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Vol. XIV., No. 4.

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FARMING

DEC.
1896



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Require less fuel to heat.

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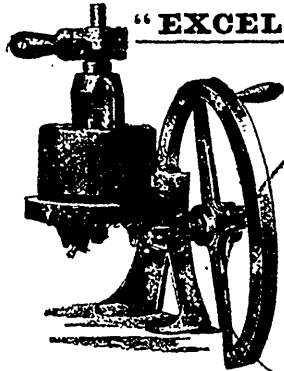
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More good things for ONE DOLLAR than you can get in any other way.

To meet the demand of our large trade, we import a very large stock of Bulbs, in most cases getting more than needed, to make sure of having enough; so, after business is about over (in November), we make this surplus stock into "Surprise" Collections, and offer them to our customers, giving them about three times the value of their money. These collections will be entirely of our own selection from kinds of which we have a surplus. No collection will be made up for less than One Dollar, and from that up to any amount the purchaser may desire. They will be sent free by mail, unless desired by express, and in that case we can send very much more for the money than by mail.

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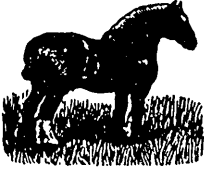
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I have on hand the best young **Clydesdale Horses and Mares** on this continent. Bred from the well-known sires, Prince of Wales, Darnley, Macgregor, Energy, Lord Montrose, The Ruler, Carruchan Stamp, Knight Errant, and other celebrities.



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

SHORTHORNS.

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

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



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

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FOR SALE----



Three Clydesdale Brood Mares

weighing from 1,500 to 1,800 lbs. Also purebred colts from one to three years old; best breeding and good action; also Ayrshires. Prices and terms easy.

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Young bulls and heifers of finest Booth breeding always on hand at reasonable prices. Write for particulars.

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For Sale—Choice young cattle of both sexes of the most select breeding. Also young Berkshire pigs from sows selected from the herd of J. C. Snell, Edmonton, Ont. Write for prices. **W. WARD,** Birchton, Qu. B.C.O. Farm one-half mile from station, C.P.R.

DO YOU WANT A SHORTHORN BULL?

We have them all ages—sired by imported Kinellar bulls. They are good ones—from good cows—and prices are right. **Make your selections early.**

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I have a number of exceedingly well-bred horses and colts on hand of Norland, Veteran, Clear Grit, Royal Revenge, and other blood, which can be bought on advantageous terms. If you want really good registered Shorthorns, I can supply these as well. Now is the time to buy.

F. C. SIBBALD,
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631

SIMMONS & QUIRIE Shorthorns and Berkshires.

The herd is headed by the imported bull, Blue Ribbon, 17005 (63706). He by Royal James (54992) dam, Roslentz, Vol. 38, p. 298, E.H.B., by Gravesend (92460). Among the females are representatives of the Strathallans, Minas, Golden Drops, Mysies, Elviras—all pure Scotch breeding, except the Elviras, which are Scotch crosses.

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

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

**C. M. SIMMONS, Ivs. Ont., or
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Shorthorn Bulls....

I have six young bulls get by Aberdeen (imp.). Good ones. One a full brother to champion heifer at Toronto and Ottawa Fairs this fall. Also some

Fine Young Heifers

Write for prices, or, better, come and see them.

JOHN MILLER,

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FOR SALE

CHOICE Shorthorn BULL CALVES

By same sire as

SCOTTISH LEADER, Winner of First Prizes

Toronto, Montreal, and Ottawa. If you want a really fine animal, good color, fit for service, see these.

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

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

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

703 **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. 1310 D. A. H. B. Jerseys all of the celebrated St. Lamoert family; herd headed by Lisgar Pogs of St. Anne's 25704 A.J.C.C. Berkshire Pigs. Young stock of all the above breeds for sale. Post Office, Telegraph Office, and Railway Station, North Nation Mills, P.Q., on the C.P.R.

A. E. SCHEYER, Manager.

- CARGILL HERD of SHORTHORNS -

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Six young Bulls twelve months old and under, and all the Heifers you want bred any way you wish from different strains of blood in Imported and Homebred Cows. Come and see them or write.

H. CARGILL & SON,

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FOR SALE Shorthorns, Berkshires Southdowns and Leicesters.

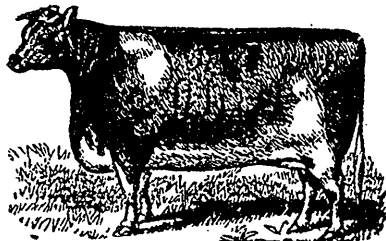
Seven choice bull calves and six heifers, three young boars and five sows, also a fine lot of sheep of all ages and both sexes.

WRITE ME, OR
COME AND SEE.

532 **H. B. JEFFS, Bond Head, Ont.**

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GREENWOOD, ONT., P.O. and Telegraph Office,



Has for sale, at temptingly low prices, 17 extra good Short-horn Bulls, fit for service, and equally good lot of Cows and Heifers—the very best we ever bred. Send for Catalogue and prices. Enquiries answered promptly. Our motto—"No business, no harm."

Claremont Station, C.P.R.

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696

4 Grand Young Shorthorn Bulls 4

Twenty heifers of finest quality and best Scotch breeding. Sired by the greatest living Cruickshank bull, Sittytton Stamp (66368). Also a few high-class Welsh ponies. Prices low. Write us. 497

JOHN MILLER & SONS, Brougham, Ont.

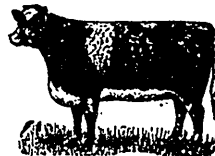
H. I. ELLIOTT, Danville, P.Q.

Shorthorn Bulls and Heifers for sale, of superior merit and select Scotch Breeding. 704

Cherry Grove Stock Farm

We have for sale this year seven choice young bulls and a number of heifers, sired by our stock bull, Royal Lavender, by Indian Chief (imp.). These are of superior blood and qualities. This cut is a representation of our herd.

Call or write.



JOHN MORGAN & SONS,

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FOR SALE, 3 choicely bred SCOTCH SHORT-HORN BULLS from 12 to 18 months old. Good colors and good animals, at prices and terms to suit purchasers.

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There Is No Doubt About the **MERIT** of **THE KEYSTONE DEHORNER** **KNIFE**. It cuts both ways, does not crush. One clip and the horns are off close. Write for circular. **The Keystone Dehorner Mfg. Co., Picton, Ont., Can.**

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Importer and Breeder of
**Cruikshank and Campbell
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A number of splendid cows and heifers and seven young bulls from Royal Gloucester; also a grand lot of Minas, and four of the Fanny B. sort, for sale on very reasonable terms.

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Choice Ayrshires 

This noted Bull
"SILVER KING"
with an unbroken record
of 18 first prizes and the
sire of many prize win-
ners, is

FOR SALE.

Also a few choice young
animals of high merit.

WRITE ME.

D. McLACHLAN,
Petite Cote, Que.

JERSEYS.

FOR SALE**A CHOICE LOT OF Jersey Heifer Calves**

of good colors and rich breeding, both purebred and high grade. Dams have averaged the past year 330 lbs. of butter each, all sired by Canada's Hero, whose dam has a seven days' record of 19 lbs. 5 oz. For description and prices write to

W. C. SHEAREK, Bright, Ont.

FOR SALE—Pure St. Lambert Yearling Bull, \$40.
Also purebred and high-grade cows and heifers bred to Sir Ollie.

JERSEY COWS AND HEIFERS.

The highest testing strains.
Rich breeding and good colors.

454

ALSO TAMWORTH PIGS.

JOHN PULFER, - Brampton, Ont.

**THE MANOR FIELD FARM
OF JERSEYS**

Combines blue blood with vigorous constitutions and undeniable dairy qualities. The St. Lambert bull, Kaiser Fritz 21173, bred by D. S. Dodge, Connecticut, U.S., heads the herd. Write for prices on young stock.

548

WILLIAM BACON,

Orillia, Ont.

BRAMPTON JERSEY HERD

Special sale now on. A grand two-year-old bull, bred direct from imported stock. Bull calves and high-grade heifers. Also Berkshire pigs and Barred Plymouth Rocks. Prices low, as we wish to reduce our stock. 544

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

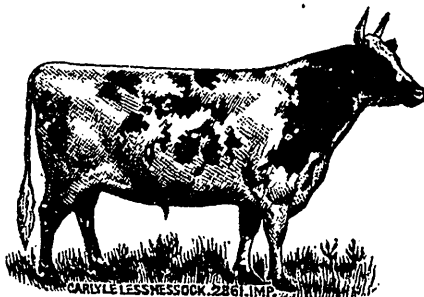
Maple Grove Ayrshire Stock Farm

—LYN, ONT.—

Improve

Your

Stock



Increase

Your

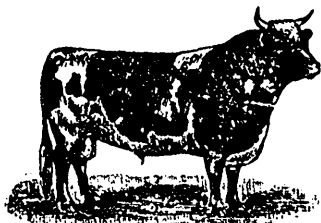
Wealth

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

R. G. STEACY,

Importer and Breeder, LYN, ONT.

AYRSHIRES.



Special December Bargains

-AT-

ISALEIGH GRANGE STOCK FARM.

Our stock of Shropshires and Yorkshires is larger than our winter quarters will accommodate. We must reduce the number, and we are offering at reduced prices very choice young animals.

Do not Fail to take Advantage of this Great Opportunity.

Write for what you want. Our prices will surprise you. We still have on hand four choice young Ayrshire bulls, grandly bred, at very low figures if sold at once. Our stock has won over \$1,000 at leading exhibitions this fall.

J. N. GREENSHIELDS, Proprietor.

T. D. McCallum, Manager.

DANVILLE, - - QUEBEC.

53

Imported Ayrshire COWS and HEIFERS

... FOR SALE ...

I will offer for sale my herd of AYRSHIRES, including my imported heifers

Alice of Hatton, Violet of Park, Fair Queen, Imp, Miss Bonnie Doon, two heifers from Fairy Queen, also heifer calf, dam, Alice of Hatton, bull calf, dam, Violet of Park, both calved about 1st October, 1895, and a number of yearling and heifer calves sired by Dominion Chief, also two purebred Short-horn yearling heifers sired by Gibson Duke.

Write for prices and particulars.

JOHN H. DOUGLAS,

WARKWORTH, - - ONTARIO.

PARK HILL HERD

OF

AYRSHIRES



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

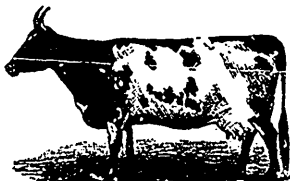
For pedigrees and full information address

JAS. DRUMMOND
PETITE COTE, - - - QUE.

AYRSHIRE CATTLE

The bull Tom Brown and the heifer, White Floss, winners of sweepstakes at World's Fair, were bred from this herd. Young stock always for sale.

Also Leicester Sheep and Berkshire Pigs.



DAVID BENNING, Breeder,

WILLIAMSTOWN, ONT.

596

FOR SALE

Choice young Ayrshires, of both sexes, sired by imported bulls Silver King and Glencairn. Write, or come and see them.

DANIEL DRUMMOND

Petite Cote, Que.

538

- CHOICE AYRSHIRES -

Three very choice, massive yearling bulls and thirteen spring calves of the very best quality and breeding, also a few splendid cows for sale at bargain prices. Must be sold this month. Write at once and secure first choice.



576

F. W. TAYLOR,

Wellman's Corners, Ont.
Hoard's Station, G.T.R.

..SPRUCE HILL DAIRY FARM..

6 Fine Young Ayrshire Bulls 6
of fine quality and choice breeding now for sale. If you want a good one write us for particulars. Our prices will suit you.

A. McCallum & Son, - Danville, Que.

FAIRVIEW STOCK FARM

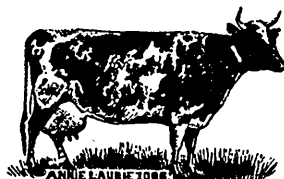
AYRSHIRE CATTLE
BERKSHIRE PIGS

Traveller of Parkhill at the head of herd, while my her is descended from cows purchased of Mr. David Benning, ar modern in type, and are of the choicest milking strains. Writ for prices of young bulls and heifers.

DAVID LEITCH,

CORNWALL, G.T.R. 578 Grant's Corners, Ontario.

Menie Stock Yard



ANNIE LAURIE TOBE.

Ayrshire Cattle and Berkshire Pigs. First-class pedigreed stock always on hand and for sale. First-class milking stock a specialty.

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Meule, Ont.
Hoard's Station,
G.T.R. 534

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HOWICK, QUEBEC.

FOR SALE—
Lord Sterling,
1st Prize and Diploma at Sherbrooke, and 1st at Montreal.

Dainty Lad,
1st at Sherbrooke and winner at Montreal, and other choice animals from prize winners. For pedigrees, etc., write

WM. WYLIE,

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AYRSHIRES

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

John Sandilands, Williamstown, Ont. 852

AYRSHIRES AND HOLSTEINS.

Maple Cliffe Herd of Ayrshires



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

Apply to

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THOMAS GUY

Sydenham Farm, Oshawa, Ont.



AYRSHIRE CATTLE LEICESTER SHEEP
BERKSHIRE PIGS

Four Young Bulls from prize-winning stock now for sale.
Closely related to winners at the World's Fair. Write for
particulars. 757

MAPLE CLIFF STOCK AND DAIRY FARM

AYRSHIRE CATTLE, BERKSHIRE AND TAM-
WORTH SWINE. We have three young bulls for sale, in-
cluding Labor Day 1820, first prize yearling at Ottawa,
1896, and calf from first prize and diploma cow.

R. REID & CO.,

729 (One mile from Ottawa.) Hintonburg, Ont.

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

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

Berkshire pigs and Shrop-
shire Sheep always on
hand.

Terms to suit the times.

J. YUILL & SONS,

Carleton Place.



AYRSHIRES

—OF THE—
RICHEST MILKING STRAINS

—AND THE—
CHOICEST BREEDING

ARE KEPT AT THE GLEN FARM.

YOUNG BULLS AND HEIFERS FOR SALE

531 WHITESIDE BROS.,
Correspondence solicited. INNERKIP, ONT.

Evergreen Stock Farm

HOLSTEIN-FRIESIANS of the Pietertje, Jewel,
Sir Henry of Maplewood, and Mercedes strains. Two choice
fall Bull Calves for sale. Prices right, to suit the times.

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Holstein-Friesians of the
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founded on the best import-
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A few choice females of different
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hand at reasonable prices and easy
terms. Also Improve Large
Yorkshires of Sanders Spencer
and Walker-Jones' breeding. Also
choice Oxford Down rams.

J. W. LEE, 809 Simcoe, Ont.

MAPLE HILL

Holstein-Friesians

For sale, two yearling bulls, grandson of Koatje DeBoer,
imp., who has a record of 63 lbs. of milk, making 3 lbs of
butter, in one day. Also bull calves from Artis Peer's Paem,
Cornelia Tensen, Cornelia Artis, Inka 5th, and Queen DeKol.
These cows are all well-known prize-winners, with large milk
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G. W. CLEMONS - St. George, Ont.

GEM HOLSTEIN HERD.

SNAP, \$75 CASH Sir Archibald Mascot, 353, C.H.
F.H.B., four years old, Oct. 8th,
1895, was never sick a day, is a splendid stock-getter, and is
in every respect a first quality bull. We have used him as our
stock bull with the very best results, only part with him to
change breeding. Was a prize-winner three years in succession
at Toronto Industrial Exhibition.

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Shipping Stn., TORONTO. Bedford Park, Ont.

HOLSTEIN-FRIESIANS.

Purebred stock of all ages, male and female, of Netherland,
Johanna, Moore, and Peel strains, for sale at lowest prices.
519 Londesboro Stn. JOHN MCGREGOR, Constance, Ont.

We have a number of

Choice Young Holstein Bulls and Heifers
FOR SALE

Price and quality must sell them!

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

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

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

SPRING BROOK STOCK FARM

Holstein-Friesian Cattle and Tamworth Swine.

Do not fail to visit this celebrated herd of Cattle and Swine
on or before the holidays. Bargains in everything I have.
Remember this herd leads in prize winners, rich breeding and
high producing animals. Write at once for prices.

413 A. C. HALLMAN,
St. Peter'sburg, G. I. R. Main Line. New Dundee,
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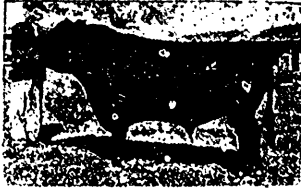
Holstein - Friesians

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

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

POLLED ANGUS AND SHEEP.

"RAPIDS FARM" MACHINE RAPIDS, QUEBEC



Royal Blackbird of Craigston.

POLLED ANGUS AND AYRSHIRE CATTLE

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

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WILLOW GROVE STOCK FARM.



Oxford King.

best, for sale at bargains. Lucasville, Ont.

Breeders and Importers of highly-bred ABERDEEN ANGUS CATTLE AND SHROPSHIRE SHEEP. Choice young animals, PRIZE-WINNERS AT TORONTO and from noted first-prize stock, For Sale at Reasonable Prices. RAM AND EWES LAMBS from imported prize-winning stock, extra fine, equal to the WILLIAM STEWART & SON,

SHEEP.

BEANS FOR SHEEP FEED

A quantity of good sound Beans (but off color) For Sale at 50 cents per bushel; \$1.10 per two bushels, bag included.

CHARLES E. BISHOP, Seedsman, BELLEVILLE, ONT.

