to 6 months.
Holton, F. W. & Co.	Myrtle, Ont.	20 sows, 3 to 7 months.
Holdsforth, R. L. & Sons.	Port Hope, Ont.	4 sows, 3 and 10 months.
Jeff, E. & Son	Bond Head, Ont.	Boar, 3 years; stock, both sexes, 2 to 8 months.
Johnston, A.	Greenwood, Ont.	Young sows and boars.
King, W. P.	Oakwood, Ont.	2 boars, 2 months to 2 years; 3 sows, 2 months.
Kitching, J.	Corwhin, Ont.	Stock, both sexes, 2 to 6 months.
Lahmer, J.	Carville, Ont.	Boar, 3 months; sows, 3 months and over.
Lemon, S.	Kett's by, Ont.	Boars and sows, all ages.
Linton, W.	Aurora, Ont.	7 boars.
McKenzie Bros.	Scotch Block, Ont.	10 boars and sows, under 6 months; boar, 18 months.
McNish, W. H. & C. H.	Lyn, Ont.	Young pigs.
Murray, G. H.	Innerkip, Ont.	Boar, 10 months; 2 boars and 3 sows, 4 months.
Mutch, J. F.	Pilot Mound, Man.	Stock, all ages, both sexes.
Neil, T. H.	Lucan, Ont.	Boar, 13 months.
Patterson, W.	Churchill, Ont.	5 boars, 5 to 18 months; 7 sows, 1 to 10 months; 22 pigs, 2 and 4 weeks.
Pettit, W. G. & Son	Freeman, Ont.	2 boars, 9 months; 15 sows, 9 to 15 months.
Reid, R. & Co.	Hintonburg, Ont.	Stock, both sexes, all ages.
Ross, A. W.	Douglas, Ont.	5 boars and sows, 5 months.
Rusnell, Francis	Cedarville, Ont.	4 boars, 6 months.
Russell, J. A.	Precious Corners, Ont.	Boar, 18 months; boars and sows, 3 months.
Shipman, G. H.	Cannington, Ont.	4 boars, 2 and 9 months; 2 sows, 2 and 9 months.
Small, A. Jr.	Melbourne, Ont.	2 boars, 5 months and 2 years; sow, 5 months; sow; 9 young pigs.
Smith, H. D.	Compton, Que.	Young stock.
Thompson, W.	White Rose, Ont.	Boar, 4 years; 12 young pigs, both sexes.
Tierney, J. H.	Norham, Ont.	Pigs.
Walter, J.	Saltford, Ont.	15 boars and sows, 6 weeks to 9 months.
Wright, C. J.	Dixville, Que.	Stock, all ages, both sexes.
Yuill, J. & Sons	Carleton Place, Ont.	Stock, all ages, both sexes.
Yorkshires.		
Brethour, J. B.	Burford, Ont.	6 imp. boars and sows, 6 months; 60 sows and boars, 3 to 6 months; 5 sows; 50 pigs, 2 months.
Bowman, W. R.	Mount Forest, Ont.	20 boars and sows, all ages.
Cousins, J. & Sons	Harriston, Ont.	Boars and sows.
Darling, L. A.	Morganston, Ont.	3 boars, 3, 6 and 12 months; sows, 15 months and under; young stock.
Davis, H. J.	Woodstock, Ont.	26 boars and sows.
Davis, J. F.	Tempo, Ont.	Stock.
Day, N.	Powles Corner, Ont.	Stock.
Featherstone, J.	Streetsville, Ont.	6 young boars and sows.
Godard, C.	Cobourg, Ont.	Aged boar.
Honey, R.	Briellev, Ont.	11 boars, 1 to 12 months; 13 sows, 2 weeks to 6 months.
Hord, J. & Son	Parkhill, Ont.	10 sows and boars, 5 months; 20 pigs, 6 weeks.
Hood, G. B.	Guelph, Ont.	11 sows and boars, 2 and 4 months.
Howe, W.	North Bruce, Ont.	Boar, 2 years; stock, both sexes, 1 to 6 months.
Johnson, J. W.	Underwood, Ont.	7 boars and sows, 2 months and 2 years.
King, W. P.	Oakwood, Ont.	Boars and sows, 1 month to 2 years.
McKenzie Bros.	Scotch Block, Ont.	Sow, 1 year.
McLelland, D. W.	Harriston, Ont.	Aged boar; 4 boars, 6 months; sows, 2 months and upwards.
Mayloney, T. A.	Chapeau, Que.	3 boars and 2 sows, 10 months.
Ross, A. W.	Douglas, Ont.	25 boars and sows, 2 and 6 weeks.
Rusnell, F.	Cedarville, Ont.	3 boars, 7 months.
Russell, J. A.	Precious Corners, Ont.	Boar, 15 months; sow, 5 months; boars and sows, 2 months.
Shaver, S. & Son	Winchester Springs, Ont.	2 boars, 6 months and 1 year; pigs, both sexes, 2 weeks to 3 months.
Wilson, Mrs. A. J.	Pittsford, Ont.	11 boars, 5 and 8 months; 14 sows, 5 months to 1 year.
Wilson, W. C.	East Oro, Ont.	Stock, both sexes, 4 to 5 months.
Chester Whites.		
Beingsen, F. N.	Mil-Inay, Ont.	5 boars, 4 and 5 months.
Bennett & Pardo	Charing Cross, Ont.	Yearling boar; 10 boars, 4 months, aged sow; 13 sows, 4 to 10 months; young pigs.
Birdsall, F. & Son	Birdsall, Ont.	Young stock, both sexes.
Brooks, T.	Brantford, Ont.	3 boars, 5 and 9 months; 6 sows, 4 months to 2 years.
Butler, W. E. & Son	Dereham Centre, Ont.	100 boars and sows, 2 months to 3 years.
Cairns, J.	Cambridge, Ont.	10 sows; 100 young pigs.
Chalk, J. H.	Calton, Ont.	Boar, 2 years; young stock, 2 to 6 months.
Godard, C. E.	Cobourg, Ont.	Aged boar; 4 boars.
Golding, H.	Thamesford, Ont.	8 sows and boars, 4 months.
Harding, R. H.	Thornedale, Ont.	Boars, 4 to 12 months; sows, 4 to 5 months.
Holland, T. F.	Dereham Centre, Ont.	Boar, 2 years; 2 sows, 1 year; 8 boars and sows under 6 months.
Holdsforth, R. L.	Port Hope, Ont.	10 sows, 3 and 9 months.
Neil, F. H.	Lucan, Ont.	6 boars, 4 and 7 months; 19 sows, 4 to 13 months; 6 pigs, 1 month, both sexes.
Richardson, R. H.	South March, Ont.	Stock, both sexes.
Shaw, J. H.	Simcoe, Ont.	6 boars, 3 months and 1 year; aged sow; 10 sows, 3 months.
Tierney, J. H.	Norham, Ont.	Stock, both sexes, all ages.
Suffols.		
Hord, J. & Son	Parkhill, Ont.	Aged boar and sow; 8 boars and sows, 5 months.
Poland-Chinas.		
Bate, E. H.	Brighton, Ont.	2 boars, 4, 6 and 9 months; 3 sows, 4 months.
Clark, W.	West Lorne, Ont.	6 sows, 3 and 8 months; boars.
Duck, W. J.	Morpeth, Ont.	Stock, both sexes.
Elliott, A.	Pond Mills, Ont.	10 pigs, 2 and 3 months.
McKay, J. F.	Parkhill, Ont.	Aged boar; sow and boar, 6 months; 2 sows; young stock, both sexes.
McIntosh, A.	Winchester Springs, Ont.	4 sows, 18 months to 2 years; hog; stock, 4 to 5 months.
McKenzie Bros.	Scotch Block, Ont.	7 boars and sows, under 6 months; sow.
Stirzinger, F. H.	Fenwick, Ont.	9 boars, 5 months to 3 years; 24 sows, 5 to 18 months; pigs, 2 to 4 months.
Smith, W. M.	Fairfield Plains, Ont.	6 boars and sows, under 6 months.
Smith, J. M.	Chatham, Ont.	6 boars, 4 to 14 months; 11 sows, 3 to 10 months.
Willie, R., Jr.	Glen Meyer, Ont.	2 boars, 5 months to 2 years; stock, both sexes; yearling sow; 2 sows, 5 months.
Wright, C. J.	Dixville, Que.	Stock, all ages, both sexes.
Duroc-Jerseys.		
Butler, W. E. & Son	Dereham Centre, Ont.	7 boars; 18 sows; 10 pigs, 2 to 3 months.
Elliott, A.	Pond Mills, Ont.	8 pigs, 2 to 3 months.
Fraser, I. O. & Son	Fellows, Ont.	4 boars; sows; stock, 2 to 6 months.
Howard, N. H.	Lynden, Ont.	Young stock.
McKenzie Bros.	Scotch Block, Ont.	10 boars and sows, under six months.
Maxtin, S. E.	Bloomfield, Ont.	Young stock, both sexes.
Park, J. & Son	Burgessville, Ont.	12 sows; boar under 1 year.
Smith, W. M.	Fairfield Plains, Ont.	Boar, under 6 months; boar, 11 months; 2 sows, under 6 months.
Tapscott, Bro.	Ridgetown, Ont.	22 boars, under 1 year; aged boar; 20 sows, under 6 months; young stock, both sexes.