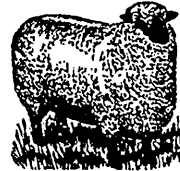
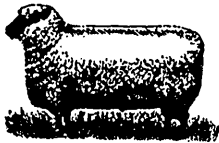
SHEEP.

OXFORD DOWNS

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

SMITH EVANS, 491 GOUROCK, ONT.

BREEDER and IMPORTER



"MINNIE MILES," twice winner over all breeds.

FARNHAM OXFORD DOWNS

I have for sale rams and ewes of all ages and both sexes at reasonable prices. All registered. Satisfaction guaranteed.

100 YEARLING RAMS AT RANCHMEN'S PRICES 100 Won many honors at World's Fair.

HENRY ARKELL,

Guelph, G.T.R. Arkell, C.P.R.

776

ARKELL P.O.

SHROPSHIRE

Our flock, one of the oldest established Shropshire flocks in Canada, was founded in 1887. Importations arrive from time to time, selected in person from best English flocks. Imported stock of both sexes for sale. Homebred January and February lambs by the typical Mountford Exile and English-bred ewes are also offered. **JAMES COOPER & SON, 492 Kippen, Ont.**



FAIRVIEW SHROPSHIRE.

Only two shearing rams left. One a choice imp. Mansell. A grand lot of ewes on sale. Homebred and imported winners. Shortage of winter feed compels me to offer better bargains than ever. Choice imp. ewes, at cost.

JOHN CAMPBELL,

606 Fairview Farm. WOODVILLE, Ont.

Oxfords

Fine rams, shearing and shears and ram lambs. Yorkshire sows due to farrow in a few weeks. Also Plymouth Rocks. We can suit you. Send card for particulars and prices. **John Cousins & Sons,**

693

HARRISTON, ONT.



DORSET HORN SHEEP and CHESTER



WHITE SWINE a specialty at

Mapleview Farm, Thorndale, Ontario.

First-class Stock for sale at very reasonable prices.

R. H. HARDING, Prop.

ON account of the Death of R. L. BURGESS, his entire stock of registered Southdown Sheep and Berkshire Swine will be sold. Apply early. Mrs. R. L. BURGESS, Burgessville, Ont. 842

SHEEP AND SWINE.



One mile north
of Claremont,
on C.P.R.

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

BERKSHIRE SOWS, ready to breed. Boars fit for service. 20 **PLYMOUTH ROCK COCKERELS**, choice. Visitors welcome.
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E. D. GEORGE PUTNAM, ONT.

Importer and Breeder of

Ohio Improved Chester White Swine

The largest and oldest established registered herd in Canada. I make this breed a specialty and furnish a good pig at a fair price. Write for prices. 667

NITHSIDE FARM HERD of BERKSHIRES

A choice lot of boars and sows of all ages and the right type always for sale. As we have been breeding Berkshires for the last fifteen years from the best that can be got, our customers can rely on getting choice pigs. None but first-class stock sent out, and satisfaction guaranteed in every case.

E. E. MARTIN,
Paris Station, G.T.R. 464 Canning P.O., Ont.

Ghester Whites and Berkshires

For a boar or sow of any age, that are right in quality, right in breeding, right in price, and guaranteed to be all right. Address,

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I have for sale 4 choice young boars, 14 months old, of the right stamp, sired by imported **QUEEN'S OWN**. Also a lot of young pigs from two to four months old. Prices to suit the times. Write for particulars.

686 S. COLE, North, Whitby, Ont.

Crystal Stream Farm ORMSTOWN, QUE.

Choice Berkshires of both sexes for sale, bred from prize-winners.

WRITE FOR PARTICULARS.

R. J. McNEIL



LAKEVIEW FARM

Purebred Berkshires. Choice young stock, from prize winners, for sale. Satisfactory prices.

Write for particulars.

Albert F. Dawes,
Lachine, Que.

Carter & Coyn

Portage la Prairie, Man.

PRIZE TAMWORTH AND
CHESTER WHITE SWINE

Mammoth Bronze Turkeys

For sale. Write us.

858

LARGE ENGLISH BERKSHIRES

I have a large number of pigs of good length and fine quality, bred from the best imported families. Two fine litters of Spring '06. All first-class. Send order for a pair not akin, or a single pig of this most profitable breeding sort.

GEO. THOMSON,
Bright, Ont.

603

D. A. GRAHAM, - PARKHILL, ONT.

Importer and Breeder of Large English Berkshires.

Reduced prices this month. I have an excellent lot of boars fit for service, and a few choice young sows. Also a number of choice brood sows, one to two years, cheap. A No. 1 Ayrshire cow. Write for prices. Poultry, B. P. Rocks, S. L. Wyandottes, and B. Leghorn cockerels, \$1.00 each, \$1.50 a pair, \$2.00 a trio. Bronze Turkeys, \$4.00 a pair; trio, \$5.00.

ELMDALE HERD OF TAMWORTHS



One yearling boar, a prize-winner at the Western Fair, 1895. Has proved himself a good stock getter. Also September, '95, boars and sows from prize-winning sires and dams; pairs not akin. Write for prices.

JOHN C. NICHOL - 623 - Hubrey, Ontario.

A SPECIALTY OF Improved Chester Swine and Leicester Sheep



We have for sale a number of our prize-winning Chesters, of all ages and both sexes. Also a lot of ram lambs. Everything registered if desired. A fine lot of cockerels of various breeds. Golden, Silver, and White Wyandottes, Plymouth Rocks, Silver Dorkings, Brown and White Leghorns, and Cornish Indian Games. Bronze Turkeys, \$3.00 per pair. Toulouse Geese, \$3.00 per pair. Aylesbury Drakes, Pekin and Rouen Ducks, \$1.00 each.

770 GEORGE BENNETT & PARDO,
CHARING CROSS, ONT.

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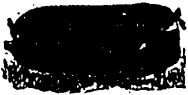
JOS. CAIRNS, - Camlachie, Ont.

IMPORTER AND BREEDER OF
Chester White Hogs

Stock on hand for sale at all times, of all ages, and at right prices.

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The home of the famous imported sires, Baron Lee 4th and Star One. Young litters arriving every month out of matured sows. Highest quality. Best breeding. Now is the time to order spring pigs. Write for prices, or come and see us.



J. G. SNELL, Snelgrove, Ont.

Brampton Stn., Ont.

820

REGISTERED POLAND-CHINAS

For sale, cheap, young pigs of different ages and both sexes. Orders booked for spring pigs. Also eggs for hatching of the Banded Plymouth Rock and Black Minorca varieties. Satisfaction guaranteed.

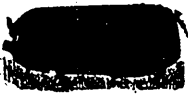


R. B. McMULLEN, Goldsmith, Ont.

Best Strains of

LARGE ENGLISH BERKSHIRES

Selected from the herds of J. G. SNELL & BRO., Snelgrove, and T. TEASDALE, Concord.



Boars and sows of all ages, not connected. Sows in farrow. All first-class stock. Address,

650 Wm. McALLISTER,

VARNA, ONT.

GOLD MEDAL HERD OF BERKSHIRES

Young boars and sows of fall litters, bred straight from imported stock. Sires weigh from 650 to 840 lbs. Size and quality combined. Orders booked for spring pigs at eight weeks old. Jersey cows, heifers, and calves for sale.



\$10 J. C. SNELL, Snelgrove, Ont.

LARGE ENGLISH BERKSHIRES

The sweepstakes herd at the Western Fair, London, 1895. Headed by my famous boar, Bright Prince, assisted by two grand yearling boars. Two yearling sows fit for show, and three grand September cows; also March and April boars and sows for sale. Write me for prices before you order. My motto, "A good pig at a fair price." Also choice Shropshire sheep and Silver-Laced Wyandottes for sale. Sunnyside Stock Farm. 821 T. A. COX, Brantford, Ont.



THE SWEEPSTAKES HERD OF

TAMWORTHS



has won the highest honors for the last three years. Boars and sows of all ages by the Industrial and London first prize-winner, Glen Sandy.

WALTER. T. ELLIOTT, Hamilton, Ont.

POLAND-CHINAS ARE THE RIGHT KIND.

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



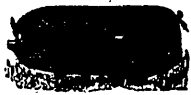
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R. WILLIS, Jr., Glen Meyer, Ont.

SWINE.

Large English Berkshires

A number of Choice Young Boars, fit for service. One splendid yearling boar. Sows in farrow and ready to breed now, and younger stock, both sexes. Satisfaction guaranteed. Write for prices or come and see stock. Mention FARMING.



698

C. E. Decker, Chesterfield P.O., Ont. Bright Station,

FOR SALE

CHOICE

Ohio Imp. Chester White and Duroc-Jersey Swine SUITABLE FOR SHOW PURPOSES.

Write for prices.

WM. BUTLER & SONS, Dereham Centre, Ont.

582

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IMPROVED LARGE YORKSHIRES.

ONLY ONE BREED KEPT

But the very best of that breed. A large herd to select from, and prices very moderate. Write for prices.

J. E. BRETHOUR,

Burford, Ontario.

668

MATLAND STOCK FARM...

Improved Yorkshire and Large English Berkshire PIGS

OF THE BEST TYPES.

Stock guaranteed. Young stock on hand and for sale at all times

FRANCIS RUSSELL, CEDARVILLE, ONT.

Pine Grove Herd Duroc-Jersey SWINE

NOW IS YOUR CHANCE

to secure a choice breeding sow cheap. Also a choice lot of fall pigs to hand.



Write for particulars.

754

OHAS. ANSTICE, Springfield, Ont.

POLAND-CHINAS

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



710

OLIVER DRURY,

Fargo, Ont.

GOLDSRING HERD OF TAMWORTHS



Herd headed by the famous King George, an unbeaten winner, assisted by Red Knight, and such famous dams as Amber Rose, Tribby, Goldspring Girl, and Nellie Bond. Young boars ready for service, and sows ready to mate. Two grand September litters ready to ship. Prices right.

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offer the following stock for sale now.

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- A fine lot of young stock to sell from \$3 per pair up.
- BANTAMS**—Buff, Black, and White Pekin Cocks, \$2.00 each also a few Buff chicks at \$2.00 a pair.
- For particulars write

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Send stamp for 48-page Catalogue.

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A lot of **WHITE WYANDOTTES** and **BLACK MINORCA** of both sexes, and **30 GRAND PEKIN DUCKS**. Prices right. We will please you or refund your money.

J. H. MEYER,
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QUALITY NOT QUANTITY

Is what I breed, and if you order Eggs or Fowls of **GOLDEN, SILVER, or WHITE WYANDOTTES, WHITE P. ROCKS, BLACK HAMBURGS, or BRONZE TURKEYS**, you will not get something for nothing, but you will get exactly what you buy. Don't give me your order if you expect disappointment in its filling.

733

JAMES LENTON, Park Farm, Oshawa, Ont.

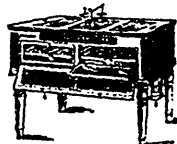
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OF THE FOLLOWING VARIETIES:

Blue Andalusians, Black Javas, Partridge Cochins, Black Hamburgs, S.S. Hamburgs, Silver Grey Dorkings, Brown Leghorns, Houdans, and Rouen Ducks. Will sell singly or in pairs.

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Bowmanville, Ont.

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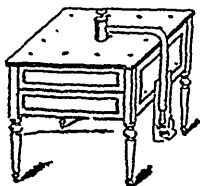


and pay for it before giving it a trial

The firm who is afraid to let you try their incubator before buying it has no faith in their machine. We will sell you ours **ON TRIAL. NOT A CENT** until tried, and a child can run it with 5 minutes' attention a day.

We won **FIRST PRIZE WORLD'S FAIR** and will win you for a steady customer if you will only buy ours on trial. Our large catalogue will cost you 5 cents and give you \$1.00 worth of practical information on poultry and incubators and the money there is in the business. Plans for Brooders, Houses, etc., 25 cents. N.B.—Send us the names of three persons interested in poultry and 25 cents and we will send you "The Bicycle: Its Care and Repair," a book of 180 subjects and 80 illustrations, worth \$5 to any bicycle rider.

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Our Incubators and Brooders won Bronze Medal and Diplomas at Toronto, 1896. Silver and Bronze Medals at London, 1896.

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BREEDER OF BUFF LEGHORNS EXCLUSIVELY.

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DUFF'S WHITE AND BLACK MINORCAS
And BARRED PLYMOUTH ROCKS

Make another Sweeping Victory at Toronto Industrial Exhibition.

On Black Minorcas I won every First, four Seconds and three Thirds; on White Minorcas, every First and Second and two Thirds; on Barred Plymouth Rocks I scored twelve points against my nearest competitor's ten. Strongest competition ever seen in Canada. I have a large number of C. ckerels and Pullets to dispose of at reasonable prices. When writing please mention "FARMING."

THOMAS A. DUFF, Toronto, Ont.

Who can beat this?

The following is a copy of letter received by me from Michigan under date of October 22th, 1896:

"I regret that I have but two chicks left from the eggs received by you (misfortune deprived me of four), but these two were shown by me this fall, and won first and second prizes on pullets, 104 birds competing. Sharpe Butterfield, judge. I competed against Hawkins & Latham's stock of Lancaster, Sid. Conger's, of Flat Rock, and E. B. Thompson's stock."

Choice stock for sale. **W. T. GIBBARD, Napanee.**



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Simple, Perfect, Self-Regulating. Thousands in successful operation. Lowest priced first-class Hatcher made. **GEN. H. STAHL.**

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Light Brahmas, Houdans, Silver Gray Dorkings, Rose Comb White Leghorns, Silver Comb Brown Leghorns, Brown and White Plymouth Rocks, Red Caps, Aylesbury Ducks, and Mammoth Bronze Turkeys. For particulars and prices, write

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

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MR. ALFRED B. OWEN,

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214 Farley Avenue, TORONTO, Ont.

775

INDIAN GAMES
SILVER WYANDOTTES.

Indian Game Cock and Cockerels (Kent, Oldriver, and D. G. Davies' stock), and a few good Wyandotte Cockerels and Pullets for sale cheap.

J. R. HAND,

Fenelon Falls, Ont.

965

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Handsome, Handy, Safe, and Cheap.

No Wind Can Blow It Out.

Send 20 cents and we will mail, post paid, one Lantern Frame to your address. Ordinary lamp chimney completes the Lantern. First application in each locality secures the agency. Agents making big money. Secure your territory at once.

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TORONTO,

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The undersigned offers for sale choice farm and fruit land in the best fruit-growing section of the Niagara District. Fruit Farms in plots of from 2 to 100 acres. Convenient to stations and markets.

Easy Terms. Correspondence invited.

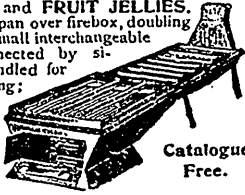
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For MAPLE, SORGHUM, CIDER, and FRUIT JELLIES. Has a corrugated pan over firebox, doubling boiling capacity; small interchangeable syrup pans (connected by siphons), easily handled for cleansing and storing; and a perfect automatic regulator. The Champion is as great an improvement over the Cookpan as the latter was over the old iron kettle hung on a fence rail.



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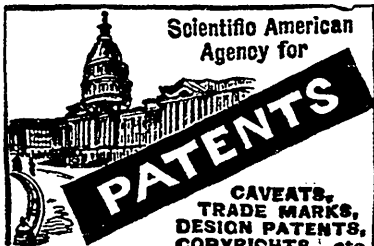
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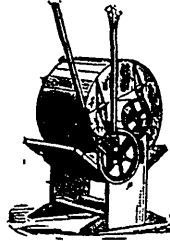


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The Best Machine
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And washes more clothes at one time than any other machine.
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Manufacturers of
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854 FIRST-CLASS AGENTS WANTED.



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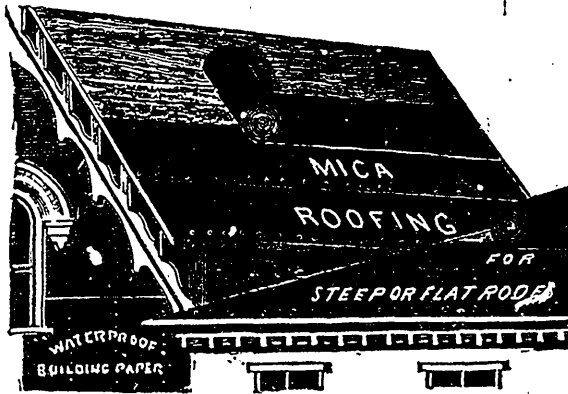
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On all your buildings.
It is cheaper than shingles.
Waterproof and Fireproof.



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

RAPIDLY TAKING THE PLACE OF SHINGLES.

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

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Office—101 Rebecca Street, HAMILTON, ONT

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Look up its advantages
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25,000 farmers produced over 60,000,000 bushels of grain in 1895.

Over 10,000,000 acres of land in the province have never been cultivated, and can be purchased on easy terms from \$2.00 to \$10.00 per acre.

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Breeder and Exhibitor in 1895 of the celebrated champion Berkshire Sow "Elphicks Matchless," sold to United States where she also won first and champion prizes. The champion Yorkshire Boar and Sow at Oxford A.S., 1895, also bred at Elphicks.

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

Pigs exported to all parts of the world.

Station—**GOUDHURST, S.E.R.**, one mile distant.

33

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Address: **MANOR FARM, Comelstone, Taunton, Somerset, England.**

41

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**RIBY GROVE, GREAT GRIMSBY,
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Has always for inspection, and sale, the largest flock of pure Lincoln Longwool Sheep in the county, including many prize-winners, having taken prizes for many years at the Royal and other shows for both Rams and Ewes, including champion medals at both the Paris Exhibitions, Vienna, Amsterdam, Canada, Australia, New Zealand, and all the leading prizes at the Chicago Exposition; also the first for the best collection of Lincoln fleeces of wool at the Royal Windsor Show and the Lincolnshire Show last year, which proves the character of this flock, which is most famous for their great size, and one hundred and twenty-five years' good breeding. Rams from this flock have made the highest average on record.

Riby Grove is seven miles from Great Grimsby, and three miles from Stallinboro' Station.

40 Telegrams: "**Dudding, Keelby, England.**"

S. E. DEAN & SONS

**DOWSBY HALL, FOLKINGHAM,
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HAVE always for inspection and sale fine specimens from their FLOCK of PURE LINCOLN SHEEP (No. 47 in Lincoln Flock Book), including SHEARLING EWES and RAMS, also RAM and EWE LAMBS. Sheep from this flock have been exported to nearly all parts of the world, where their great substance and large fleeces of beautiful quality wool give the greatest satisfaction to purchasers. Early in 1894, about twenty Rams from this flock were sold by public auction in Buenos Ayres, and realized the highest average ever obtained for Ram Hogs exported from England. The flock is most carefully bred, and none but the very best sires used. Messrs. Dean also send out selections from their flock to purchasers who are unable to come to England to inspect them, and they have given great satisfaction. Messrs. Dean have also for sale purebred Bates SHORTHORNS and pure LINCOLN RED SHORTHORNS.

Dowsby Hall is one mile from Rippingale Station, on the Great Northern Railway, Bourne and Sleaford Branch.

TELEGRAMS:—**DEAN, RIPPINGALE.**

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

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24

JAMES FLOWER, . . .

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Flock of about 1000 registered Hampshire Down ewes. Established 30 years ago by owner's father. Prizes won at all leading shows in England, including Royal, Bath and West of England, Royal Counties, and Wilts County shows; the Challenge Cup at Salisbury being won two years ago (1894-1895 in succession) by ram lambs from this flock. Specimens always for sale. Annual sale August 12, Bretford Fair.

39

J. E. Casswell,

**Stock Book No. 46. LAUGHTON, FOLKINGHAM,
LINCOLNSHIRE, ENGLAND.**

THIS well-known flock has been established more than 100 years, and the pedigree Lincoln long-wooled rams and ewes have been noted throughout the Colonies and South America for their size, symmetry, and lustrous wool. Ewes from this flock have always passed from father to son, and have never been offered for sale. Mr. J. E. Casswell's grandfather, Mr. G. Casswell, of Laughton, was the first breeder in the county to let his rams by public auction. At Lincoln Ram Fair, 1895, Mr. J. E. Casswell made the highest average for 20 rams. During the last two years the following amongst other noted sires have been used: Bakewell Councillor and Baron Rigby, for each of which very high prices have been refused; Laughton Baron, Laughton Major, Laughton Style, Laughton Choice, No 5; Ashby George, 60 guineas; Laughton Judge, 95 guineas; his son, Laughton Justice Lincoln, 200 guineas; Lincoln, 152 guineas; Welcott, 70 guineas; Lincoln, 72 guineas; and his sire, Laughton Riby. Shire horses, Shorthorn bulls, and Dorking fowls are also bred. Inspection and correspondence invited. Visitors met by appointment. TELEGRAMS: **Casswell, Laughton, Folkingham, England.**

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17

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SPRUCEDALE FARM, Owen Sound, Ont., John Harrison, Prop., Breeder of English Thoroughbred horses (Registered in English Stud Book) and Shropshire Sheep. Stock for sale. 691

SHORTHORNS.

BONNIE BURN STOCK FARM, Stouffville station and P.O., D. H. Rusnell, proprietor, Breeder of thoroughbred Shorthorn Cattle and Berkshire Swine. 799

WM. DONALDSON, Huntingford, South Zorra P.O., Ont., Breeder of Shorthorns and Shropshire Down Sheep. 701

GALLOWAYS.

A. M. & R. SHAW Brantford, Ont., Breeders of Galloway Cattle. Choice young animals for sale. 735

DAVID McCRAE, Janeville, Guelph, Canada, Importer and Breeder of Galloway Cattle, Clydesdale Horses, and Cotswold sheep. Choice animals for sale. 630

AYRSHIRES.

J McCORMACK, Rockton, Ont., Breeder of Ayrshire Cattle, Toulouse Geese, and Colored and Silver-Grey Dorkings. 629

W. M. & J. C. SMITH, Fairfield Plains, Ont., Breeders of World's Fair prize-winning Ayrshires, Merino Sheep, Poland-China Pigs, and Poultry. Stock for sale. 526

W. F. & J. A. STEPHEN, Brook Hill Farm, Trout River, Que., Breeders of Ayrshire Cattle and Yorkshire Pigs. Young stock for sale at reasonable prices. 635

WALTER WICHOL, Plattsville, Ont., Breeder of Ayrshire Cattle and Leicester Sheep. Choice young stock for sale. 527

JERSEYS.

WM. ROLPH, Glen Rouge Farm, Markham, Ont., Breeder of Jersey Cattle. Herd nearly all pure St. Lambert. Young stock always for sale at reasonable prices. 708

E. P. BALL, Rock Island, Que., Breeder of Standard-bred and Roadster Horses, St. Lambert Jersey Cattle, and Shropshire Sheep. 766

D. H. KITCHESON, Menie, Ont., Breeder of A. J. C. C. Jerseys, Shropshire Sheep, and Berkshire Pigs. Stock for sale. Hoard's Station (G.T.R.). 737

WM. WILLIS, Pine Ridge Farm, Newmarket, Ont., breeder of St. Lambert Jersey Cattle, also Cotswold Sheep, registered. Stock always for sale. 855

ROB. REESOR, Locust Hill, Ont., Breeder of Jersey Cattle and Shetland Ponies. Young stock for sale at reasonable prices. Locust Hill is 20 miles from Toronto on the C.P.R. 744

J. H. SMITH & SON, Willow Grove Farm, Highfield, Ont., Breeder of St. Lambert and St. Helen's Cattle. Prize herd at the last Industrial. Young stock for sale. 702

HOLSTEINS.

E. PANNABECKER, Fairview Farm, Hespeler, Ont., Breeder of Registered Holsteins. Stock for sale. 720

WM. ARMSTRONG, Locust Hill, Ont., Breeder of Purebred and High-Grade Holstein Cattle. Stock for sale. 694

JOHAN A. RICHARDSON, South March, Ont., Breeder of Holstein-Friesian Cattle, Dorset Horn Sheep, and Tamworth Swine. All registered. 745

DEVONS.

W. J. RUDD, Eden Mills, Ont., Breeder of Devon Cattle, Cotswold and Suffolk Sheep, Berkshire Pigs, Plymouth Rock Fowls, and White Turkeys. 740

SWINE.

R. J. LAURIE, Wolverton, Ont., Breeder of Tamworth Swine, Toulouse Geese, Rouen and Aylesbury Ducks. Stock for sale. 840

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

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

J O. FRASER & SON, Fellows, Ont., registered Duroc Jersey swine, bred, and for sale. 826

SHEEP.

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

A. TELFER & SONS, Paris, Ont., Breeders and Importers of registered Southdown Sheep. Stock for sale. 670

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

JOHAN JACKSON & SONS, Abingdon, Ont. Southdown Sheep. Champion flock at World's Fair. Awarded 20 prizes—10 firsts. 828

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

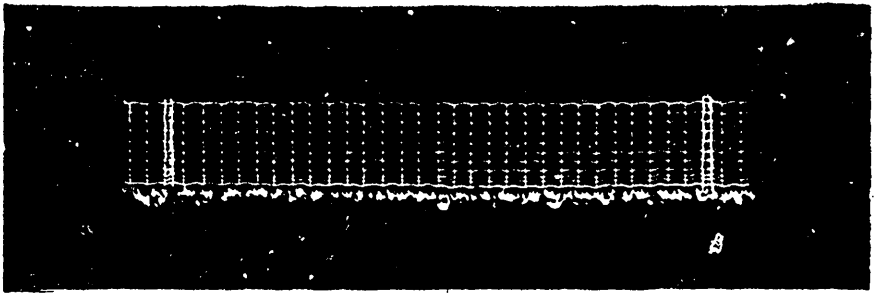
D. A. CAMPBELL, Mayfair, Ont., Breeder of registered Lincoln Sheep. 600

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

POLLED ANGUS.

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

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



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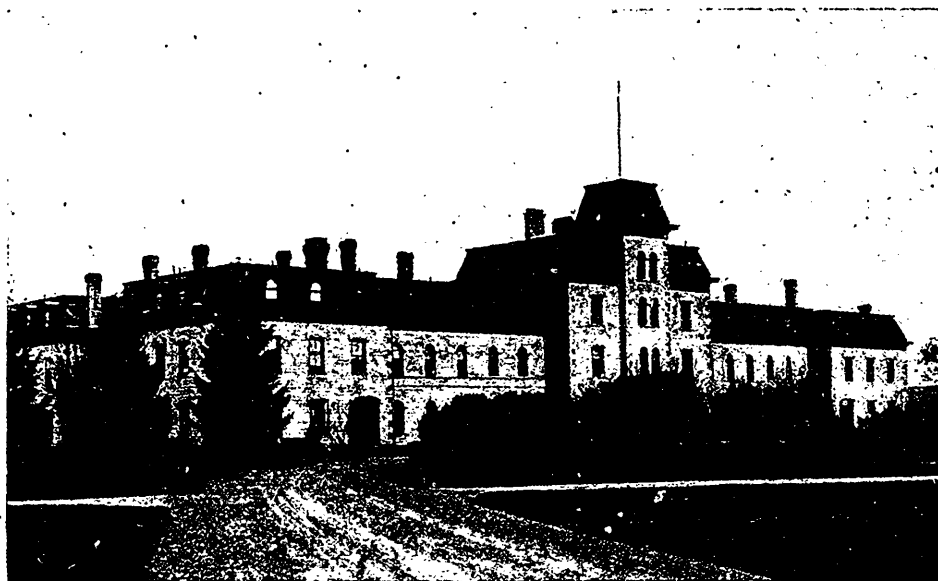
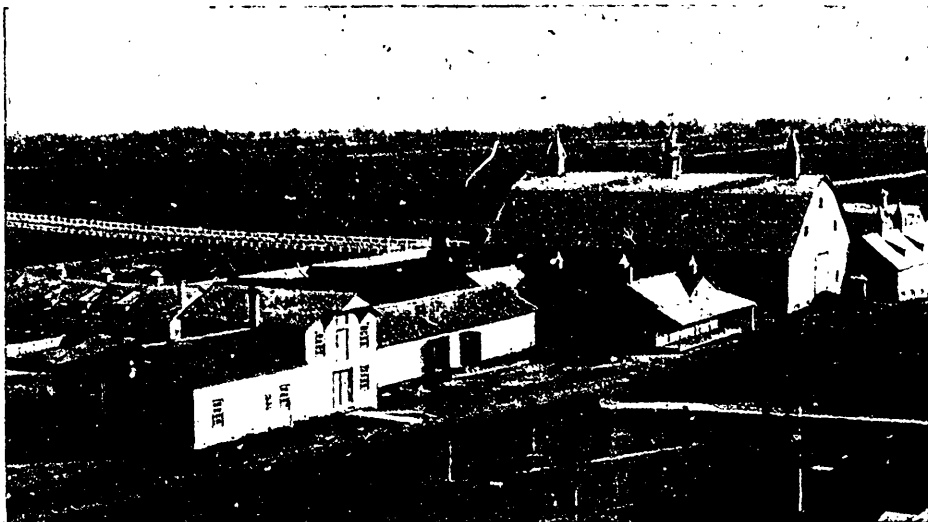
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The Ontario Agricultural College.

The lower engraving represents the main building, in which are the president's residence and office, the general lecture rooms, the library, the museum, the dining-room, and the students' dormitories. The engraving in the middle to the left represents the new chemistry building. The engraving in the middle to the right represents the experimental building, in which also is the bacteriological laboratory. The group above includes the farm superintendent's office, the main barn, the sheep houses, the piggery, and the work shops. There are, of course, many other buildings.

FARMING

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No. 4

THE ONTARIO AGRICULTURAL COLLEGE.*

By PRESIDENT MILLS.

During the sixties there was an agitation, more or less general throughout the province, for the establishment of a school to give instruction in the theory and practice of agriculture. As an outcome of that agitation the Hon. John Carling, then Commissioner of Agriculture for Ontario, appointed, in August, 1869, the Rev. W. F. Clarke, of Guelph, a special commissioner to visit some of the agricultural colleges in the United States, to collect information, and report thereon, with suggestions and recommendations for the founding of a school of agriculture in Ontario.

Mr. Clarke's report and recommendations appeared in June, 1870; and, in 1871, 600 acres of land in the county of York, near Mimico station, on the G.T.R., about six miles west of Toronto, were purchased as a site for a school. A new government having come into office the same year, strong opposition to the site chosen at once showed itself. A change was recommended by Mr. Clarke, the Board of the Agriculture and Arts Association, Dr. Manly Miles, of Michigan, and others; and as a result of these recommendations a farm of 550 acres, belonging to Mr. F.W. Stone, of Guelph, was purchased for a site in 1873, and a Provincial Farm Commission appointed to advise the Government regarding the organization of a school and the character of the work to be undertaken by it.

THE COLLEGE FOUNDED IN 1874.

Work was begun in the spring of 1874, and the outlook for valuable results seemed quite favorable; but some of the first appointments of officers were unfortunate, the management of the farm for a length of time was not all that could have been desired, and the change of site aroused fierce political opposition in parliament and throughout the country—an opposition which was not allayed till a short time ago. Hence for a number of years the school did not meet the expectations of its founders.

EARLY AND LATER PROGRESS.

In 1880 an Act was passed changing the name from the Ontario School of Agriculture to the Ontario Agricultural College and Experimental Farm, and making slight modifications in the course of study. Since that time the institution has made steady progress; but of late it has, if we may use the words of another, "gone ahead by leaps and bounds, rapidly improving from year to year in equipment and in the character of the work done by it." This more rapid development of recent years is attributable to several causes, but chiefly to the following:

(1) The liberal and progressive policy pursued towards the institution by the Hon. Mr. Dryden, the Provincial Minister of Agriculture.

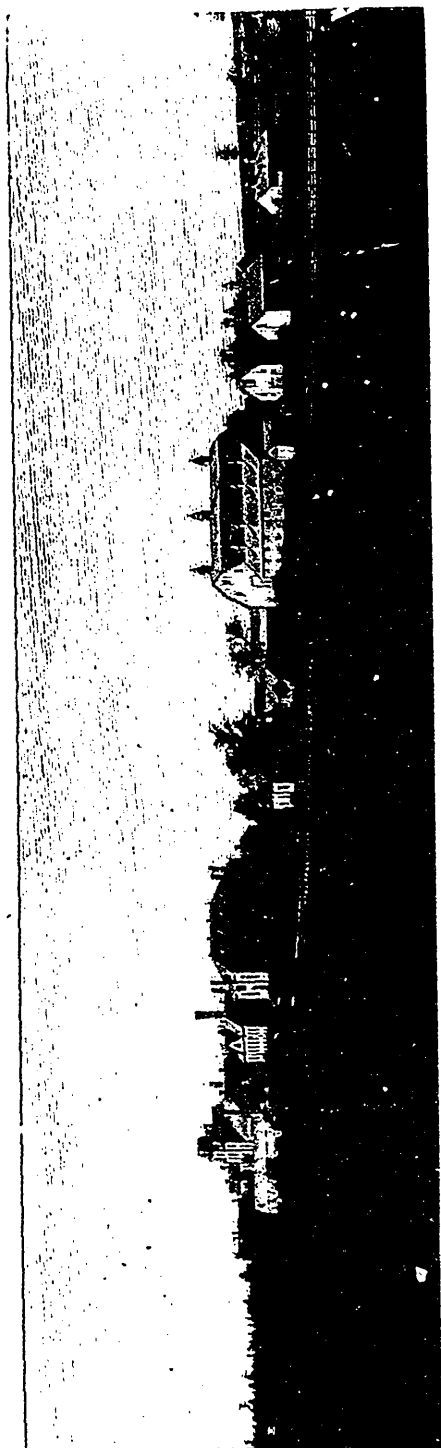
(2) The decision of the Government to give the president full control of all departments of the institution—of college and farm alike.

These causes are, we believe, primary and fundamental; but there are others which must be taken into account, viz., the appointment of a really first-class farm superintendent, who has revolutionized the farm within the last three years; and the adoption of a policy which has led to the selection of an able and progressive staff of professors, instructors, and experimenters, who are working zealously and harmoniously for the benefit of the students and the best interests of the college.

PRESENT EQUIPMENT.

As many who have not visited the institution have somehow or other got possessed of the idea that it is merely a farm for growing crops and raising live stock, "the Model Farm," or "Agricultural Farm," as some call it, we may state in a word that it is, first of all, a college—an institution founded and maintained for the express purpose of educating the young men of this province, especially farmers' sons, for agricultural pursuits; and the farm and whole outside appli-

*This very concise and clear account of the Ontario Agricultural College was supplied to FARMING by Dr. Mills at the Editor's special request.



The Ontario Agricultural College. (View as seen from the southwest.)

ances are used mainly for that purpose. To emphasize the correctness of this statement we shall outline very briefly the present equipment of the institution, as follows :

I.—For College Work.