with great difficulty by any means at present available shows the need of making every effort to reduce the impurities by careful milking and treatment."

(To be continued.)

Stock Notes.

The well known firm of H. Cargill & Son, Cargill, Ont., breeders of pure-bred Shorthorns, have recently made some noted purchases of Shorthorns in Scotland. Mr. W. D. Cargill has been visiting a number of the cattle shows in England and Scotland and has been successful in securing among others the following animals which will be important additions to this well-known herd: the two year-old Shorthorn bull, Orange Duke, from Mr. Adams, of Raade. This animal was first in his class at the Bauchory Show, Aberdeenshire, and was selected by Mr. Cargill as the best animal in the yard. He also bought from Mr. Adams the yearling heifer Duddy, which was also first in her class and adjudged the champion Shorthorn of the above show. Mr. Cargill also bought from Mr. A. Still Nether Angus, a young cow; Princess Thule II., and her heifer calf, the former being by the Bull Denmark, which was champion at Bauchory and Inverarie, and the latter by Maximus. He also took from the same herd two very handsome two-year-old heifers. Mr. Cargill purchased from Mr. Longmore, Rittie, the three-year old prize cow Cranla and her calf, which has been twice in the prize list at Aberdeen, and also a two-year-old heifer from the Manganese family. Besides these he bought of Mr. Longmore the first prize and champion Aberdeen heifer Costilla. These importations will make the Cargill herd one of the best in the province, and will add very much to the value of Canada's stock-breeding interests. There cannot be too many importations of this kind made during the next few years.

Brampton Jersey Herd.

This large herd of Jerseys is fast coming to the front as a winner of prizes. Last year the owners, B. H. Hull & Son, of Brampton, carried off 86 prizes. In this herd, which consists of some fifty animals, are to be found to-day such cattle as Princess Minette, with a record of 13 lbs. 6 1/2 oz. She is a granddaughter of Stoke Pogis 3rd, and is dam of the great Adelaide of St. Lambert, who has just given 200 1/2 lbs. of milk in one month. Corinne, a granddaughter of Kitty of St. Lambert, and sired by Briars Rogers, was winner of second place at the Provincial Fat Stock and Dairy Show 1896. This cow is the dam of Sunbeam of Brampton, a cow of wide reputation and a good worker as well as a show animal. She won six red tickets in 1896, being first everywhere shown, and in 1897 won the sweepstakes as best female, any age, at Montreal, and the milk test open to all ages and breeds at Brantford. Rhoda of Don is also a granddaughter of Kitty of St. Lambert and is sired by Stoke Pogis of Don. She gave with her second calf 47 lbs. of milk per day, which according to the Babcock test made 10 lbs. of butter per week, and has also been very successful in the show ring. Coloma, by Kitty's Stoke Pogis, has a record of 17 1/2 lbs. of butter per week. Jetsum's Molina, a worthy daughter of the imp. Jetsum, Minette of Brampton, out of Princess Minette, and sired by Aylesbury, whose sire was Briars Pogis, dam Satin Bird. Minette is but two years old and due to calve in a few weeks, and according to appearance may some day rival her sister, Adelaide of St. Lambert. Princess of Brampton, out of a full sister of Minette of Brampton is a superior heifer and is making an excellent showing. Bettina of Brampton, though only twenty-two months old, is giving over 30 lbs. of milk per day and increasing. She will likely be heard from before the season's fair is over.

At the head of this herd is the imported bull, Brampton's Monarch, Imp. He is admitted by all who have seen him to be an animal of very rare merit, and the firm are now taking orders for his stock, which will be much sought after in the near future. His dam, Manor Lass 2nd, now owned by E. N. Fleming, Toronto, took first everywhere shown on the Island before being imported, and last year, though six months in milk, took first prize and sweepstakes at the Toronto Industrial.

R. H. Bull & Son will make a large exhibit at the Industrial this year, and visitors to the show are invited to inspect their show stock, among which will be all the animals mentioned above.

Mr. JOHN H. DOUGLAS, Warkworth, Ont., reports a very strong demand for Ayrshires this season. The demand has been especially brisk for both heifers and bulls. All his stock are doing well. He is offering for sale his imported stock bull, *White Prince*. This bull has proved to be a splendid stock getter and has had a good record at the leading fairs. He was a noted winner at the World's Fair at Chicago in 1893. Breeders desiring to secure a good and well tried Ayrshire bull to head their herds should lose no time in communicating with Mr. Douglas. He also keeps on hand a number of pure-bred large white Yorkshire hogs. He has some fine specimens of this breed of the bacon type for sale.