- (1) A large and well-furnished **chemical building**, containing a beautiful class-room and three commodious laboratories—one for first and second year students in general, agricultural, and animal chemistry ; another for third-year students in quantitative work ; and a third for special investigations and research in connection with the dairy and experimental departments.
- (2) A large and well-assorted **geological cabinet**, especially arranged for purposes of instruction.
- (3) A well-equipped **biological laboratory**, with class-room and everything required for theoretical and practical work in botany, zoology, and general biology, including cabinets and specimens for the study of entomology, or that branch of science which treats of insects.
- (4) A large and well-equipped **bacteriological laboratory** for instruction, and original work in the vast and highly important field of bacteriological research.
- (5) A good **physical laboratory**, with tables and all necessary appliances for practical instruction in dynamics, mechanics, hydrostatics, hydrodynamics, and electricity.
- (6) General and special lecture-rooms for studying, handling, and judging live stock, especially cattle, sheep, and horses, and for practical demonstrations in the veterinary art.
- (7) A complete set of **greenhouses**, with lecture-room and laboratory, for instruction in horticulture.
- (8) Lecture-rooms with all modern appliances for the illustration of lectures on dairying.
- (9) A lecture-room for instruction in English and mathematics.

II.—For Practical Work illustrative of Lectures in the College.

- (1) A farm of 387 acres of land, in fine condition, well tilled, and well managed.
- (2) A complete set of farm buildings and an ample outfit of agricultural implements.
- (3) Representative specimens of all the most valuable breeds of cattle, sheep, and swine.
- (4) A large experimental building and fifty acres of land, divided into about 1,800 plots, for testing varieties of grain, roots, potatoes, and corn, and for experimenting as to different methods of cultivation, dates of seeding, kinds of seed, value of artificial fertilizers, etc.

- (5) Special stable, piggery, and yards for experiments in feeding cattle, pigs, and sheep.
- (6) A separate dairy stable and a special herd of thirty cows for experiments in dairying.
- (7) Butter, cheese, and milk-testing rooms, with the latest and best appliances for buttermaking, cheesemaking, and milk-testing, and the Pasteurization of milk and cream.
- (8) Two rooms devoted to experimental cheesemaking for nine months of the year, and to work in the dairy school for the remaining three months.
- (9) Large and well-arranged poultry buildings, with twenty-five varieties of the most valuable hens, for practical instruction in the breeding, feeding, and management of poultry.
- (10) Sixty-three acres of land, including lawn,

economy; and German has recently been added to the course.

With due regard to modesty and professional etiquette, I think I may say that not only are the purely practical or bread-and-butter subjects well taught, but the work in English is thorough, and the course in natural science is fully equal to that in our best arts colleges.

MANUAL LABOR.

A distinctive feature of the institution is the fact that all students are required to do a certain amount of manual labor while they are getting their education. They are at lectures every day, except Saturday, from 8.45 to 12 o'clock; and for work in the outside departments they are divided into two divisions, which work alternately



The Dairy Buildings, Ontario Agricultural College.

The large building in the centre is the new dairy building used for the Dairy School. The building immediately to the left of it is the old dairy building, now used principally for college classes and for experimental dairy work. To the right are the dairy stables, and the silo.

arboretum, forest-tree plantations, vegetable garden, vinery, small fruit garden, and orchards, for instruction and practical work in horticulture.

- (11) A carpenter shop, with benches and tools for plain work and general repairs.

COURSE OF STUDY AND APPRENTICESHIP.

The course of study is liberal and very practical, specially adapted to the wants of young men who intend to be farmers. It embraces general agriculture, arboriculture, live stock, dairying, poultry, beekeeping, chemistry, geology, botany, zoology, entomology, bacteriology, horticulture, veterinary science, English literature and composition, arithmetic, mensuration, drawing, mechanics, electricity, bookkeeping, and political

in the afternoons every day in the week, taking their turn at field work, in looking after the live stock, and at all other kinds of work which may be required in the different departments of the institution. For this work they are paid a certain amount, not exceeding nine cents per hour, which is credited on their bills for board and washing.

The object of this practical work is twofold: first, to assist students in meeting their expenses at the college; secondly, and chiefly, to keep them in touch with the farm, and prevent them, during the process of their education, from acquiring a distaste for farm work and farm life—such a distaste as the great majority of students acquire in the high schools and universities of the country.

COURSES.

The regular course, which is intended as a preparation for life on the farm, extends over two years. Those who complete this course receive diplomas in the month of June admitting them to the status of associates of the college. Nothing further was attempted for the first thirteen years in the history of the institution; but in 1887 a third year was added, for those who should reach a certain standard at the end of the second year, and might wish to prepare themselves, not only for life on the farm, but for original work and teaching in agriculture, horticulture, live stock, dairying, and those branches of science which have a more or less direct bearing on agricultural pursuits.

WORK AND ATTENDANCE.

Most of the United States agricultural colleges give instruction in mechanics, as well as in agriculture, and aim at giving their students a general education to fit them for business and professional life. The effect of these two features of their work has been twofold: first, to increase the attendance of students; secondly, to overshadow agriculture, dairying, etc., and reduce to a minimum the number of those who devote special attention to these branches.

On the contrary, our college at Guelph has hitherto been strictly an agricultural institution. While giving a broad and thorough training in English and the natural sciences, it has always given prominence to agriculture, live stock,



The New Dairy Building, Ontario Agricultural College.

The view is taken from the rear. To the left is the silo; while a bit of the dairy stable is also to be seen.

AFFILIATION WITH THE UNIVERSITY OF TORONTO.

In the early part of 1888, the College was admitted to affiliation with the Provincial University; and since that time all third-year work and the final examinations for the degree of Bachelor of the Science of Agriculture (B.S.A.) have been controlled by the Senate of the University. The work of this year is very heavy, and none but the picked men of the second year are allowed to take it. Hence, those who pass for the B.S.A. degree are nearly all good men, and men who, generally speaking, give a good account of themselves wherever they go.

dairying, veterinary science, etc., and has never allowed anything to overshadow these subjects. Had it followed the example of kindred institutions on the other side of the line, it could, we think, have greatly increased the attendance of students; but it is doubtful whether it would thereby have done as much as it has done to advance the interests of agriculture throughout the Dominion of Canada.

DAIRY SCHOOL.

Having spoken of the general course, we may refer very briefly to the Dairy School at the College. This school, which is well equipped and well manned, furnishes a very thorough ten-

weeks' course every winter in the theory and practice of cheesemaking, buttermaking, milk-testing, the running of cream separators, and the Pasteurization of milk and cream. In this course, farmers' sons and daughters, factorymen, and others can get in a short time, and at small cost, such instruction and practice as they may need in any branch of dairy husbandry.

EXPERIMENTAL WORK.

The experimental work done at the College is growing in importance from year to year. The 1,800 or more plots devoted to field experiments are nicely laid out, well kept, and carefully managed; and it is now generally admitted that these plots, taken together, make as beautiful and valuable an

practical operations on the farm, but, through several outside organizations, the College has done, and is doing, valuable work for the farmers of Ontario. By means of the Experimental Union of ex-students, the Travelling Dairy, the services of the professors at Farmers' Institutes, and the new Fruit Experiment Stations, the institution is imparting a great deal of very useful information, is creating a widespread interest in agriculture, and giving dignity to life and labor on the farm.

OVERSIGHT OF STUDENTS.

The students reside in the college, and are carefully looked after as regards both conduct and studies. There is an active Y.N.C.A. in the in-



A Portion of the College Farm.

A field of hay, June, 1896. An idea of the cultivation practised on the College Farm may be had from the productivity of this field. The yield was over 200 tons on 85 acres.

experimental field of fifty acres as can be found anywhere on this continent. The appearance of the plots is all that could be desired, and the results obtained from them are worth large sums of money annually to the people of the province.

For several years, valuable experimental work has been done in the dairy department; experiments in horticulture are in progress; and special buildings have recently been completed for experiments in feeding cattle, sheep, and swine.

OUTSIDE WORK DONE BY THE COLLEGE.

Not only by lectures in the class-room and

stitution, and it is admitted on all hands that the moral tone of the college is exceptionally good.

GRADUATES, ASSOCIATES, AND OTHER EX-STUDENTS.

The graduates, associates, and the other ex-students of the college are, for the most part, giving a good account of themselves—the great majority engaged in practical agriculture, several holding professorships, and some occupying other prominent and useful positions—all warmly loyal to the college. It was through the influence of ex-students that over seventy-five per cent. of those now in attendance were induced to apply for admission.

GROWING IN THE CONFIDENCE OF FARMERS.

The college has been steadily growing in public estimation, till at length it may be said to have won the confidence of the farming community. Very large numbers of farmers visit it from year to year (over 15,000 last June), and those who do so generally speak in the warmest praise of the institution and the work done by it.

SHOULD BE RECOGNIZED IN OUR EDUCATIONAL SYSTEM.

The graduates of all United States agricultural

and High schools; and we can see no good reason why the graduates of our college—not the associates, but the graduates, the holders of the B.S.A. degree granted by the University of Toronto—should be wholly excluded from these schools. Their knowledge of English is quite sufficient; their training in the natural sciences is broad, thorough, and practical; and they are qualified to teach agriculture, live stock, dairying, entomology, and kindred practical branches, which are so much needed in rural schools. Then let them teach as science specialists in the High



The College Garden, 5½ Acres.

The foreground represents the experiments now being made by Mr. Hutt, the College Horticulturist, in the cultivation of strawberries. In the distance are to be seen the dairy stables, the silo, the new dairy buildings, the experimental dairy buildings, and, in the extreme left, the residence of the manager of the Poultry Department, immediately behind which are the new poultry buildings.

colleges are allowed to teach in the schools and colleges of the country on the same terms as graduates of arts colleges; but hitherto the graduates of the Ontario Agricultural College have not been recognized in the educational system of this province—they are not allowed to teach in any school, however well qualified they may be. This, we think, is a mistake; but we are not without hope that it will be rectified at an early date. Certainly there is a growing demand for more practical education in both Public

schools; or change half the High schools of the province into Agricultural High schools, to be manned by graduates of the Agricultural College. We think something should be done on one or other of these lines without delay; and there is no doubt that legislation in this direction would receive general approval, because there is a widespread and deep-seated feeling that an effort should be made to lessen the annual grist of thousands upon thousands that pass from the High schools into the overcrowded professions;

that our system of education should, if possible, be so modified as to give our young people a good general training, and at the same time turn the attention of a larger proportion of them to agriculture and the mechanic arts, where there is still considerable room for the wise application of brain and muscle.

In our opinion, the Agricultural College offers great advantages to the young men of Ontario; and we are glad to say that the outlook of the institution never was brighter than at the present time. The attendance of students is larger than for several years past, and a spirit of hopefulness pervades both students and professors.

A STUDENT'S PERSONAL EXPERIENCE AT THE ONTARIO AGRICULTURAL COLLEGE.

By JUDSON F. CLARK, Bay View, P.E. Island.

I have been asked to state what I think of the Ontario Agricultural College as a place for the education of boys who have been bred on the farm, and who intend to follow agriculture or horticulture as their life-work; and I have thought



Judson F. Clark.

that perhaps I cannot do this better than by giving my own experience at the college.

Like most farmers' boys, I was brought up on a very busy farm, on "Kirklawne," Bay View, P.E. Island; and, as in the case of most eldest sons, my attendance at the public school was very irregular, and practically ceased at fifteen. Indeed, at that age I greatly preferred driving a team to studying grammar. A few years later I discovered my mistake and wished in vain for opportunity to remedy it. My twenty-third summer, however, found me slowly recovering from a severe attack of typhoid fever, and, being unable to do my usual share of the work, I decided to take a year's course at the Ontario Agricultural College.

I found the college well suited to my needs. It suited me, first, because there were no hard entrance examinations to pass. Like many

other boys from the farm, I had, during my seven years' absence from school, forgotten nearly everything I had ever learned about grammar, arithmetic, and kindred subjects, and could have passed no examination in them. There *are* entrance examinations in these subjects, and every student coming in *should* be able to pass them. Should he fail, however, he is not refused admission, but placed in the Preparatory Department, from which he may be transferred to the first year at any time, if his progress warrants it; otherwise he completes the year in the preparatory department, and matriculates into the first year at the close of the term. The authorities have decided to refuse admission to no one who is of sufficient age and can produce satisfactory certificates as to moral character, physical health and strength, and intention to follow agriculture or horticulture as an occupation. This rule has been adopted in view of the difficulties that many farmers' sons have to contend with in getting their elementary education, and of the fact that many of the best students the college has ever had were boys whose early education was sadly neglected.

The college suited me, secondly, because of the course of instruction offered; so much so, indeed, that at the completion of my first year I determined to take a full course. Like most farmers, I had more or less contempt for theoretical farming. I found the studies at the college *eminently practical*, but I also found that theory had a place even in farming. I learned that practice without an intelligent knowledge of the why and the wherefore was as one-sided as a theoretical knowledge without the ability to put that knowledge into practice. In a word, I learned that, for the best results in farming, theory and practice must go hand in hand.

This happy combination of theory and practice has been the guiding principle in the arrangement of the course of study. Let us glance at the instruction in live stock, for example. In the class-

room the students are taught the characteristics of the various breeds, the laws of breeding, the pedigree system, the rearing of young stock, the principles of feeding, etc. They are also taught the qualities that should characterize a steer for feeding purposes; a cow for the dairy, or any animal for stock purposes. This classroom work is supplemented by practical work in the stables, in feeding, caring for, and judging the animals. For this purpose the college keeps fair samples, male and female, of nine breeds of



A Portion of the College Lawn.

Showing the beautiful weeping birch so much prized by the staff and students. The lawn in front of the College covers over 50 acres, and is deservedly considered one of the most beautiful in the country. Each tree and shrub on the lawn is very plainly labeled with its botanical and also with its common name. Students in botany as well as in horticulture have advantages here that they rarely would find elsewhere.

cattle, nine breeds of sheep, and five breeds of swine. The practical work includes a thorough training in the characteristic features of these breeds and the distinguishing qualities of animals kept for different purposes. This union of the theoretical and practical is followed in arranging the courses in agriculture, dairying, horticulture, poultry, etc.; but space forbids details.

Such natural sciences as are intimately con-

nected with agriculture are included in the course, and their bearing on the work of the farmer is especially emphasized. Special laboratories, fitted with the most modern appliances, have been provided for the study of chemistry, physics, botany, zoology, and bacteriology. Then, too, those boys who have had little opportunity to study the subjects that they should have mastered in the Public School are given another chance. In the first year they are taught English literature, grammar, arithmetic, and bookkeeping for the farm. In the second year they go more extensively into the study of literature and essay writing.

Last, but by no means least, the college suited me *financially*. The following is an exact account of my expense during the two-year course. This statement does not include travelling expenses, cost of new clothes, books or stationery. It must also be noted that being an "outsider," I had to pay \$30 a year more than is paid by Ontario boys.

FIRST YEAR, 1893-94.

Tuition fee.....	\$50 00
Board and washing, Oct. 20, 1893, to June 31, 1894.....	\$95 34
Less money earned by afternoon labor during term.....	32 37
Balance on board and washing account paid in cash.....	62 97
Total paid in first year.....	\$112 97

SECOND YEAR, 1894-95.

Tuition fee.....	\$50 00
Board and washing, Oct. 1, 1894, to Aug. 31, 1895.....	\$125 13
Less money earned by afternoon labor during term....	\$60 13
And money earned by work on farm during summer term....	35 00
Total earned by work.....	95 13

Balance on board and washing account paid in cash.....	30 00
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Total paid in second year..... \$80 00

Hence the total cost to me in cash for the two years' course was \$192.97; and had I been an Ontario student it would have cost me \$60 less, a total of \$132.97 for the two years, *i.e.*, \$66.49 a year, which would be about the average yearly expense for an Ontario boy who remained one summer term (July and August). If he remained

both summer terms the expense would be less than \$50 a year for the two-year course. All students are required to work three afternoons each week, and are paid by the hour, according to the quality of their work. It will be noticed above that during my first year I earned \$32.37 in this way, which is considerably below the average, as I was unable to work full time. In my second year I earned \$60.13 by working full time and extra hours as I had opportunity. Books and stationery cost the average student from \$12 to \$20 for the two-year course. This shows the Ontario Agricultural College to be an institution

which offers special inducements to plucky boys who have to make their own way. Indeed, it is the cheapest two years' course of which I have any knowledge, and as one who has been greatly benefited by it I heartily recommend it to my brethren on the farms of this country.

In conclusion, let me say that the institution as a whole is splendidly situated as regards healthfulness of location and moral surroundings, is admirably qualified to carry on the work of educating the young farmers of Ontario, and altogether worthy of the patronage of the best sons of the province.

LIME AS A FERTILIZER.

By R. HARCOURT, B.S.A., O.A.C., Guelph.

ROBERT HARCOURT, B.S.A., of the Ontario Agricultural College, is the Assistant Chemist of that institution. He worked on his father's farm in Welland county till he was twenty-three years of age. He then went to the O.A.C. and took the full three years' course there, receiv-



ing his degree of B.S.A. in 1893. He then spent some time in practical work at cheesemaking, and in the fall of 1893 was appointed to his present position. During the past summer, to further qualify himself for his present work, he took a course of organic chemistry at Harvard University, Boston, Mass. Mr. Harcourt fully realizes the importance of the practical side of his duties at the O.A.C. For some time back he has been making a series of analyses with a view to discovering the relative values as fertilizers of the different sorts of wood ashes produced on Canadian farms. These fertilizers are but little understood, and are often misused. Mr. Harcourt hopes to be able soon to give to the farmers of Ontario some accurate information as to their fertilizing properties, and also as to the ways they should be applied to soils of varying constituents.

The theory of the use of lime as a manure is a subject full of interest and importance; and, it may be added, of apparent contradiction. In some sections of the country lime is applied with good effect; while in other districts the practice has been given up on account of the small returns received. Some authorities state that lime gives its best results on heavy clay lands; others maintain that better returns are received from light, sandy soils. It is hard to say why opinions should differ so widely, but no doubt many of the misconceptions and much of the abuse lime is subject to arises from a lack of knowledge of its effect on the soil and the constituents in the soil.

The benefits arising from the application of lime to farm lands, which are, in many cases, great, do not arise from any distinct fertilizing ingredient of its own. Plants require lime for their proper development; some require it in very large quantities, but usually the soil contains a sufficient quantity of this constituent to furnish all that is needed by the growing plants. Clearly, then, to understand the benefits derived from liming, special attention must be given to the physical and chemical action of this substance upon the soil itself, and upon the various constituents of the soil.

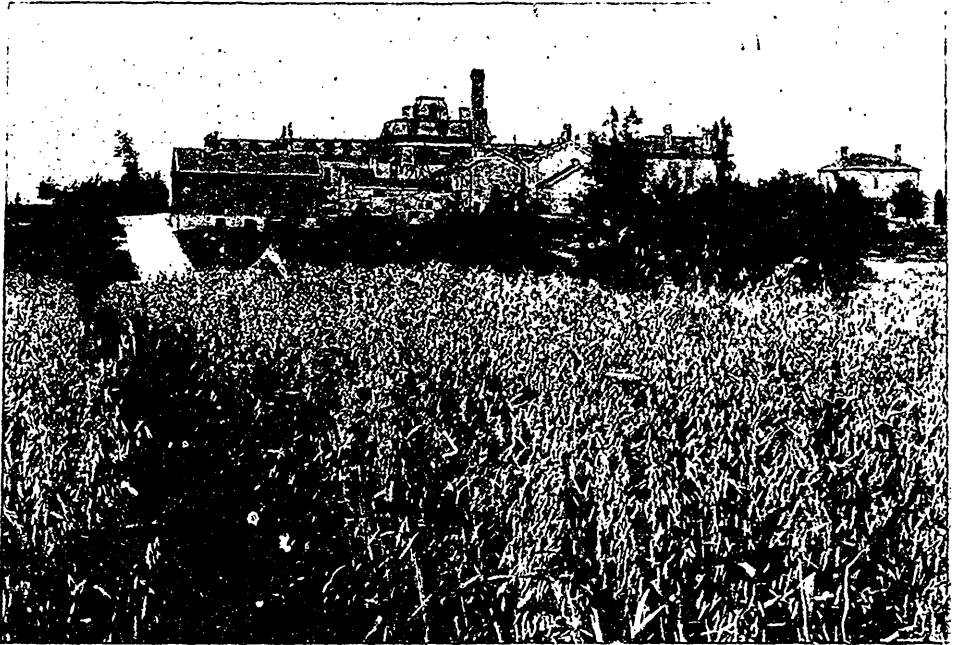
Lime has a decided beneficial effect upon the mechanical condition of both clayey and sandy soils. Contradictory as it may seem, lime tends to lighten clay soils, and to render firmer and more compact the light soils. If a portion of heavy clay be puddled, or worked up with water, until it is a pasty mass, and then allowed to dry, the result will be a mass of almost stony hardness. If, however, to a portion of the same paste a little lime be added, a difference in texture is noticeable at once, and, upon drying, the mass will crumble down at a mere touch. Or if to a pail of clayey water, which has stood for some time without be-

coming clear, a little lime be added, the fine particles of clay tend to flocculate, and, in a short time, will settle to the bottom, the water becoming clear. Upon drying the soil precipitate, it will be found to be loose and mellow. When lime is applied to a clayey soil a somewhat similar action takes place; the adhesive nature of the soil is destroyed by this flocculation, rendering it pervious and more easy of tillage. Once get the clay into this loose, friable condition, it will remain so until again puddled. The opposite effect of lime on sandy soils is owing to the formation of humates of lime, which tend to fill up the spaces between the sand grains and cement them together. The increased firmness thus obtained is of considerable importance in retaining moisture.

Besides these actions, which affect the physical conditions of the soil, lime exerts a chemical change in some of the soil constituents. The soil is formed largely from decomposed rock; certain forms of which, for instance, feldspar, contain potash and smaller amounts of phosphoric acid. These are, however, held in such a form that the plants cannot feed upon them. Innum-

erable particles of these rocks are mixed with the soil, and, as a result of various changes going on in the soil, are continually decomposing, liberating potash and phosphoric acid in a soluble form. Lime, by reason of its chemical action on the rock particles, hastens this decomposition, thus rendering an increased amount of these valuable fertilizing constituents available for plant growth. Lime also hastens the decomposition of the vegetable matter of a soil. This organic matter is the natural source of nitrogen, but, like the rocks, it must undergo decomposition or decay before its fertilizing ingredients are of any use to the growing plant. The conversion of the ammonia resulting from this decay into nitrites and nitrates is not easily effected without a proper amount of lime. The micro-organisms producing this change (which is known as nitrification) apparently require the presence of lime to neutralize the acids formed.

Lime is especially valuable on sour, marshy lands. It not only hastens the decomposition of the large amount of humus present, but, owing to its alkaline nature, corrects the sourness or



A Bit of the Experimental Grounds, Ontario Agricultural College.

These Experimental Grounds cover 50 acres, and during the growing season are divided into over 1800 plots, each devoted to a separate experiment. The particular plot represented in the engraving was that devoted this year to the cultivation of the "White Siberian Oats." This valuable variety of oats stood highest for five successive years, not only in the experiments conducted on the college grounds, but also in the experiments conducted all over the province by the members of the Ontario Experimental Union. Mr. C. A. Zavitz, the College Experimentalist, is seen standing at the end of the plot. The Experimental Grounds are situated in the rear of the College buildings, and in summer or early autumn constitute as lovely a picture as one would wish to see.

acidity natural to such soils. By this means the coarse marshy grasses may be displaced by those common to cultivated lands.

When applied in the caustic form, lime may act as a fungicide in destroying some of the hurtful forms of fungi harboring in the soil.

It will thus be seen that, through its chemical action on the constituents of the soil, lime tends to render available the three main constituents of plant growth (nitrogen, potash, and phosphoric acid), and for this reason may give greatly increased yields. But it must be remembered that it is simply a stimulant, and, therefore, should be used with moderation. Wonderful yields may follow the application of lime to a field. But as it contains no essential element of plant growth, its action being simply to liberate elements of plant growth already there, its continued use may reduce a soil to the verge of sterility. There is considerable truth in the old proverb, "Lime enriches the fatter, but beggars the son."

It is difficult to say just what soils will be benefited by liming. It is a matter that must be

settled by individual experiments. As a rule, heavy clay lands are improved, but sometimes not. The same is true of sandy soils. Well-drained marshy lands are benefited by the application of enough lime to neutralize their undue acidity. Owing to the large amount of mineral matter taken up by the legumes (clover, peas, vetches, etc.), lime usually gives marked results when applied for these crops. On heavy soils, by reason of its mechanical action, lime may be of great assistance in preparing the land for roots. The better tilth gained may make all the difference between a good and bad crop.

In considering the amount of lime to be applied per acre, we must not lose sight of the fact that it is possible to over-stimulate the land, and thus render available more fertilizing constituents that can be taken up by the growing plants; the balance, being soluble, may be carried deep into the soil or may run off in the drainage water.

On ordinary cultivated lands one ton to the acre is the amount usually applied. On marshy lands the amount may be increased to three tons per acre with profit.

PRACTICAL HINTS TO THE BEEF-CATTLE FARMER.

By MUNGO McNABB, Cowal, Elgin County, Ont.

MUNGO McNABB was born in 1855, and though still a comparatively young man is looked upon as one of the



most progressive farmers of Western Ontario. He has always been ready to adopt new methods when these have appeared to him as favorable; the consequence has been

that his farming operations have been closely watched. His farm comprises 235 acres, a great portion of which has been got solely by his own efforts. The system followed upon it is "mixed farming." Horses, cattle, sheep, and swine have been the principal products; but also wheat in considerable quantity. He has always aimed in all his farm operations not only to maintain, but also to increase the fertility of his farm. The means he has employed to effect this are principally (1) a judicious rotation of crops; (2) clover growing; (3) the feeding to his stock of all the coarse grains raised on the farm, so as to produce as much manure as possible; and (4) underdraining.—As a stockman Mr. McNabb has won an excellent reputation as a beef-producer and as a breeder of purebred Leicester sheep. As a sheep-breeder his aim has been to produce a sheep with a frame well covered with a good quality of mutton. As a prize-winner he has had his share of successes, having won very many township and county fair prizes, as well as prizes and diplomas at the Western Fair at London.—Mr. McNabb takes a warm interest in every movement undertaken for the benefit of farmers. He has been secretary of both his subordinate and his division Grange; and director, vice-president, and president of his township and also of his county agricultural association. He has also been for several years one of the most enthusiastic and most appreciated members of the Farmers' Institute staff of lecturers.

While grass grows and water runs, the human race will require for its sustenance an ever-increasing supply of beef. The population of the world is constantly enlarging; new towns and

cities are springing up, especially in the western world; people in comfortable circumstances are growing more numerous every year; and we may, therefore, reasonably expect that there will be an ever-increasing demand for this product of the farm. The demand, no doubt, will be for a better quality of beef, as it now is for a better quality of butter; and, as those who make the demand will be willing to pay a better price for what suits their taste than they would be willing to pay for what does not suit them, it will be wisdom on the part of the farmer and stock-raiser to try to cater to the tastes of his customers, and to try to meet the demands which his market makes upon him.

Great Britain's market has in the past fifteen years been a grand opening for disposing of the well-fed beef of this country, and the trade we have had with that country in beef and beef-cattle has undoubtedly brought large sums of money into ours. That market is still open to us, and free to our beef, if not to our beef-cattle; and there is every probability that it will continue to be open and free to us. So that while we have not now, and very likely never will have, the advantage over other beef-producing countries which we once had of being permitted to take our cattle inland alive, we shall still have the British market open to us on equal terms with other countries; and, if proper care and attention is given by our breeders and feeders to producing the very best quality of beef, and placing it upon the market in the very best possible condition, there is no doubt that we shall obtain the highest prices that are going.

QUALITY AND CONDITION THE PRIME REQUISITES.

The whole difference between profit and loss in a critical market generally lies in the difference that there is in the quality and condition of the animals offered for sale when put upon the market.

Animals of the best quality will always find buyers at a fair price, even in a depressed market; while animals of inferior quality and condition will be passed by and neglected even in a buoyant market, and will, in a depressed market, have to go begging for buyers altogether.

The breeders of this country are responsible for the class of cattle the country produces, and they should exercise care and discretion in keeping up the standard of the product as far as their influence extends.

It is a matter of regret that many farmers are so slow to avail themselves of the use of purebred sires in improving the stock they have. Many still prefer to use a nondescript scrub at 50c. to availing

themselves of the services of a purebred bull at \$2; but we must deal with these matters as we find them, and the only way to bring about an improved state of affairs is by all of us doing what we can to promote a general system of education in these matters—line upon line, precept upon precept—until there is an improvement over the whole country.

FOR BEEF PRODUCTION WE MUST BREED THE BEEF BREEDS.

Observation and experience join to confirm the principle that in order to produce beef successfully we must breed only the special beef breeds. Of those special breeds we certainly have a choice—Durhams, Herefords, Polled Angus, and Galloways existing in sufficient numbers in this country to afford plenty of room for the exercise of our individual preference, whatever that may be.

Of the breeds I have named the Durhams or Shorthorns have with most farmers the preference; and certainly as beef-producers, if they have an equal, they have no superior. They possess in a remarkable degree those qualities that are essential to successful beef production—constitutional vigor, size, the faculty of early maturity, and the aptitude to lay on flesh rapidly either in stall or pasture.

COMFORTABLE HOUSING AND PLENTY OF WATER REQUISITE.

In breeding for beef it is necessary to have (1) roomy and comfortable stables, sufficiently warm to prevent the manure from freezing; and (2) a plentiful supply of water available, so that the cattle can procure it easily whenever it is required.

THE DAM, AND HOW SHE SHOULD BE TREATED.

The dam of the calf should be selected with care, but nevertheless she need not be thoroughbred. The common Canadian cows are, in many cases, good enough to produce good steers; and if the farmer possesses these it is not necessary to part with them. Breed these cows to a first-class purebred sire, and the first cross will produce a steer that, with care and management, will be fit for export at from two and a half to three years old; and by breeding the heifers obtained from these crosses to purebred sires you will soon have a herd of cows that for the production of steers are in every respect equal to thoroughbreds.

It has been found in practice that the first conception has an influence on all subsequent ones; therefore be particular to breed all heifers to nothing but the best of purebred sires.

THE POINTS OF THE DAM.

The two essential qualities that every cow should possess are: (1) Constitutional vigor, and (2) roominess. She should also have good size and good bone, but the bone should not be strong enough to be coarse. She should have a large mouth and large, wide open nostrils; she should have mild, expressive eyes with a good width, between; and fine, well-shaped horns, a thin neck, and a straight broad back with well-sprung ribs, long quarters, and a fine tail. Her skin should be loose and velvety to the touch, and covered with an abundance of fine mossy hair. Her udder should be large and well placed, and extend well forward and upward.

THE POINTS OF YOUR BREEDING BULL.

Your bull should invariably be purebred, and he should belong to a family that is noted for its early-maturing faculty and for its aptitude to lay on beef rapidly. Do not buy a bull because he has a long pedigree. Be sure you have a good animal, that is, one that is good in his own points.

Your bull should have a large open nostril, and a mild, clear, full eye; he should be broad between the eyes, and also have a good length from eyes to horn; his horns should be strong, flat, and yellow, and he should be straight from tail-head to horns, except that his neck should be a little arched. He should be full in the crops, and round in the barrel, and long in the quarters, with his buttocks well let down to the hock. He should have a full, wide brisket, and should be short-legged, with a clean, broad bone, and have a fine tail and an abundance of soft mossy hair. His skin should be loose and mellow. In short, he should be a smooth, straight, thick, low-set animal, who, if properly cared for, and well handled, will improve everything he is mated with.

THE CALVES.

The best time for calves to be dropped is from November 1st to April 1st.

When a calf is dropped, let it remain with the cow for forty-eight hours; then feed it with new milk from the pail for about three weeks. The third week commence mixing a little warmed skim-milk with the new milk, and keep increasing the proportion of the skim-milk gradually, so that by the time the calf is five weeks old he will be getting skim-milk entirely. It is an excellent practice to mix a little cooked linseed meal with the skim-milk.

It must not be forgotten that castration should be attended to before the calf is more than a month old.

When the calf is about a month old he should be encouraged to eat a little meal. This should be fed in a box in the stall. A few pulped roots placed in the box will also prove tempting. A mixture of two parts oats and one part of corn or peas makes an excellent feed.

The feed should be gradually increased, but never feed more than the calf will lick up clean. Clover hay in small quantities should be placed where the calf can have access to it. By the time your calf is three months old he should be eating a peck of pulped roots and two quarts of meal per day.

As soon as grass gets good in the spring turn your calves out every day into a good pasture supplied with plenty of shade and water, but feed them what meal they will eat. At the end of six months the feeding of skim-milk may be stopped.

When days are very hot and flies are numerous it is an excellent practice to house the calves during the daytime in a darkened stable, letting them out to pasture at night. At noon a little clover hay should be fed to them in addition to their meal ration. When nights get long and cool reverse the plan, and house the calves at night and allow them to graze during the daytime.

When winter comes on the calves will be able to consume their share of the rough feed of the farm. Cut cornstalks and straw dampened, with a little meal added, will make an excellent feed night and morning. Feed roots as liberally as possible, and towards spring feed hay at least once a day.

Your calves should be kept growing constantly and never allowed to lose flesh.

In the spring do not turn them out again till the grass is well grown, and provide salt so that it is always in reach. Be sure to have a supply of water at all times. Many cattle have suffered excessively during the last two seasons for want of water. A beast driven to water will fail, no matter how good the grass may be; but if the water supply is ample he will continue to thrive, even if the grass gets short and dry. Have a piece of fodder corn contiguous to the pasture, and feed from the fodder when the grass gets short and dry. Feed generously; remember that it is far cheaper to make beef on the grass than to make it in the stable.

If the above instructions are attended to your steers will go into the stable in good shape, and will not require very heavy feeding to fit them for the block.

FEEDING IN THE SECOND WINTER.

The feeding the second winter will depend on whether you are going to fit for export shipment from the stable or to again turn your steers out to

grass and ship in June or July. The latter is the course commonly pursued in Elgin, and, in fact, throughout Western Ontario. Cut cornstalks and straw dampened in a box, with three pounds of meal added for every steer, given morning and evening, with a feed of hay at noon, is the plan of feeding I have employed with two-year-old steers for a number of years, and with good success.

If roots were plentiful I would feed a liberal amount of roots and reduce the grain ration.

If the cattle are being fed for May shipment I would increase the grain ration during the last two months. I should endeavor to feed one pound of meal for every hundredweight the animal weighed.

Sell by the pound rather than by the dollar, and be as careful as possible in driving your cattle to the scales to deliver them. Overheating and bloating will ensue if the steers are hurriedly driven. The cattle should, if possible, be attended by the one herdsman throughout, and they should be treated kindly and kept as quiet as possible.

When in the stable they should be turned out for a short time each day for exercise. They will feed better and make better shippers because of this.