Mr. Douglas is also a breeder of standard bred horses and has for sale a mare in foal of this breed. This mare is sired by Red Chief; grand sire, Red Wilkes. The foal is sired by Red Wilkes; grand sire, Stamboult. Persons desiring high-class horses of this type cannot do better than communicate with Mr. Douglas.

Mr. NORMAN N. BLAIN, of Cold Spring Farm, St. George Ont., reports the demand for good Tamworth pigs to be steadily broadening and increasing. He intends making an exhibit at the Fair, and would like his many old customers and friends to look him up and examine his stock.

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1896

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THE LARGEST PAINT MANUFACTURERS IN THE WORLD

MARKET REVIEW AND FORECAST.

Office of FARMING,

44 and 46 Richmond street W., Toronto.
Sept. 1st, 1898.

The outlook for general trade is very good. Merchants are preparing for a big fall trade. How soon this trade will open up will depend largely upon how quickly the farmers will begin marketing this season's crop. From several sections it is reported that there is an inclination on the part of farmers to hold their wheat awhile, with the hope of better prices later on. Should this be practised to any great extent, it might stimulate prices for a while. It must be remembered, however, that the wheat crop is large, and that, whether the farmers hold their wheat or not, it will have to be brought out sometime, and, therefore, any advance in prices, due to holding back for a while, will be only temporary.

Wheat.

More definite statistics are now coming to hand, which show that the world is not likely to suffer from a wheat famine for a time at least. There are, however, reports of crop failures in some of the wheat-growing districts of Russia, which may affect present figures, but the world's crop, as a whole, is so much better than a year ago that the total output will be large. Europe now produces 57.22 per cent. of the world's wheat supply, a fact that is somewhat incredible. The United States and Canada produce another 21 per cent., and with these two heard from we have 78 per cent. of the world's wheat supply accounted for. But Europe consumes 15 per cent. more wheat than she produces. The indications now are that Europe will produce this year about 1,500,000,000 bushels as against 1,106,000,000 last year, and an average of 1,405,000,000 for the last five years. She consumes annually about 1,715,000,000 bushels, and, therefore, will require from 200,000,000 to 250,000,000 bushels over what she produces. It is estimated that the United States and Canada will produce upwards of 700,000,000 bushels, so that this 250,000,000 bushels can be supplied without any great hardship. It must be remembered, however, that stores were drawn upon last year as never before, and that it will take considerable of this year's crop to bring these up to what they were a year or two ago. Should it happen that the Russian crop proves a failure and that that country has very little to export it may help things on this side, as what is lacking in Russia will have to be supplied from America.

The wheat market does not appear to show much change over last week. There has been a little excitement in Chicago owing to some depressing cables from abroad, but prices have been maintained of these. On the whole cables from abroad for cash wheat are encouraging. The Ontario buyers and sellers seem to be apart. Quotations at Montreal are from 70 to 72 cents afloat. The offerings here are small, and the demand slow; 67 and 68 cents are about the ruling prices north and west. Manitoba wheat is scarce at 91c. for No. 1 Toronto and west.

Oats and Barley.

Oats seem to be moving well at Montreal and some round lots have changed hands recently at 28c. afloat. The market here is easier at 31½c. to 23½c. for new white west. Old white oats are quoted at 24½c. to 25½c. west.

The barley market is quiet at 38c. for No. 1 outside.

Peas and Corn.

There seems to be an active enquiry for peas at Montreal. Exporters appear to be taking more interest in this commodity, but prices are about the same as last week, and range about 60c. afloat. The market here is somewhat dull at 49c. to 50c., north and west.

The market for American corn here is somewhat firmer at 39c.

Bran and Shorts.

According to Montreal reports Ontario bran and shorts are scarce at present, and prices are firm at \$12 for winter wheat, and

\$14.50 to \$15 per ton for shorts in bulk. The market here is somewhat quiet at \$12.50 to \$14.50 for shorts, west, and \$8.50 to \$9 for bran west.

Eggs and Poultry.

The supply of eggs here seems to be about sufficient just now for present requirements. There is a good demand, however, and the market continues steady at about 12½c. for late gathered and 11c. to 11½c. for held fresh. There has been a fair trade on foreign account at Montreal this week, and on the whole the market was moderately active, with 14c. to 14½c. for selected new-laid, 12c. to 13c. for No. 1 candled, and 9c. to 10c. for No. 2 candled.

The poultry market is active this week, owing to the demand for exhibition times. Prices are higher at 60c. for chickens, 75c. for ducks, and 10½c. to 11c. per lb. for turkeys.

Potatoes.

The dry weather seems to be having considerable effect upon the potato market. The market here is firmer at 85c. per bag for new potatoes.

Hay and Straw.

There does not appear to be any improvement in the market for baled hay. Receipts continue liberal at Montreal and supplies in consequence are far in excess of the demand, and the market is dull. No. 1 quality is quoted at \$6.50; No. 2 at \$5 to \$5.50 and clover mixed at \$4 to \$4.50 in car lots. The market here is dull, cars on the track here are quoted at \$7. Baled straw is quiet at \$4 for cars on track.

Fruit.

The auction sales of fruit at Montreal this week show a slight improvement over those held last week, especially in peaches which brought from 80c. to \$1.25 per box. Apples brought from \$1.25 to \$2.25 per barrel and pears from \$1.50 to \$3 per barrel. There have been large supplies of fruit here during the week. Apples are quoted at 75c. to \$1.25 per barrel, or 10c. to 15c. per basket. Peaches are coming in in fair quantities and maintain a good price at 35c. to 75c. per basket.

Cheese.

So far this week there has been very little change in the cheese situation as compared with last week. The local markets have been fairly active, with prices about the same as last week, or in the neighborhood of 8 cents. At one or two of the markets 8 cents was refused by the factorymen, showing an inclination not to sell too readily at present values. Montreal figures are about the same, and rule from 8½c. to 8¾c. for finest western colored, 8c. to 8½c. for finest western white, 7½c. to 8c. for finest eastern colored, and 7¾c. to 7½c. for finest eastern white. There can be no doubt but these are very reasonable values for August goods. Last year at this time buyers were paying from 9½c. to 10½c. for August cheese, and seemed more eager to get it at that figure than they are this year to get this year's goods at from 8c. to 8½c. It may be said that the market does not warrant any more being paid. Perhaps not, but the outlook is very much better than it was at this time last year. There are signs of a little firmer market on the other side, and this week the cable has advanced 6d. for colored.

There is no denying the fact that the total production of cheese so far this season is much behind that of other seasons. Besides, the pastures are now very dry in many places; and this, together with the low prices which prevail, is causing a falling off in the supply of milk at the factories, which, we think, will lessen the fall make very much. Up to August 20th the total exports from Montreal were 855,460 boxes, as compared with 1,556,811 for the same period last year, showing a falling off of 201,351 boxes. The shipments from New York for the same period show a falling off of 169,699 boxes, as compared with last year, making a total decrease from both places of 370,960 boxes. This, together with the increased consumption owing to low prices, must have the effect of strengthening prices before long.

Butter.

Hodgson Brothers, Liverpool, in their weekly circular, dated August 20th, 1898, report the butter market there as being quiet, but with continental and Irish butter further advanced in prices. Importers are firm on the small lots of finest Canadian arriving and a little advance has been obtained. A somewhat easier feeling prevails at Montreal this week, and holders show a disposition to shade prices somewhat. Prices have been marked down a little owing to lack of demand from shippers and large supplies from factorymen. Extra fine creamery in boxes is quoted at 17½c. to 17¾c., and extra fine creamery in tubs at 17¼c. to 17½c. Ordinary finest creamery in boxes is quoted at 17c., and ordinary finest creamery in tubs at 16½c. to 16¾c. Creamery seems to be in good demand here and continues steady at 20c. for prints and 18½c. for tubs. There are complaints of too much poor stuff coming forward in the dairy butter line. Choice dairy butter sells well here at from 14c. to 15c. for the best tub. Common to medium brings from 11c. to 13c. At Montreal good dairy butter is quoted at from 13½c. to 14 cents.

The shipments of creamery butter from Montreal are beginning to fall off very quickly. The total shipments up to August 20th were 76,196 packages, as compared with 72,934 packages for the same period last year, showing an increase of only 3,235 packages. The total shipments from New York for the same period were 28,109 packages, as against 111,186 packages for the same period last year, showing the large decrease of 83,077 packages, and thus making the total decrease from both places 79,842 packages. According to this it may be believed that considerable butter is going into cold storage on this side, which to a great extent is the case. But reliable reports from the Western States show that the total amount in cold storage there is 6 per cent. less than last year.

Wool.

Some American exchanges consider the future outlook of this trade on this side of the line as improving. There has not been much buying during August, nor much activity during the past few weeks, but this is to be expected at this season of the year. One feature of the situation, which makes the outlook bright, is that prices have not weakened, owing to the slow demand. The situation on this side does not show much change, and the market is inactive, with values unchanged.

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with all the latest improvements? If not, send a postcard to the manufacturers for descriptive circulars and price lists.

They are the only up-to-date cutters for ensilage, hay, straw, etc. Practically no breakages occur, as the patent automatic "Quick Stop" attachment throws them out of gear the instant the revolving knives come in contact with any foreign substance such as a stone, piece of iron, etc. Safety Fly Wheel, Steel Reversible Cutter Bars, Self-oiling Anti-friction Bearings, Friction Drive for Feed Rollers and Elevators, and many other important improvements, make them the

FASTEST, SAFEST, CHEAPEST and BEST.

I have used one of the No. 11 Lancaster Cutters for some time, and find it a MOST PERFECT WORKING MACHINE in every way. It cuts faster and with less power than any other cutter I have seen working. I have cut ONE TON OF ENSILAGE IN FIFTEEN MINUTES, with only two knives on and slow feed. The Safety Attachments work perfectly. A stone got into my machine and only made a small nick in one knife, not damaging the other knives in the least.

DAVID A. GRANT, CASHION'S GLEN, ONT.

LANCASTER MACHINE WORKS,

Box 113,

Lancaster, Ontario.

Cattle

The cattle situation has taken on a brighter outlook this week and cable advices to Montreal show an advance of from 1/4c to 1c. per lb. at London. Canadian cattle are quoted there at 5d. to 5 1/4d. per lb. The same quotations prevail at Liverpool. One feature in the situation that will tend to stimulate prices for good export cattle is the lowering of the ocean freight rates to Liverpool, which have declined from 2s. 6d. to 5s. per head. Should these lower rates continue it will help the export trade considerably. Tuesday's market here was a little brisker, though supplies were not large.

Export Cattle. - Export cattle are slow, owing largely to poor quality, which made trade dull. \$4 to \$4.40 are the ruling figures. Choice heaves at Montreal bring from 4 1/2c. to 4 3/4c. per lb.

Butcher's Cattle. Good butchers' cattle were scarce on Tuesday's market, and sold from \$3.75 to \$4 per cwt. Choice picked lots brought from \$4.10 to \$4.25.

Feeds and Stockers. Heavy stockers of good quality and weighing 1100 lbs. each bring about \$3.75 per cent. Stockers bring from \$3.15 to \$3.50 as to quality. There were 68 load of Canadian stockers at the East Buffalo market on Monday last, but owing to the quality of the cattle not being so good prices were about 10c. lower. Good to best stock steers brought from \$4.10 to \$4.30 per cwt., and stock heifers from \$3.25 to \$3.50.

Culls. At East Buffalo on Monday these varied from \$3.50 to \$7.50 each as to quality. Prices here are from \$3 to \$6 per head, but they are firm at these prices.

Sheep and Lambs.

There has been an advance in the price of heep at Liverpool this week of from 3d. to 3 1/2d., choice Canadians selling at 5 1/2d. per lb. There has been a better demand for sheep for export at Montreal this week, and the bulk of the good to choice stock brought from 3c. to 3 1/2c. early in the week. The demand for lambs was also active, and sell for from 4c. to 4 1/2c. per lb. There were ten load of Canadian lambs at East Buffalo on Monday. The general market was higher and quite firm on the kinds wanted. Choice extra lambs bring from \$5.75 to \$6; good to choice, \$5.25 to \$5.50; common to fair, \$4.75 to \$5.25; and yearlings, \$4.75 to \$5. Sheep bring from \$4.40 to \$4.75. The market here is steady at \$3 to \$3.40 per cwt. Spring lambs are firmer at \$3.75 to \$4.75 per cwt.

Hogs.

There has been quite a slump in the price of hogs. Choice bacon hogs have dropped from \$5.25 to \$5.35 as reported last week to \$4.70 to \$4.75. This is a big drop for two or three days, and clearly shows that prices for the past month or six weeks have been too inflated. Deliveries have been light. Light hogs bring about \$4.25, and thick, fat hogs from \$4.25 to \$4.40 per cwt. However, at these figures there is money in hogs.

Horses.

The Buffalo market for good horses of all kinds has ruled strong of late, but common ones have been easier. Good prime draft horses bring from \$90 to \$150, and teams \$320 to \$325. Good to choice drivers bring from \$85 to \$135; extra speedy ones, \$150 to \$200. The general demand at Chicago is excellent, and prices are well sustained, particularly for choice horses. Exporters are purchasing good, fat, rugged, 1,200 lbs. to 1,400 lbs. chunks at \$70 to \$150. Good, blocky horses of 1,400 lbs. to 1,600 lbs. are in fair demand at \$90 to \$150. There is an excellent demand for good actors with style, size and breeding.

E. L. JARVIS PARIS, ONT.

Breeder of Chester Whites

King George-717—bred by R. H. Harding & Son, at head of herd. Young boars and sows for sale. A choice lot of four fine young boar pigs, dam Snowball-816—sire King George. Also a few excellent young sows. Prices right. Lovers of Chesters inspect my herd, or write, before purchasing. Visitors always welcome.
E. L. JARVIS, Paris, Ont.