The cattle will be much easier handled if dehorned. The dehorning should be done about the time they are fifteen or eighteen months old. They feed more quietly, and do better in every way after their horns have been removed.

FINISHING OFF STOCKERS.

I have dealt in the preceding part of this paper with beef production on the supposition that the farmer breeds and rears his own stock. But there are many feeders in this country who never raise a calf. They buy their cattle at two or two and a half years old, and feed them for six months or longer and dispose of them as fat cattle. To the farmer who wishes to produce beef in this way I wish to offer a few suggestions:

(1) Exercise the greatest care in your selection.

The whole question of profit or loss depends on the class of cattle you buy. Buy nothing but well-bred, growthy, thrifty cattle. Have no culls or non-does among them. Remember that there are steers that will gain only fifty pounds in a season, but which will consume as much feed as others that will gain two hundred. It will take all the profit on the steer that gains two hundred pounds to let you out on the steer that only gains fifty pounds, so that you have no profit on either.

(2) Buy cattle that are in good condition. The more flesh a steer carries when bought the less feed it will take to finish him. A steer that has been starved and stunted till two and a half years old has lost the aptitude to make flesh rapidly, and therefore will not make a profitable feeder.

(3) Get your lot as even and uniform as possible, and try to get cattle of average weight. Aim to get good colors—reds and roans.

COST OF PRODUCING A STEER TILL TWO AND A HALF YEARS OLD.

Service of male	\$ 2 00
Warm milk.....	2 00
Skim-milk, 150 days, 20 lbs. a day, at 20 cts. per cwt.....	6 00
Meal, 420 days, 4 lbs. per day, 80 cts. per cwt., say.....	13 50
Mangels, 1 peck per day, 260 days, 8 cts. per bush	5 20
Hay, 3 lbs. per day, 420 days, \$8 per ton, say.....	5 00
Grass for first summer, say	1 00

Cost to end of first winter	\$34 70
Pasture for second summer.....	5 00
Meal, 8 lbs. per day, 180 days, 80 cts. per cwt., say	11 50
Hay, 6 lbs. per day, 180 days, \$8 per ton, say.....	4 50

Total cost..... \$55 70

That is, for a steer of 1,400 lbs. the cost would be four cents a pound.

UNDERDRAINING.

By MUNGO McNABB, Cowal, Ont.

NOTE.—When Mr. McNabb got possession of his farm in 1883 no underdraining had been done upon it. He at once began to underdrain it, and though it is naturally well drained he found the underdraining to be so advantageous that he has gradually continued the work until now there are over eight miles of underdrains laid.—EDITOR FARMING

At the present period in our agricultural history, when we are all studying how best to produce a larger quantity and a better quality of farm products, if we were to ask ourselves what are the essentials necessary to the successful production of crops, we should certainly answer: *Drainage, tillage, and manuring.*

The first place, however, must be given to drainage, for everyone will admit that in order to grow crops successfully we must have a dry soil.

THE REASON FOR DRAINING LAND.

There are people who will still assert that draining heavy clays will injure them; and to anyone who is unacquainted with the effect of draining it appears to be a contradiction to state that drained land is drier in wet weather and more moist in dry weather than undrained land; but experience proves this to be the case. The object in draining is not to get the water *off* the land, but to get it to pass *through* the land. This is in order that the soil may have the opportunity of catching hold of and retaining what fertilizing constituents the water contains, and that what constituents of the water the soil does not require may pass off with the water through the drains.

Also, when the water passes through the soil it leaves perforations or channels through which the air is enabled to penetrate the soil and act upon the vegetable matter contained therein, and render it available for plant food.

On the other hand, in undrained land the water is stagnant and fills up all the pores of the soil and the land remains cold; also, the heat which is in the atmosphere above cannot get into the soil until the water in the soil is evaporated; hence, we find that the temperature of undrained soils is lower than that of drained soils. Careful experiments conducted in England have shown that there is a difference of seven degrees of temperature in favor of drained land.

ADVANTAGES OF DRAINING.

The advantages we gain from draining are the following:

(1) It enables us to work our land much earlier in the spring. The benefit which is to be gained from early seeding is evident to everyone in this country of short seasons. Experiments have shown that the crop obtained when the seeding is done early is very consider-

ably greater than that obtained when the seeding is done ten days later.

(2) After heavy rains in summer our land dries more rapidly when drained than when undrained, and this allows our hoed crops to be cultivated more thoroughly, and causes our grain crops not to be so liable to rust or blight.

(3) Our crops are less liable to be injured by summer frosts.

(4) We obtain an earlier harvest and a better quality of grain.

(5) When we grow fall wheat it is not so liable to be heaved by the action of the frost; also we are more likely to secure a catch of clover, and the liability of the clover to heave is almost entirely overcome.

(6) On heavy clay soils tillage is rendered much easier, as nothing is more injurious to these soils than to work them while they are in a wet condition.

(7) On drained soils manure gives much better results than on undrained soils; it can be applied on the surface, and its fertilizing constituents are washed down into the soil by rain.

(8) If our land is drained we can have greater comfort in all our farm operations than we can have if our land is undrained, and therefore in wet weather heavier and more sodden, and in dry weather harder and more impacted, than it ought to be. For a similar reason the health of all our farm animals and also of ourselves is better on drained than on undrained land.

THE MAKING OF THE DRAINS.

In the laying of drains thoroughness is essential. We must always remember the principle that not only should every tile laid down be of a sufficient size and be laid at a sufficient depth for present requirements, but it should have capacity and depth enough to carry off whatever water ought to pass through it in future.

As to the size of tiles to be laid it is an excellent practice to use tiles a size larger than that which we think in all probability would do.

The greatest care should always be taken to secure a good outlet. This outlet *may* be an open ditch; but, if so, the ditch should be of sufficient depth to allow the tiles draining into it to discharge their water into it freely. But never have an open ditch for an outlet where an eight-

inch tile will carry the water. Use the eight-inch tile as a main drain instead.

Care should be taken to secure the tile at the outlet with flat stones or a wooden box, for the reason that tiles that are exposed will crumble away on account of the action of the frost.

Do not bring laterals into the main drain at right angles to it, but turn them so that they will enter the main drain in the direction in which the water in the main drain flows.

The junction of a lateral with a main may be in the side of the main; or, if the depth will allow it, the lateral may be laid on top of the main, a hole being cut in the centre of the lateral and the tile laid so that the hole will be exactly over a corresponding hole cut in the tile of the main. In this way the water in the lateral will fall down into the main.

The joint should be carefully secured with pieces of broken tile.

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

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

In making drains in level land it is an excellent practice to plow a furrow each way, and clean out the bottom with a shovel; this will remove seven or eight inches of the surface more expeditiously than could be done by digging.

Only first-class tools should be used; half-round spades and scoops of proper size for the different tiles intended to be laid are essential.

Extra care should be taken in levelling the bottoms of drains. In bottoming for three-inch tiles at least one inch of soil at the bottom should be removed with the scoop, in order that the tiles may lie perfectly solid. More than this should be removed when the tiles are larger. To get the bottoms perfectly even, water should be used.

Even in very level land tiles will work perfectly if they are laid correctly; a fall of one inch to two hundred feet is sufficient if the work of laying the tiles is properly done.

LAYING THE TILES.

In laying tiles, the operator first lays one tile at the outlet, and stands upon it to get it firmly placed; he then continues the laying in the same way, each tile as it is put down receiving a sharp blow from the heel of his boot, which drives it close up to the one previously laid.

DRAINING QUICKSAND SOILS.

It is in quicksand soils that the beginner will meet with the most difficulty. These should be drained as deeply as possible. If the outlet will allow it, and it is possible to reach a clay bottom at a reasonable depth, it is better to do so. The deeper the drain is put, the more it will accomplish.

Select the driest time of the year for such work. If the water is allowed to run off after each succeeding spading is dug out, there will not be much difficulty experienced.

When you come to laying the tiles, if you are unable to reach solid bottom, let all the water run out, and then scoop the bottom carefully and throw in an inch of dry sawdust upon it, and you will be able to lay the tiles satisfactorily. Cover every joint of the tile with a tough sod.

FINISHING.

To ascertain if the tiles are properly laid, walk through the drain from end to end, stepping on every tile; if they remain *perfectly solid* you may rest assured that they are laid all right.

The drain should be filled for the first six inches with surface soil. Then plow in. Use a long doubletree, and put a horse on each side of the drain.

THE COST OF DRAINING.

The prices at which at present tiles are sold in this neighborhood are (at kiln) as follows: Three-inch tile, \$8 per thousand; four-inch tile, \$12 per thousand; five-inch, \$18 per thousand; six-inch, \$25 per thousand. These prices are about twenty-five per cent. less than could have been obtained some years ago, and possibly they are less than can be obtained in some localities even now.

One thousand tile will lay sixty rods of drain.

The cost of digging and laying for ordinary draining, say, four-inch mains and three-inch laterals, is from twelve and a half cents to fourteen cents per rod, with board additional. For quicksand soils the cost would be greater.

THE PROFIT THAT RESULTS FROM DRAINING.

The percentage of profit that money invested in draining will return will vary with different soils. Cold springy soils will yield a much greater profit than clay soils; but, even on clay soils, I have always received a good percentage of profit on the capital invested.

APPLE CULTURE.

By A. W. PEART, B.A., Burlington, Ont.

MR. A. W. PEART, of Burlington, is a graduate of the University of Toronto, having received his degree of B.A. in 1881, but with the exception of the time he was at college he has spent his whole life on the farm. At present he is in partnership with his father, Mr. Thomas Peart.



Their farm of 150 acres is devoted to "mixed farming," but principally to the production of beef, pork, butter, and fruit, in which they have been successful. But by degrees, however, they have been paying more and more attention to fruit-growing, and now have twenty-two acres devoted to apples, pears, plums, grapes, currants, blackberries, and raspberries. Mr. A. W. Peart also has charge of the Burlington Fruit Experiment Station, the specialties assigned to him being commercial pears, blackberries, raspberries, and currants. As a public worker in the interests of farmers Mr. Peart takes a prominent position. He is secretary of his own township agricultural society, and is master of the Halton County Grange; and he has been secretary, and is now the president, of the Halton Farmers' Institute. He was one of the promoters of the Burlington Horticultural Association, which was organized in 1886, and he has been its secretary ever since. He is also one of the most popular of our institute lecturers, and was employed in that capacity last year, and will be again this year.

SOIL AND SITUATION.

In choosing a site for an apple orchard, southern and southwest exposures are the least favorable. The reason for this is that in the spring vegetation is earlier on these exposures than on others, and more liable to receive severe checks from frost, while it also continues later in the

fall, so that the wood does not go into winter as well ripened as it should be.

With respect to soils, if what you propose to use be rich, no special fertilizing is necessary; but an old soil that has been depleted of its fertility by cropping should be well manured before it is planted.

Plow the manure under, and, before setting out the trees, thoroughly cultivate and pulverize the soil.

Apples require a rich, porous, dry soil, and, should the subsoil be wet, the field, previous to planting, ought to be underdrained, care being taken to run the drains between and equidistant from the proposed rows of trees.

Clay, sandy and gravelly loams, are well adapted for orchards, provided the subsoil is clay or shale; but, if the subsoil is gravel to a considerable depth, should a prolonged drouth occur it will wither both your fruit and your trees.

SELECTION OF TREES AND CULTIVATION.

In choosing nursery stock great care should be taken to select only the best. Trees taken from low, wet soils very often have a black heart, due to the frost. Be sure that you select thrifty, stocky trees, with straight, clean trunks, free from disease and insect pests. Plant them two or three inches deeper than they were in the nursery, cutting away the torn and bruised ends of the roots, and pruning the tops back so as to correspond with the roots. If a tree has too much top it will die from drouth.

In a young orchard, if it is cropped at all, hoe crops should be grown, so that the orchard may have sufficient cultivation. Cultivation, in addition to keeping the soil free from weeds, checks evaporation, and, during a drouth, is equal to showers. Cultivated thus, your trees will push ahead and become vigorous and strong.

Of course, if you pursue the above plan, it is necessary to manure almost every year.

Should your trees be making too rank a growth, or be not fruiting satisfactorily, you may correct this by seeding down with clover for a year or two, cutting it early and leaving it in the ground as a mulch.

It may be laid down as a general rule that conditions favorable to a heavy growth of wood are unfavorable to fruiting, while, on the other hand, conditions not favorable to a strong wood growth are favorable to the production of fruit buds.

When the orchard reaches maturity, cultivate, manure, or seed it down and top-dress it, as its

conditions seem to require; but never remove hay or grain crops from it, because if you do you rob the trees of their food.

It is also a good practice to allow hogs the run of an orchard; their rooting in the soil will not do it any harm, and they will destroy thousands of worms in eating fallen apples.

In ordinary soils, apple trees should not be less than thirty-five feet apart. If planted nearer, when they reach maturity there will be too much shade, which will mean an inferior quality of fruit, as well as a greater liability to the attacks of fungus diseases. Also, when the trees are too close together it will be very difficult to move ladders around them when their branches meet and interlace.

In short, each tree should have sufficient space to have an individuality of its own.

PRUNING.

Pruning is absolutely necessary to obtain good fruit. I form the head from $3\frac{1}{2}$ to $4\frac{1}{2}$ feet from the ground, according to the habit of growth of the tree.

This is high enough to permit horse cultivation, and yet sufficiently low for the foliage of the branches to afford some shade to the trunk from the sun. Thus, too, the attacks of the borer will be warded off, and a stiff, substantial tree will be the result.

The head should be formed of three or four branches, and never of two, for the reason that in the latter case the tree would be very apt to split when bearing a heavy crop.

Suckers and cross and superfluous limbs should be removed every year, the constant aim being to have a well-balanced, evenly distributed, and medium open top.

Be very careful to avoid cutting away the leading branches of large trees; the wounds do not heal over, and oftentimes the hearts of the stumps begin to rot, the rot, by degrees, extending to the bodies of the trees, and eventually killing them.

The great point in pruning is to determine the main branches of the tree when it is young, and afterwards, year by year, to use only a thinning process, as may be found necessary. In this way the food of the tree is not wasted on useless limbs, but is devoted entirely to the building up of necessary wood and the production of fruit.

Pruning may be done any time between the fall of the leaf and a few weeks before the opening of vegetation, so long as the wood is not frozen. I do not advocate pruning in June, as it checks the growth of the tree and tends to stunt it, although in exceptional cases pruning at that time of the year may promote greater fruiting.

WINDBREAKS.

When the orchard is set out, windbreaks of pine or other coniferous trees should at the same time be planted along its west and north sides. Windbreaks protect the trees from the searching, icy winds of winter and autumn, when gales are so frequent. They reduce windfalls to a minimum.

VARIETIES.

I am always diffident about recommending varieties of apples as suitable for any district other than my own. The soils, situations, climatic peculiarities, etc., of different localities vary so much that it is indeed hazardous to give any such advice.

In the Burlington district, the Duchess for summer, the Ribston Pippin for fall, and the Baldwin and Greening for winter, have been found the most profitable. I have some thirty varieties, but I give the above the first place, with the King and Northern Spy a good second.

For quality, no apple grown on the American continent can equal the Canadian Northern Spy; but, unfortunately, it is slow in bearing, and somewhat subject to spot.

In setting out a young orchard, the best plan is to find out what varieties have proved the most profitable and satisfactory in your own locality, and then plant accordingly. In a commercial orchard do not plant many varieties, nor yet new and untried ones. Thereby you will save yourself disappointment.

MANURES.

For fertilizers, well-rotted stable manure and wood ashes form a good combination; the former is rich in nitrogen, while the latter contains large quantities of potash and phosphoric acid.

In applying manures it is necessary to bear in mind the nature of your soil. Clay soils, for example, are naturally rich in potash, while sandy or gravelly loams are somewhat deficient in it. Wood ashes, therefore, give to the lighter soils those elements of which they are in need, while clay soils, on the other hand, usually require more nitrogen.

Fifty bushels per acre is a good dressing of ashes; but this should be distributed evenly over the soil of the orchard, and not piled up around the trunks of the trees, as is sometimes done.

INSECT AND FUNGUS PESTS.

In this article I can speak of our orchard enemies only in a very general way.

The chief insect enemies that we have to fight are (1) the codling moth, (2) the cankerworm, (3) the oyster-shell bark louse, (4) the borer, (5) the tent caterpillar, and (6) the fall web-worm.

The two first-named insects may be kept in check by the systematic use of Paris green, the solution to be used being $\frac{1}{4}$ lb. to 50 gallons of water, with $\frac{1}{2}$ lb. of lime added to prevent the scorching of the leaves by the Paris green.

Neglect is generally the cause of the inroads of the bark louse. Bark lice are rarely seen upon trees that are well cared for. The best remedies (in addition to good care) are the kerosene emulsion and alkaline washes, such as lye, or a solution of washing soda and soft soap. The latter is made by dissolving $\frac{1}{2}$ lb. of soda in a pail of soft water, and adding a pint of soft soap. The kerosene emulsion is applied with a spray pump; while the two latter remedies should be used to wash the trunk and main branches of the tree by means of a broom. These remedies should be employed in early June, when the young lice are being hatched and crawling about.

The flat-headed borer attacks the sunny or southwest side of the tree, blackens the bark, and leaves sawdust-like particles in its path. When these borers once get into a tree the only remedy is the knife, and a piece of wire to trace and kill

them. The female moth may, in a measure, be prevented from depositing her eggs on the bark by washing the trunk early in June, and again in July, with a solution of washing soda and soft soap, made about as thick as paint.

The best way to get rid of the caterpillar and all web worms is to crush their nests by hand.