MAPLE GLEN STOCK FARM. Richly bred, heavy producing, officially tested Holsteins, special offering: Two Sylvia bull calves from grand producing dams, one a grand-son of Inka Sylvia, the winner of official authenticated butter test for 1897. This calf is a great-grand-son of Carmen Sylvia, the great dairy test winner of Canada. Who can make a mistake in selecting a bull calf when there are three generations of performers backing him up? Stock on exhibition at Toronto Call for particulars and circulars. C. J. Gilroy & Son.

JOSUEH YULL & SONS, Meadowside Farm, Carleton Place, Ont., have a fine lot of Shropshire sheep and Berkshire swine for sale. This firm are also breeders of high-class Ayrshire cattle. During the past few

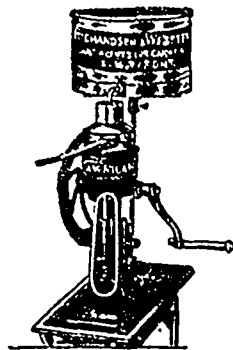
months they have made the following sales of purebred stock: Bull calf, Angus of Meadowside 2387, sold to John N. Warren, Eggenville, Ont.; Ayrshire cow, Mele of Meadowside 2161, to Hugh Kelso, St. Thomas, Ont.; bull calf, Saucy Jock of Meadowside -2416-, to B. N. Henderson, Morton, Ont.; young bull, Kenneth of Mountain View Meadowside 2140, to James McRoberts, Parry Sound, Ont.; young cow, Sadie of Meadowside 2785, to R. Reid & Co., Hintonburg, Ont.; young bull, Aberdeen of Meadowside 9001, to T. G. Raynor, Rose Hall, Ont.; young bull, Hubbard of Meadowside 0002, to John W. Garland, Dwyer Hill, Ont.; young cow, Midge of Meadowside 2532, to W. T. Junkin, Fenelon Falls, Ont.; young bull, Bounce Charlie of Meadowside 9146, to Hugh Kelso, St. Thomas, Ont.

The same thing over and over again. Read what the AMERICAN has done this time.

WILL PAY ITSELF IN 4 MONTHS

BLYTHESWOOD, ONT., JUNE 8TH, 1898.

MESSRS. RICHARDSON & WEBSTER,
St. Mary's, Ont.



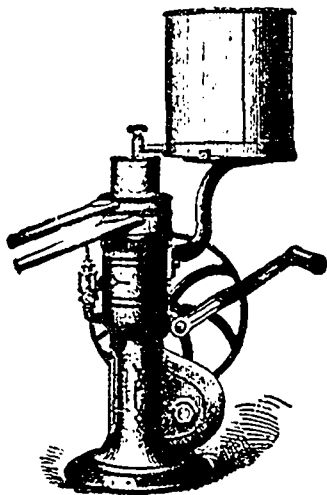
DEAR SIRS,—Enclosed find settlement for the Separator and oil received from you on May 28th. I placed the Separator on trial with Mr. S. D. Wilkinson, Leamington, and after 4 days he bought it. He is perfectly satisfied. I have tested the skim milk several times for him and it has never shown more than a trace of butter fat. I consider it a perfect machine in every respect and would like to act as your agent in this part of the county. Mr. Wilkinson is one of the most prominent dairymen around here. He says he will save enough in butter to pay for the Separator in 4 months. Yours truly, (Signed) F. A. LEAK.

Write RICHARDSON & WEBSTER, St. Mary's, Ont., for Catalogue and Prices. It will pay you to have a Separator as well as others.

W. G. GLENN, Agent for Owen Sound and vicinity

RICHARDSON & WEBSTER,

ST. MARY'S, ONT.



National Cream Separators

No. 1 - 330 lbs. \$75
No. 2 - 600 " \$125

HAND or POWER

Perfect Skimmers

Easy to Run and Clean.

Saves Labor—Makes Money

The Best and Cheapest in the Market.

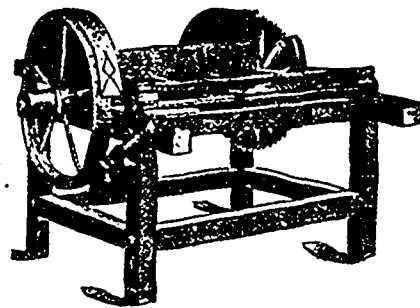
SOLD BY
The CREAMERY SUPPLY COMPANY
Guelph, Ontario.

N.B.—We furnish all kinds of Creamery and Dairy Supplies. Send for Catalogue.

Jubilee Circular Sawing Machine

These saws were introduced in 1897—the Jubilee year of our Gracious Sovereign—hence the name, and their wonderful working soon won for them a reputation in front of all wood-sawing machines.

There are none better, and few equal to them. Get prices, etc., from



LANCASTER MACHINE WORKS Box 118 Lancaster, Ont.

HELDERLEIGH FRUIT FARMS AND NURSERIES
—400 ACRES—

Situated at the base of the Mountain in a warm and sheltered valley where trees arrive at full maturity. Having over 125 acres planted in fruit, I have unusual facilities for knowing the value of the different varieties and establishing their purity. Everything is GUARANTEED TRUE TO NAME or purchase price refunded. I have for the fall of 1897, and the Spring of 1898, a complete line of Trees, Shrubs, Vines, etc., both fruit and ornamental.

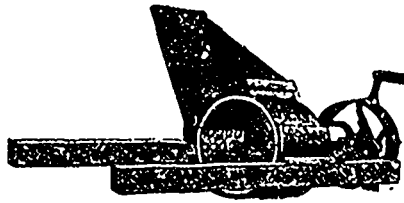
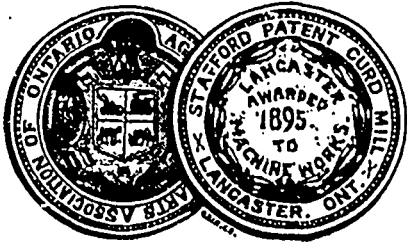
Write for a Catalogue which is furnished FREE, and which contains over ten pages of closely written matter about the various PESTS that trouble fruit growers and means of preventing their ravages.

Buy CANADIAN GROWN STOCK only, and thus escape the dreaded San José Scale so prevalent in the States. There is no more reliable, healthier, or more complete assortment than mine.

Good reliable salesmen wanted in a number of fine townships, to start work at once. Complete outfit free.

Address E. D. Smith, WINONA, Ont.





STAFFORD PATENT CURD MILL.