The worst fungus pest we have to contend against, and one which is on the increase, is the apple spot, or scab. Ample experience has shown, however, that this pest may be kept in check, if not entirely destroyed, by the use of the copper sulphate and Bordeaux mixtures; the former to be applied before the buds start, and the latter once before the blossoms open, and twice after they fall.

The Bordeaux mixture, with Paris green added, serves the double purpose of destroying both the codling moth and the scab.

CONCLUSION.

In conclusion, I would say that proper apple culture may be summed up in four words—*cultivation, manuring, pruning, and spraying.*

THE EXPERIENCE OF A SUCCESSFUL DAIRY FARMER.

BEING THE PRACTICAL RESULTS ACHIEVED IN DAIRY WORK BY W. C. SHEARER, OF BRIGHT, ONT.

By GEORGE HARCOURT, B.S.A., Stock and Farm Editor of FARMING.



W. C. Shearer, Bright, Ont.

A history of farming for the past ten years would present to us many names of men who have been compelled to abandon a chosen line of work and to take up another and an entirely different line—either through failure of certain crops that they have been accustomed to rely upon, or because of the continued ravages of insects which they could not subdue, or because prices had gone down below the profit-producing point and stayed there, or simply because of private circumstances. And this history would show us that among the men who have thus been compelled to change their plans the *successful* one has been he who has been quick to recognize the necessity of adapting himself to the changed condition of things, even although the new plan of work may not have been at the beginning entirely to his liking; also that he has been able to “size up” correctly the situation in which he has been placed and to recognize to the full the extent and value of the possibilities before him; and that having formed his plans he has possessed the requisite courage and energy to enter upon them and push them to a successful conclusion.

Such a man is WILLIAM C. SHEARER, of Bright Ont., and his experience will, we believe, be found so useful to many who may be contemplating dairy work that we have obtained from Mr. Shearer the particulars of it, and here present them to our readers.

FOLLOWED MIXED FARMING WITHOUT ANY VERY DEFINITE PLAN.

When quite a young man Mr. Shearer assumed the entire charge of the management of the farm upon which he now resides; and for a number of years he was successful in growing large crops of grain, and in disposing of them at good prices. Also, he always kept a good herd of cows, whose milk in the summer he sent to the cheese factory; but in the winter the cows had things pretty much their own way.

FINDS BY EXPERIENCE THAT A DEFINITE PLAN IS NEEDED.

After a while, however, there came a year when Mr. Shearer recognized that the prices he was receiving for his grain would not warrant him to continue growing it for sale. To make matters worse, his cows at the time were nearly all farrow, and did not come in until the fall, and he thus lost the advantage of a summer's sale of milk to the factory.

FORCED INTO WINTER BUTTERMAKING BY CIRCUMSTANCES.

It will thus be seen that by the force of circumstances, Mr. Shearer was compelled to resort to winter buttermaking, and to feed to his cows a large portion of the grain which otherwise he would have sold.

The results, however, of his first winter's experience in buttermaking were so good that Mr. Shearer determined to continue breeding a large proportion of his cows so that they would come in in the fall.

It should be said that previous to this experience Mr. Shearer had read a good deal about winter dairying; but because of the favorable results which, as a rule, he had had from his spring-calved cows he had not thought that there was much in it. But this one winter's experience with cows that were fresh in the fall, and that were fed with good feed during the winter, convinced him that *there was money* in winter dairying.

He was quick to see, too, the greater possibilities of a fresh cow, as compared with a farrow one, for winter work. And, though winter dairying was not to his inclination, he determined to go into it as a business, for he saw that he could make money out of it.

MAKES A STUDY OF WINTER BUTTERMAKING.

He then began to read and study up the question, and he was soon convinced that if he was going into buttermaking he needed to get some new blood into his herd; also that he needed better cows. After some further study, he decided upon the Jersey breed as the breed whose blood it was best for him to introduce into his herd.

About this time also he had a talk with ex-Governor Hoard, of Wisconsin, and after telling him of his plans he asked him for his advice. Mr. Hoard's advice was to go on with his plans; to build a silo and to feed well. He also strongly advised him to be particular about his bull, and to get a bull from a line of noted buttermakers; saying that while he might have to pay more for such an animal than for an inferior one, yet, in the end, an undoubtedly good bull would be cheaper and better than a much lower-priced one. "Get the bull first," Mr. Hoard said, "then if you have money enough to buy purebred females, all right, buy good ones; but, if not, buy good half-breds."

BEGINS TO IMPROVE HIS HERD.

Mr. Shearer then made his first purchases. He got a good purebred Jersey bull, the best he could find for his money; also one purebred Jersey cow and three purebred Jersey calves; investing, in all, a little over two hundred dollars.

Following Mr. Hoard's advice still further, Mr. Shearer, in the following spring, planted a field of corn, and then built a silo. The results obtained from the use of the silo proved to be so good that a second one has since been built.

For several years Mr. Shearer continued to make butter in the winter, and to send his milk to the cheese factory in the summer, but each succeeding year's experience only convinced him the more that the most money was made during the winter season. He had been fortunate in securing a good market for his butter in Toronto, but his butter was still made in the old way; the cream was raised in shallow pans, and churned by hand.

MAKES BUTTER ALL THE YEAR ROUND.

About five years ago he received an offer of a good price for his butter, to be supplied the whole year round, instead of only in the winter season, as formerly. After some consideration, he determined to accept the offer, and to go into buttermaking exclusively.

He then saw that it was necessary to improve his dairy. Accordingly a stone building that had previously been used as a cheese house was fitted

up as a dairy. He purchased a No. 7 Alexandra cream separator, a power churn, and a tread power. The bull was set to run the tread power, and the cream was separated night and morning. The bull was also made to do the churning.

This treadmill work furnished the bull with plenty of exercise, and kept him in good health and vigor, and allowed him no time for mischief. The method of doing the work of the dairy, as here described, has been continued up to the present.

EQUIPMENT AND MANAGEMENT OF HIS DAIRY.

The equipment of Mr. Shearer's dairy is com-

to every little detail of his dairy work, no matter how trifling it may appear to be, and the most scrupulous cleanliness is observed at every stage of it; for the object is to produce an A1 article that will sell at the highest price. So well has he succeeded in this respect that his butter has won for him many prizes at the leading shows. Several prizes at both London and Ottawa were awarded to his butter this year. He is at present shipping a large portion of his butter to Toronto.

MANAGEMENT OF HIS COWS.

Mr. Shearer has his cows freshen in the fall and early winter. The reason for this is that he



W. C. Shearer's Dairy Herd of Jersey Cows.

Mr. Shearer's herd of dairy cows now consists entirely of purebred Jerseys or highbred Jersey Grades. The head of the herd is Canada's Hero, whose dam has a seven-days' record of 19 lbs. 5 ounces, and a milk test record of 5 per cent. fat. Among the cows is Brindle, who has a seven-days' record of 18 lbs. and a milk test record of 5 per cent. fat. Another cow is Bessie with a seven-days' record of 18½ lbs. and a milk test record of 5.15 per cent. fat.

plete, and the management thorough. Some time ago Professor T. B. Linfield, now of Utah, visited it when he (Mr. Linfield) was in charge of the "Travelling Dairy" of the Ontario Agricultural College. Mr. Linfield pronounced it the best equipped and the best managed dairy of all the dairies that he had seen when out on dairy work. The butter is neatly put up in pound prints and wrapped in parchment paper, with Mr. Shearer's name neatly printed on it, and it is shipped in butter-boxes to its destination.

Mr. Shearer gives his special personal attention

believes he can get greater returns from them in that way than if they freshen in the spring.

From the severe lessons of experience he has learned to reduce the feed of his cows for a week or two before they come in, and for some time after they come in; this is to avoid all danger from milk fever.

In general, however, he feeds his cows liberally, and aims to keep up their flow of milk all winter and on through the following summer. He trains his cows to be persistent milkers, and even finds some difficulty in getting them to dry

up. He allows most of his cows to go dry during July and August, these being the two worst months for dairymen. All the cows, however, are allowed to go dry for two months in the year. If they get a shorter time of rest, he invariably finds that on account of it they give less milk during the following season. They need all the rest which the two months give them in order to fit them for their next season's work.

The cows are always milked in the stable. A handful of bran is put in each of their mangers to help to bring them in; but as the cows know no other place at milking time they go at once to their stalls. The greatest regularity is observed as to the time of milking.

On cold nights and on wet days in the fall the cows are kept in the stables.

MANAGEMENT OF HIS CALVES.

The calves are removed as soon as they are licked dry by their dams, placed in a box-stall and taught to drink. They are fed new milk twice a day for about two weeks; then the change is gradually made to skim-milk. Scalded oil cake is used to replace the fat of the milk.

As soon as the calves will lick bran they have it to eat. A bunch of nice clover hay is conveniently hung, so that they can reach it when they begin to eat.

They are never let out until the following spring. The heifers are bred so that all come in when about two years old.

HIS PLAN OF FEEDING.

In the fall Mr. Shearer manages usually to have good pasture, which will give the cows a fine start when they come in. If the pasture is not sufficient he supplements it with cut corn and bran, fed in the stables; when using this he feeds the cows all they will eat of it—not merely enough to whet their appetites, but enough to satisfy them.

As soon as they are in the stable for good, or as soon as the field corn is all fed, ensilage forms the bulk of the food. Cut straw is mixed with the ensilage. The morning feed is 25 lbs. of ensilage, with one-third this amount of cut straw added, and from 6 to 12 lbs. of mixed grain, according to the size and ability of the cow to eat.

When he started in on his dairy work he used to feed from three to five lbs. of grain per day; but he learned from experience to feed more, for the reason that when he did so the cows gave more profitable returns.

The evening feed is the same as that given in the morning. The noon feed is hay, and a feed of straw is given the last thing at night. The greatest regularity is observed in the feeding.

The grain ration is continued for some time after the cattle go out to pasture. When needed, green feed is given to supplement the pastures, and corn is raised for fall feeding and the silo. But in future Mr. Shearer intends growing an extra acreage of corn, so as to have sufficient ensilage left over for summer feeding, instead of growing green feed. He has observed that his cows do better on the ensilage as a supplementary food than on the regular green feed.

The cows in winter are watered twice daily; in summer a running stream supplies them.

MAKES PORK CHEAPLY OUT OF DAIRY BY-PRODUCTS.

Mr. Shearer uses the by-products of his dairy for the making of pork; and he keeps as many pigs for this purpose as can profitably make use of them. These by-products, however, are supplemented by grain and roots. He feeds a lot of mangolds and turnips to his pigs. These are pulped and cooked, and mixed with grain. The results are good; he finds that he can produce his pork cheaply, and so meet the low prices which now rule the pork market.

THE ACTUAL RESULTS.

In 1891 Mr. Shearer first began to make butter all the year round. He had 14 cows, and his average return was 294 lbs. of butter from each cow, which brought him in \$68, while about \$16 was the return from each cow for the skim-milk supplied to his pigs. This was a total return per cow of \$84.

In 1894, when he had more Jersey blood in his herd, his 14 cows (of which two were two-year-old heifers) yielded him an average of 331 lbs. of butter per cow, which was sold at a little over 25 cents per lb., and yielded him a net return of \$85 per cow for butter alone. The return for the skim-milk fed to the pigs was \$10 per cow. The heifer calves sold during the season, other than those retained in the herd, made an average of \$10 per cow. So that a grand total of \$105 per cow was made that year.

In 1895 he had fifteen aged cows and three heifers; and their average yield was 333 lbs. of butter each. The average price for butter, however, was only 23 cents; so that the average yield per cow was somewhat reduced, though it amounted to \$91.

In 1896, that is, from Sept. 1st, 1895, to Sept. 1st, 1896, the herd consisted of sixteen aged cows and three two-year-olds. The average yield per cow was 330 lbs., but as the price of butter had fallen still lower (averaging only 20 cents for the year), the total cash receipts for the butter sold averaged only \$66 per cow. But the returns from

the skim-milk fed to the pigs, and from the sale of calves, brought the average return per cow up to a total of \$81.

This average is certainly not so high as the average of two years ago was; nor even as high as that of last year; but when the depressed state of the markets is taken into consideration, the season, etc., it must certainly be pronounced very good.

And there seems to be no reason why any other energetic farmer cannot make an equally good

showing with his cows if he goes the right way to work about it.

It should be added that Mr. Shearer's plan to make up for the reduced returns which each cow makes, owing to the decreased price of butter, is so to manage as to be able to keep more cows, with but a slight additional outlay for expenses, and thus bring it about that the total net return which his dairy makes for him is quite the equal of what it was when the price of butter was better.

CO-OPERATIVE DAIRYING IN BRITISH COLUMBIA.

By J. A. RUDDICK, Superintendent of the Kingston Dairy School.

Mr. J. A. RUDDICK, superintendent of the Kingston Dairy School, had his first experience as dairy instructor in the employ of Mr. D. M. Macpherson, M.P.P., the



proprietor of the "Allengrove Combination" of cheese and butter factories. This was in 1882, when Mr. Ruddick was twenty years of age. In this position he had thirty factories under his charge. He continued in that work till 1889, when he was appointed by the Dairymen's Association of Eastern Ontario to be one of their instructors. In 1892 he was appointed by Mr. J. W. Robertson, Dairy Commissioner for Canada, one of his assistants. During the five and a-half years that he was a member of the Dairy Commissioner's staff, Mr. Ruddick's experience as a dairyman was of the widest sort. For two summers he conducted important experiments in cheese-making at the Perth Dairy Station. At this station also he assisted in making the well-known "mammoth cheese" which was sent to the World's Fair at Chicago. He was also officially connected with the Canadian dairy exhibit at the World's Fair. In 1892 he had charge of the Winter Dairy Station at Woodstock, Ont., where (and at Mount Elgin) the making of winter creamery butter was started by the Dominion Government. During the last three summers his work has been in Manitoba, the North-west Territories, and British Columbia, during which time he has visited all sections of that vast area, giving lectures on dairying generally, as well as giving specific instruction in the making of butter and cheese at creameries, factories, etc. When the Kingston Dairy School was opened, in 1894, Mr. Ruddick was placed in charge of it, although he still remained on the Dairy Commissioner's staff. But when last spring

he Ontario Government took over the school, Mr. Ruddick was offered and accepted the position of being its permanent superintendent, and at the end of September he resigned his position on the Dominion staff to take up his new work. It will be seen from this outline of his work that Mr. Ruddick can lay claim to having had a very wide experience in the practical side of dairy work, and a very large experience in dairy instruction; at the same time it is well known that he has been equally assiduous in the study of the scientific side of dairying, and his aim has been to unite and harmonize every-day dairy practice with scientific knowledge.

There are four creameries and one cheese factory in British Columbia.

The creameries are located as follows: "Cowichan" creamery at Duncan's, Vancouver Island; "Delta," near Ladners; "Edenbank," at Chilliwack. These three are separator creameries. There is also a fourth, a cream-gathering institution, in Vancouver City, the cream being supplied by farmers in the Lower Fraser valley who ship

their cream by boat and rail. The cheese factory is near Chilliwack.

The Delta creamery is the pioneer; but for some years A. C. Wells & Son, Chilliwack, had made butter on a creamery scale from their large herd, until the present year when the "Edenbank" creamery was established at their place.

These creameries run the year round. The Delta has not been idle a single day since it was

opened. The butter is all put up in one-pound prints and sent fresh to market every day or two. It finds a ready sale in the cities at prices about five cents per pound above that of the tub butter brought in from outside.

British Columbia is well adapted for creamery work. The farms are not large, and in the different districts the settlers are close enough together to reduce the cost of hauling to within reasonable limits.

The water supply is unexcelled for abundance and purity.

Part of the "upper country" is very dry and the natural grasses, though very nutritious, do not grow very luxuriantly. Irrigation is resorted to for

found necessary to tramp and pack it much more than is the practice with corn.

A. C. Wells & Son* have between sixty and seventy-five cows. Their barns and stables, shown in the illustration, are considered the best in the province—indeed, there are few more suitable or convenient anywhere.† The arrangement for feeding and stabling young calves is the best I have ever seen.

The British Columbia Dairymen's Association is a young organization. Robt. Balfour, of Langley, is president, and G. W. Hadwin,‡ Duncan's, is secretary.

Agitations are on foot for the establishment of creameries at Langley, Salmon Arm, Enderby,



Cowichan Creamery, Duncan's, Vancouver, B.C.

The rapid growth so characteristic of British Columbia vegetation is easily noticeable in the height and slenderness of the trees seen in the background.

growing fodder crops. On the lower mainland and in the Okanagan valley there is abundance of feed.

Clover is a staple crop. Once seeded a meadow becomes permanent and grows so rank that other grasses are excluded. Three crops are cut in a season and as much as seven or eight tons of cured hay per acre is secured.

Corn is also grown in some localities, and does fairly well; but as the feeding value of clover becomes better known it is taking the place of the corn even for ensilage.

A great many silos are filled with clover every year. In making clover ensilage, it has been

White Valley, Saanich and Comox. It is likely that some of these will be started in the spring.

If the present development of the mining country goes on, it will be a long time before there is enough butter and cheese made in the province to supply the local demand.

*Mr. Wells, jr., is a graduate of the Ontario Agricultural College (1890).

†We have made arrangements to have in an early issue of FARMING a plan of this fine barn of Messrs. Wells & Son, with an account of its conveniences for feeding purposes.

‡Mr. Hadwin is another graduate of the Ontario Agricultural College (1890).

RAILWAY DISCRIMINATION, OCEAN FREIGHTS, AND COLD STORAGE.