The Stafford Dairy Machinery

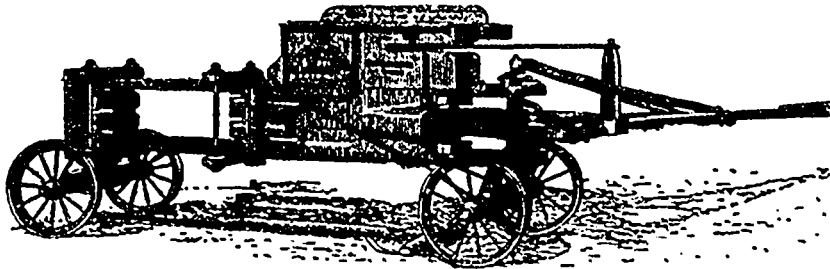
Have deservedly kept their place in the lead against heavy competition, and dairymen make no mistake in placing their orders with a firm who have been manufacturing Dairy Machinery for 25 years. We know what is wanted and supply only such. Prices, etc., cheerfully furnished on application.

LANCASTER MACHINE WORKS, Box 113 Lancaster, Ont.

N. B.—We, through pressure of business, are unable this year to Exhibit at the Fall Fairs, so don't look for us, but write direct to headquarters.

Dederick's Patent Steel Case Hay Presses

This is the only Reversible Lever Horse Hay Press that dared appear when called out for competitive test at the Chicago Columbian World's Fair.



Made of Steel. Improved for this Season. Patent Retainers, Patent Folder Roller, Patent Tension Blocks, Patent Side Clamps.

These improvements make the Press lighter, stronger, easier on the horses, and more powerful. This is the leading Hay Press in Canada and the United States. Also PATENT ADJUSTABLE AND DIMENSION BALK TIES. MANUFACTURED BY

BOYD & CO., - HUNTINGDON, QUE.

Money Cannot Buy

A better churn than the MAPLE LEAF. None better is made. Yet the Maple Leaf Churn is inexpensive.

Write for Free Circulars to the Manufacturers.

Wilson Brothers, Collingwood, Ont.



HERE WE ARE AGAIN

Having now recruited from the large consignments made one year ago to the United States and other places, we now offer a number of young bulls, from 1 to 12 months old. Sired by the noted bulls, White Prince (imp.), Dainty Lad of Elm Glade, Glencairn of Burnside, Douglas of Loudon Hill, and White Chief of St. Ann's. Also, chicks for sale from a yard of 500 or over.

WM. STEWART, Jr. & SON,

See our stock at Toronto, London, Ottawa Exhibitions

SEED WHEAT

GROWN ON THE

Ontario Experimental Farm.

For Price List Apply to

GUELPH, ONT. WM. RENNIE, Farm Superintendent.

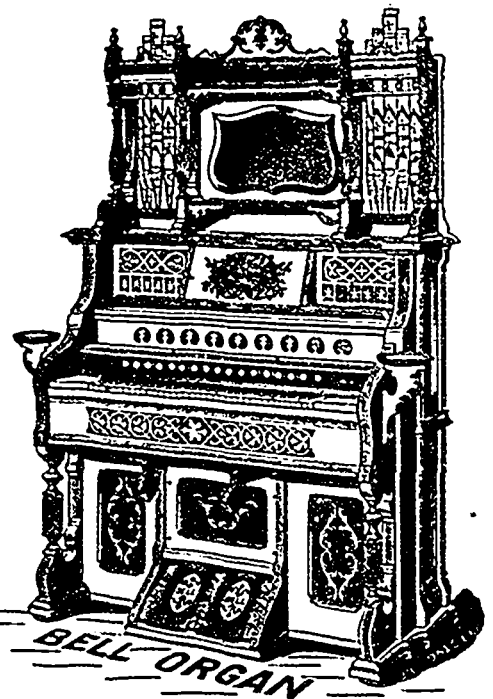


Popularity

is not attained without merit, but, where merit is, popularity must surely follow.

BELL PIANOS AND ORGANS

are so carefully made of select materials, and in designs combining elegance and solidity, as to command confidence, and has made them popular everywhere.



BUILT TO LAST A LIFETIME

The Bell Organ AND Piano Co., Limited,

Head Office and Factories, GUELPH, Ontario.

Send for Catalogues

BRANCHES AT

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Lump Rock Salt For Cattle

Domestic animals, to be kept healthy, should have salt within their reach at all times.

VERRET, STEWART & CO., MONTREAL

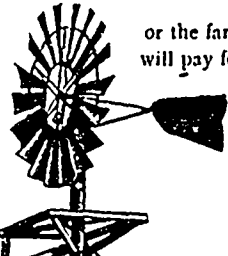
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WHAT POWER?

The Canadian Steel Airmotor



GALVANIZED
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or the farm is the most economical, and will pay for itself in two years.

Steam and Gasoline
Engines are Expensive
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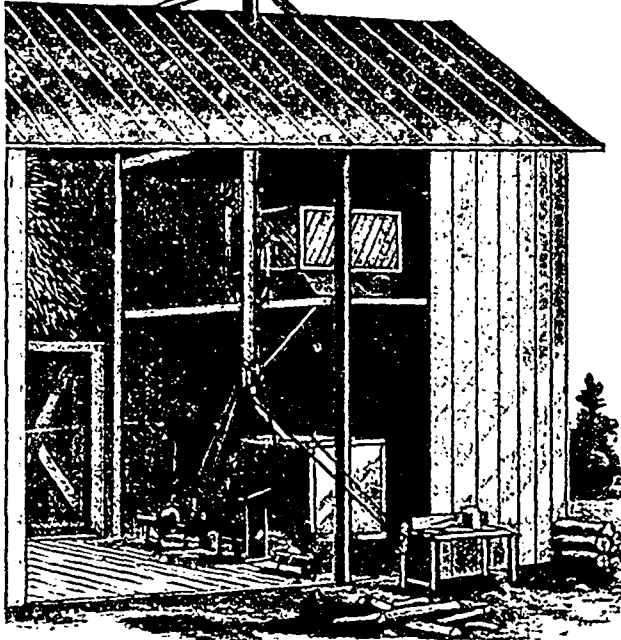


With bountiful crops you will need a first-class Grinder. Our

"Toronto" Grinder

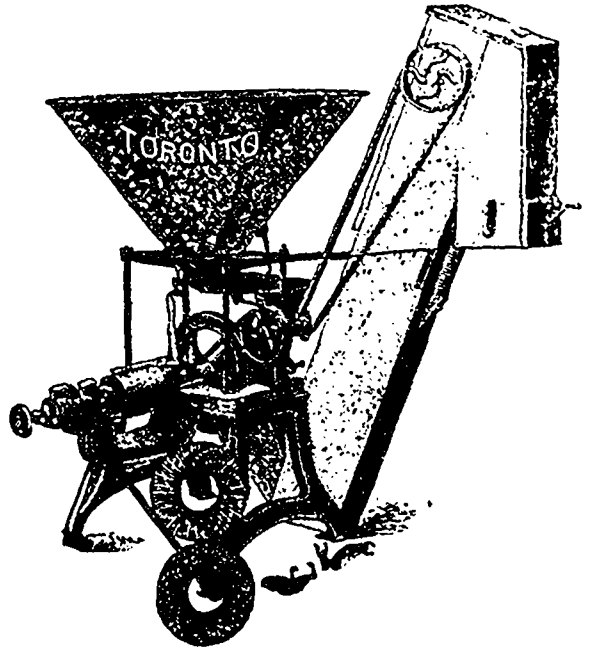
combines all the modern improvements, and is guaranteed to work satisfactorily.

With or without Bagger



Whilst visiting the Fall Exhibitions do not fail to see one

Call or Write to



ONTARIO WIND ENGINE AND PUMP CO., LIMITED,

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(Adjoining Exhibition Grounds)

HON. THOS. BALLANTYNE, PRESIDENT

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Farmers' Binder Twine Co., Brantford, Limited

The Opinion of the Canadian Farmers:

Give us to use, at any price, next season the Farmers' Binder Twine Company's make of Binder Twine. They are deserving of our fullest patronage, as inch by inch they fought their way into the hearts of our people against awful odds, and to-day stand recognized on actual merit, peers in the great deal as against all competitors, while they built up last season for themselves a proud record and one that cannot be easily effaced, carrying as they did their splendid Red Star Twine without change of price throughout the whole season at 7 1/4 cents until every ball of their 1500 ton output was exhausted.

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Brantford Galvanized Steel Windmills Grain Grinders, Etc.



"Steel King" Pumping Mill

with Sprocket Drive and our Patent Roller and Ball Bearings.
Sizes 8 to 16 feet in diameter.

POWER WINDMILLS

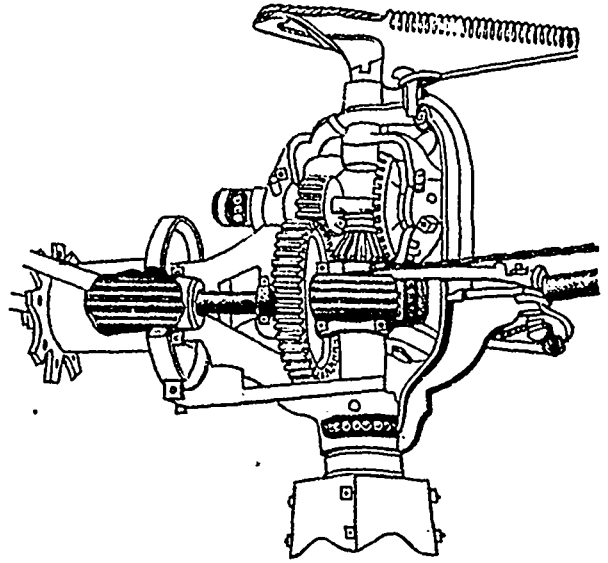
All Steel Galvanized Patent Roller and Ball Bearings.

New Governing device making it impossible for the mill to break loose in a high wind and run away.

Two bearings for each gear wheel (one on each side).

The best and heaviest gearing on any Power Windmill. Sizes 12, 13, 14, 15 and 16 feet in diameter. Will run a

Cutting Box, Our Grain Grinders, Root Pulper, Saw, Latho, Etc., and Pump Water.



View of Engine of Power Windmill, showing Patent Bearings (Two for each Plain Shaft.)

We also make and sell

Ideal Pumping Windmills

Galvanized Steel Towers

either 3 or 4 posts of all kinds and heights.

Iron Pumps

Lift and Force.

Iron Pipe

Plain and Galvanized.

Pipe Fittings

Brass Cylinders
Good Quality.

Spray Pumps

Fanning Mills
(Gearless).

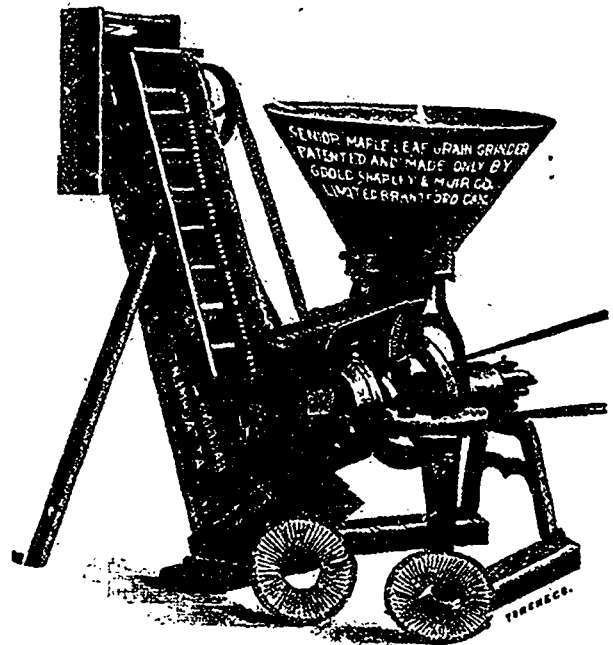
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"Canadian Bee Journal."

See our fine exhibits at Toronto, London and Ottawa Fairs or send for new illustrated catalogue.

THE CELEBRATED MAPLE LEAF GRAIN GRINDER



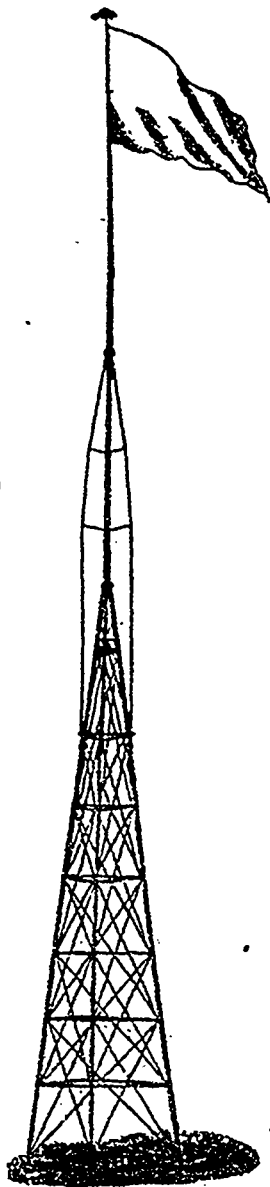
FOR ANY POWER—2 or 3-horse Tread, Sweep Powers of all kinds; Steam Engines; Electric Motors; Water Power. Our 13, 14 and 15-foot Brantford Ideal Solid Power Windmills drive it like a charm.

FOR ANY PERSON—Farmers, Stockmen, Dairymen, Flax Mills, Grist Mills, Spice Men, Threshers, etc.

Made in two sizes only, but perfectly adapted for any power from two to twenty horse, and will grind from five to eighty or more bushels per hour, according to speed and kind of work.

GOLD SHAPLEY & MUIR GO. LIMITED
BRANTFORD CAN.

"IDEAL" Galvanized Steel Flag Staff
From 25 to 150 feet in height.



GOMBAULT'S CAUSTIC BALSAM

WORKS WONDERS

IT REMOVES BUNCHES ON HORSES OR ANY OTHER LIVE STOCK

THEREBY INCREASING THE VALUE OF THE ANIMAL FULLY 50 PER CENT.

IT CURES

Curb, Splint, Sweeny, Capped Hock, Strained Tendons, Founder, Windpuffs, all Skin Diseases or Parasites, Thrush, Diphtheria, Pink Eye, all Lameness from Spavin, Ringbone and other Bony Tumors; also, all obstructions in circulation, and imparts new life and vigor. It is a peerless remedy for all Throat and Bronchial Troubles.

**NOT ONLY SEE WHAT OTHERS SAY OF IT,
BUT SATISFY YOURSELF BY TRYING IT.**

THE LAWRENCE-WILLIAMS CO., TORONTO, ONT.

SOLE AGENTS FOR THE UNITED STATES AND CANADA.

Horsemen! Better than Firing Iron.

Please send C. O. D. two bottles of your Gombault's Caustic Balsam to J. F. Comstock & Sons, 220 Canal street, Providence, R. I. I am all out of it; have used it for the past seven years, and think it a good thing to keep in stables. I have had great success with it where the firing iron has failed, and I always keep it in my training stable both as a liniment and blister. Wishing you success, I am, T. A. LEARY, Trainman, Park Farm

Almost Performed Miracles.

The bottle of Gombault's Caustic Balsam I ordered some three months ago came all right. I am able to order almost any time, for I am running a 2,000-acre horse ranch here and a 180-acre horse farm in Cass Co., Iowa, where I was when I ordered my first trial bottle. My first bottle almost performed miracles. It took a hard calloused leg down in five or six applications. The lump was nearly as large as the horse's knee, and I put him in races afterward, and he didn't show any lameness.—H. A. BROWN, Salisbury, Texas.

Veterinarians Know its Use.

Since I have practised my profession (veterinary surgeon) in this place I have had occasion to prescribe your Gombault's Caustic Balsam, contrary to my usual method of practice, which is to avoid the use or recommendation of any proprietary medicine, but experience has shown me its value. When I came here in '93 the remedy was unknown. I think I can make some arrangements with you for an exclusive agency for this community I can push the sale of the same in a way that will be highly satisfactory to you and profitable to myself. If you will come to some understanding with me, please advise me of the terms you are willing to give.—WALTER P. KELLY, V. S., Pomona, Cal., June 7th, 1897.

For Human Use.

Some readers may be surprised to learn that Gombault's Caustic Balsam (regularly advertised by the Lawrence Williams Company, of Cleveland, O.) is a very useful remedy for a number of human ills; notably rheumatism, stiff or lame joints, sore throat, pains or cold in chest, back, or limbs. Rub the flesh briskly with a coarse towel to cause irritation, then apply Caustic Balsam in small quantities, rubbing in with the hands very thoroughly until the flesh becomes tender. In twenty-four hours apply more Balsam, but without much rubbing. The best time to make these applications is just as you are retiring for the night, when you can put a piece of flannel over the affected parts and let it remain until morning, then leave entirely alone for the next five days; then repeat the treatment, and thereafter at such intervals of five days until the cure is complete.

Has Done Wonders.

I have used two bottles of your Gombault's Caustic Balsam, and find it the best and simplest remedy to remove capped locks and bunches of any kind, also I have tried it on several other people's horses in this place, and it has done wonders in every case.—W. A. NEUELL, Cotuit, Mass.

Cures if Properly Used.

Enclosed please find \$1.50 for a bottle of Gombault's Caustic Balsam. Send by express to Glendale, N. Y. It is an exceedingly good medicine. I cured a very bad spavin with it. It doesn't take off any bunch from a horse it is because it is not used properly.—GEORGE GRANGER, Houseville, N. Y.

How to Make Money.

I bought a horse for \$100 said to have a spavin, but I knew better. I doctored him for hip-joint lameness with your Gombault's Caustic Balsam, and brought the horse out all right and sold him for \$300. Said horse was seventeen years old when I got him, and was afterwards burnt up in a stable at Troy, N. Y. when he was twenty-four years old, sound and all right. So much for your Balsam.—D. A. BOARDMAN, Oneonta, N. Y.

The Greatest Remedy He Ever Used.

Please send me one half dozen bottles Gombault's Caustic Balsam, and send at once. It is the greatest remedy that ever I used on a horse in my life.—J. L. FARRAR, Townsend, Mass.

Best Thing on Earth.

I see you have some pictures for druggists. Wish you would send me some. Never had any advertising for Gombault's Caustic Balsam; have a steady sale on same. Balsam is the best thing on earth.—E. L. LANGWORTHY, Linden, Mich.

It Never Failed to Cure.

I see you are still handling the Gombault Caustic Balsam. I wish to say, right now and here, that it is far the best liniment I ever used, and I have in years past used a good deal. I would rather have one bottle of it than a barrel of any other kind I ever used. It never failed to cure for me.—CHAS. E. ROSS, Walcott, Ind.

Enthusiastic Over its Use.

I have used Gombault's Caustic Balsam with excellent results on a quarter crack and above on shoulder, and I am enthusiastic about its sale here. Please tell me what you sell it for wholesale. I think I can sell several bottles. The people in Charleston have no idea what an excellent medicine it is.—NORRIS BARON, Charleston, W. Va.

Removed Four Ringbones and One Spavin.

I have used your Gombault's Caustic Balsam for four cases of ringbone and one of spavin, and found it to be successful in every case, and would recommend it to all dealers in horses.—G. A. GEORGE, Altamont, N. Y.

The Greatest Blister.

Regarding Gombault's Caustic Balsam, I can say it is the greatest blister in the world.—TOM JAMES, Des Moines, Iowa.

Beats All Liniment.

Please send me six bottles Gombault's Caustic Balsam. Ship to Fairview, Pa. Will send money on receipt of same. Parties who I have sold Caustic Balsam to say that it beats all liniments they ever used.—GEO. SORRIS, Albert, Pa.

Does Its Work Every Time.

I found out the virtue of Gombault's Caustic Balsam and have used two bottles. I think it one of the best remedies one can keep around a stable. It is always ready for use, and I believe if properly applied and rubbed in, will do its work every time. I have used different kinds of liniments, but this does its work quicker than any I ever used, and after all, leaves no stain, and the hair grows in same as ever. You can use my name whenever you see fit.—H. C. PARKER, Wilmington, Del.

Thinks it a Wonderful Remedy.

You will perhaps remember my getting a bottle of Gombault's Caustic Balsam to remove ringbones from my colt. This was in May, 1896. I used the Balsam as you directed, and the result was all one could wish. To day, after more than a year, her feet are as smooth as ever, and I am certain the ringbones will never return. I also gave some to a friend who had a horse with enlarged glands, and he removed them entirely. I think it a most wonderful remedy, and the most perfect blister I ever saw. I now have a horse with enlarged glands about the throat. Would it remove them, and how should I use it? I would say in regard to the ringbones removed that a veterinary saw her before and after, and he said that if he had not seen her he would not have believed it possible to have removed them.—H. D. BROWN, Potsdam, N. Y.

There is nothing better for Enlarged Glands or Sore Throat.—L. W. Co.

Gombault's

The only safe and absolutely reliable

Caustic Balsam