Being a report on the subject prepared for the House of Commons Committee on Agriculture, by a sub-committee of which James M. Douglas, M.P. for East Assiniboia, was chairman; and Dalton McCarthy, M.P. for North Simcoe, John McMillan, M.P. for South Huron, John Tolmie, M.P. for West Bruce, O. E. Talbot, M.P. for Bellechasse, Que., and D. D. Rogers, M.P. for Frontenac, were the other members.

[NOTE.—Early in the last session of the Dominion Parliament a meeting of the members of the House of Commons who were interested in agriculture was convened for the purpose of considering the condition of farmers. After the meeting had discussed the influences which were militating against farming as an industry, a committee was appointed for the purpose of drafting a report of "recommendations for the improvement of the conditions affect-



James M. Douglas, M.P., Dongola,
Moosomin, N.W.T.

ing the agricultural interests of the country." The members of this committee were James M. Douglas, member for East Assiniboia, who had been instrumental in convening the meeting, and who took the deepest interest in the subject; Dalton McCarthy, member for North Simcoe; John McMillan, member for South Huron; John Tolmie, member for West Bruce; O. E. Talbot, member for Belle-

chasse; and D. D. Rogers, member for Frontenac. With the exception of Mr. McCarthy, all the members of this committee were farmers, vitally interested in the subjects which they were appointed to report upon. Mr. Douglas was made chairman of the committee. After several weeks of deliberation and consultation, this committee drew up a report which is certainly a document of the most momentous interest to the farmers of Canada. When this report was presented to the House Committee on Agriculture, for whom it was prepared, it was thought that the first or introductory part of the report, dealing as it did with the revision of the tariff, should not be considered by that committee, inasmuch as some of the points mooted in it might be thought to come within the realm of party politics; and inasmuch also as everything raised by it would be discussed fully in other committees of the House; and also because there was a strong desire felt to keep the discussions of the Agriculture Committee free from the complications of party interests. Accordingly the report was referred to a sub-committee with instructions that the short introductory part which dealt with tariff revision should be struck out, but that the remainder, dealing wholly with railway and ocean freight rates, and with cold storage, should be printed. It might be said that in the part relating to tariff revision the report strongly recommended that when the tariff should be revised it should be done in such a way that those articles which the farmer has to buy and which are necessary to him in the carrying on of his business should not be protected by duties so as to enhance their cost to him over and above what he would have to pay for them were they not protected. The foundation for this recommendation lies in the fact that while (in the words of the report) "nearly all commodities which the farmer has to sell have declined in prices within the last ten years, the fall in prices in the articles which the farmer has to buy has not kept pace with what may be described as the *stump in prices* of the products of the farm on which the farmer is to depend for his living; for the reason that while the price of the products which the farmer has to sell is regulated by the price at the port of export, and so is dependent on foreign competition the world over, the articles which the farmer has to purchase have been protected against foreign competition." We here present to our readers the main portion of the report, and trust that its statements will be studied carefully. We also have pleasure in presenting to our readers a portrait of Mr. Douglas, the chairman of the committee which drew up the report.—EDITOR FARMING.]

REPORT.

The problem is to ascertain by what legitimate means the value of the articles which the farmer has to dispose of can be enhanced.

Two matters, speaking generally, enter into the consideration of the question. The ultimate market at which the agricultural products of the world are disposed of is that of the United Kingdom, and it is plain that nothing that can be done

in Canada can increase the price or value of commodities in that market. But the products of the Canadian farmer when fit for that English market are reduced in value by two causes: (1) By the deterioration in the quality which, owing to the distance separating the producer from the consumer, lowers the value of the Canadian article almost to the verge of extinction before it

reaches its destination, and on many articles of a perishable nature is so great as to be prohibitive; and (2) by freight rates by land and sea, especially from parts inland from the seaboard, so excessive as to almost eat up the value of the article in the cost of its transportation.

If no means can be found of meeting and conquering these difficulties, the outlook of the agriculturist of Canada is not a cheerful one, but one well calculated to excite the most gloomy forebodings for the future of the Dominion.



A British Columbia Cornfield.
The property of A. C. Wells & Son, Chilliwack, B.C. (See Mr. Ruddick's article on Dairying in British Columbia on page 255.)

RAILWAY DISCRIMINATIONS.

The minor question is dealt with first. Your committee does not doubt, although not pretending to give exact data for the conclusion at which it has arrived, but speaking from what may not unfairly be considered common knowledge, that the great railways of Canada discriminate in several ways, all of which bear heavily upon the agricultural classes.

There is, firstly, discrimination in favor of the foreign and against Canadian products, excused by the companies on the ground that it is only by carrying the American products at a reduced rate

that they can secure any part of the carrying trade of the American great west. While this may be true, it is, nevertheless, unjust to the Canadian farmers and injurious to Canadian interests, as thereby giving to the American farmer alongside of our own people a higher price for the crops of like kind produced by the farmers in both countries. This is especially unfair on the part of railway companies that have been largely constructed at the expense of Canadians.

Then there is discrimination against localities; and it is not an unknown thing that a freight rate for goods carried between local and non-competitive points is double, nay, treble, the rate for carrying the same class of goods twice the distance, and covering in part the same mileage of the road where the terminal points are subject to competition.

And, lastly, there is a discrimination in favor of individuals, chiefly the larger dealer against his smaller competitor, which in the end leads to the ruin of the poorer man, and thus does away with the competition between buyers to the manifest injury of the farmer, who has to sell his cereal grains, or cattle, or whatever he may have to dispose of, to the favored individual who by railway discrimination is alone left to carry on the business, whatever it may be.

There is much complaint also as to the arbitrary and preposterous rule by which a fictitious weight is placed on young cattle carried between the eastern Provinces and Manitoba and the Northwest, which makes it impossible for the farmer in

the west to improve his herd by purchasing young thoroughbred animals in the east. This is a matter of great practical importance, as it operates as a prohibition against the improvement of stock in Manitoba and the Northwest, and to that extent postpones the carrying on of that mixed farming which it is believed is so essential to the prosperity of that part of the Dominion.

Finally, there is a great loss inflicted on the shippers of goods in bulk, a large portion of the commodity shipped being useless, and, consequently, unremunerative, on which, however, freight has to be paid. For this, of course, the

carriers are not responsible, but it is an important factor to be kept in mind when an attempt is being made to suggest a remedy for the improvement of the farmers' condition.

RAILWAY CONTROL.

The committee knows of no means by which the railway companies are to be forced to obey the law which forbids discrimination except the appointment of a railway commission or other tribunal with powers such as the railway commissioners in England or the interstate Commerce Committee of the United States have. It is a fact worthy of notice that, although Canada has over sixteen thousand miles of railway, she stands one in English-speaking communities in having practically no governmental control to ensure by the universal carriers of modern times the fulfilling

tive route will tend to equalize freight rates on ocean shipments, to the great advantage of the Canadian shipper. It is hoped that other arrangements of a mutually advantageous character may be made with our American neighbors.

COLD STORAGE.

But perhaps the most important question which the committee has considered yet remains to be elucidated.

How are Canadian farm products to be laid down in the English market in prime condition equal to that in which they are offered for sale at home? To this question one solution alone appears satisfactory, and that is by the adoption of a system of cold storage which will keep the article stored in the condition in which it is deposited in the storehouse for a time sufficiently



A British Columbia Dairy Barn.

The property of A. C. Wells & Son, Chilliwack, B. C. (See "Co-operative Dairying in British Columbia," page 255).

of the conditions on which the important and practically exclusive franchises they hold were granted to them. By some such means the cost of transportation might be reduced, and the selling value of the products thereby so much increased.

OCEAN FREIGHTS.

The freight, too, by sea, more especially in the carriage of live stock, is higher from Canada than from American seaports, and while the best remedy that suggests itself is the encouragement of trade with the mother country there would undoubtedly be a lowering of rates if the shipper of live stock had permission to send his cattle *via* Boston or other American ports. The committee learns with pleasure that the concession of sending cattle to Boston has recently been obtained from the United States authorities, and exporters are already satisfied that this choice of an alterna-

long to cover that required for its transportation.

This, it must be understood, means (a) warehouses to receive and store the goods until shipped by rail; (b) cold storage cars to carry the goods to the port of export; (c) warehouses with cold storage appliances at the port to hold the goods until shipped by sea; (d) ships provided with cold storage accommodation to carry to the port of destination; and (e) cold storage warehouses to receive the goods in Great Britain until they are disposed of.

If these means are attainable, the only question being one of cost, the first inquiry is, To what extent would the producer be benefited thereby?

In the opinion of the committee it is not too much to say, taking one thing with another—articles which from their perishable character

cannot be shipped, and articles which, although now sold for export, suffer much from climatic causes and natural decay, whereby their value is reduced fully one-half (which cold storage would avoid)—that the value of the farm products (including in this term the widest signification of animals and goods produced on the farm) would be increased fully twenty-five per cent.

The committee have been led to adopt this conclusion by the reflection that meats, cheese, fruit, poultry, butter and eggs, would benefit to an extent that it is difficult to exaggerate. For such a result a reasonable expenditure is surely warranted, and on public grounds can be fully justified.

The scheme to be a success involves the establishment of cold storage warehouses in central parts of the provinces and of the Northwest, and what may be considered a cold storage chain of communication reaching therefrom to the important centres where food products are in demand, and command the highest prices in the motherland.

The committee has arrived at the conclusion that these facilities cannot be secured within any reasonable period without governmental aid in some form or other.

No doubt there are objections, to which the committee is fully alive, against what is denominated paternalism; and to a past generation of political economists such an expenditure as is suggested was one that the government had no concern with.

But, however that view may have prevailed, it is believed to be fast giving way to the necessities and conditions of modern times. Thus we find England legislating under the most conservative of administrations in the advancement of the social welfare of the people; while many of the Australian colonies, the direct competitors of the Canadian farmer, are spending large sums of public money in encouraging the exports of farm products, and in other ways building up an export trade with Great Britain; while Denmark, which has obtained the practical control of the import butter business of Great Britain, has attained and maintains that position by government aid and supervision extended to her dairying interests in various ways.

The committee therefore do not hesitate to advocate the wise and judicious expenditure of public money in the promotion of the cold storage scheme which is suggested in this report.

TWO PROPOSITIONS.

How this should be done is perhaps more for the government to determine than for this com-

mittee to suggest; but two schemes have been brought under its notice, which, while in some respects in agreement, differ in what may be termed details.

It is common to both propositions that the railway companies should be induced to provide cold storage cars, and to run the same from points where warehouses are established at regular intervals, by such subventions as are fair under all the circumstances, the government retaining control over rates of freight; and that, in a like manner, the steamship lines should be subsidized for providing cold storage accommodation, the government retaining, as a consideration for such aid, control over the shipping conditions and freight rates.

By this means, and without unduly burdening the treasury, weekly or fortnightly lines of steamships, trading to all the great centres of population, such as London, Liverpool, Manchester, Glasgow, and Bristol, might be secured; and the different provinces in such a scheme would be fairly and equitably provided for.

The committee are convinced that the attainment of these results is quite within the resources of Canada, but would recommend that government aid should be granted but for a limited period, and to establish the business, trusting that in the not distant future private enterprise would without subventions be enabled to maintain it.

There remains, however, the manner of providing warehouses.

One plan is to leave this to private enterprise, paying as an encouragement, as well to the warehousemen as to the depositor of goods, a certain proportion of the storage charges. This would be a direct bonus to the man who had sufficient enterprise to collect and store the goods, but seems objectionable for many obvious reasons.

The other scheme is the one adopted by the Legislature of New Brunswick at its last session, namely, to provide a fund to guarantee for a limited term of years interest at a moderate rate on the cost of erecting cold storage warehouses, so long as they are kept open, and are at the same time under certain government control. In this way, as the committee has been informed, for the annual sum of \$7,500 for seven years New Brunswick is negotiating for the establishment of four cold storage houses at St. John, Woodstock, Chatham, and Sussex, which it is thought may end in securing their construction.

The committee prefer the latter plan as being one more certain to result in the speedy carrying out of the cold storage system, to which they attach so much importance, and as being one fairer to the community at large. And attached

to the cold storage warehouses in some places there should be slaughter houses, where animals unsuitable for export alive might be properly prepared for transportation as dead meat.

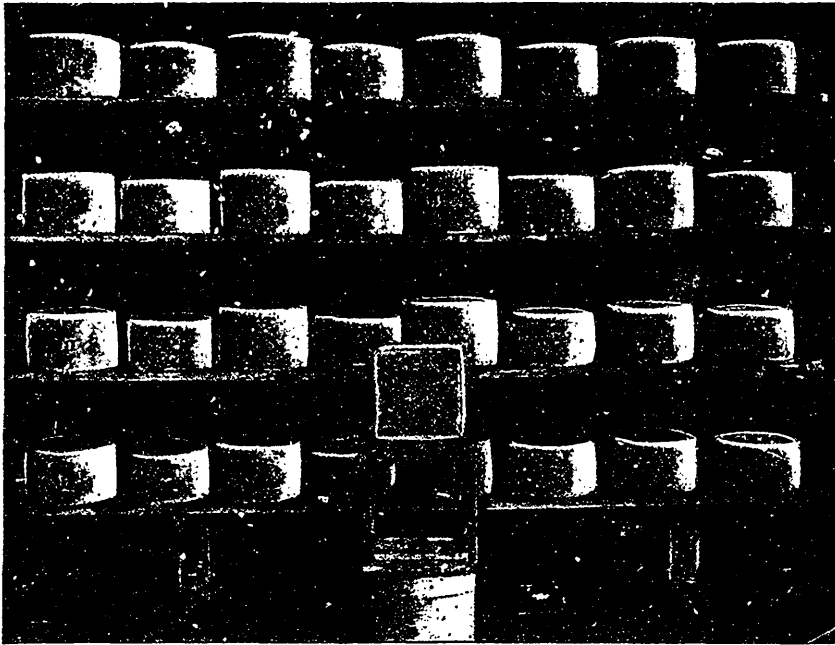
QUARANTINE REGULATIONS.

Another matter, by no means unimportant from a practical point of view, has been under the consideration of the committee. It is the onerous cattle quarantine regulations which are now in force.

Nothing can be more important for the agricultural interests of Canada than that our herds should be able to maintain and increase the reputation now enjoyed by them in some parts of the Dominion, as being equal to the best description of cattle in any part of the world.

That this excellence is only to be preserved by the constant infusion of the blood of the highest class of thoroughbred stock is certain; yet such are the regulations that the cost of the importation of live stock, owing to their detention in quarantine, makes their importation at present prices well-nigh impossible. Surely animals imported from countries where no epidemic exists might be allowed through our ports on it being shown that the animal itself was free from disease when shipped, and was in condition on arrival to pass a veterinary examination as to its condition of health.

Such changes in the law and regulations as may be required to effect this end should, the committee think, be made with the least possible de-



An Object Lesson in Cheesemaking; Experimental Dairy Department, O.A.C.

The cheese represented in the engraving were all made from the same amount of milk, namely, 600 lbs. in each case. The cheese are arranged in pairs, each pair being made on the same day; one of the pair, marked H, being made from milk with a high percentage of fat, the other, marked L, being made from milk with a low percentage of fat. The figures on the cheese indicate the month and day on which each cheese was made. The pair of cheese made on September 24th (marked "A" in the illustration) were made from two lots of milk, one of which (H) tested 5.05 per cent. of fat, and the other (L) tested 3.50 per cent. of fat. The weights of these cheese were 75½ lbs. and 60½ lbs., respectively. The pair of cheese made on October 8th (marked "B" in the illustration) were made from two lots of milk, one of which (H) tested 5.00 per cent. of fat, and the other (L) tested 3.70 per cent. of fat. The weights of these cheese were 75¾ lbs. and 62¾ lbs., respectively.—Not taking into account the two lots of cheese above mentioned, the average difference in percentage of fat between the milks used in making each pair of cheese was about nine-tenths of one per cent. It was found that for every increase of one-tenth of one per cent. of fat in the 600 lbs. of milk used, there was an increase in weight in the cheese produced of 1 lb.—The square cheese shown in the illustration is the first made in an experiment now being conducted with a view to showing the preferability of a square press as compared with a round press in the manufacture of cheese, for the reason that cheese when made square in shape can be packed more conveniently and economically in cars and ships than cheese round in shape.

lay, the government retaining in its hands ample power by order-in-council to re-enact the present or some other effective means to prevent the introduction of cattle from countries where any cattle epidemic exists without the most complete security as to their freedom from disease.

ABATTOIRS.

A matter of no inconsiderable moment has been under consideration by the committee, viz., the establishment of abattoirs in different parts of the Dominion.

The benefits which would accrue from abattoirs would be the utilization of every part of the animal when slaughtered, some of which now goes to waste; the canning of meats, which in

parts of the United States has become a great industry; and the encouragement this would give the farmer to increase his herds, and to abandon a practice, now too prevalent, of killing his young stock because found unprofitable to bring to maturity.

The committee has been impressed with the great value that such enterprises would be to the community, but, thinking it wiser in seeking government aid to err on the side of safety, has not felt warranted in doing more than drawing attention to the subject, in the hope that if the cold storage system should prove to be successful means would not be wanting to aid what may be considered a sister undertaking.

COLD STORAGE FOR CREAMERIES.

AN IMPORTANT FORWARD STEP IN THE COLD STORAGE MOVEMENT.

By J. W. ROBERTSON, Agricultural and Dairy Commissioner for Canada.

[Early in November the Department of Agriculture at Ottawa, through the Agricultural and Dairy Commissioner, issued a very important bulletin, detailing conditions under which the Government would aid in the establishment of cold storage rooms in individual creameries. This is the "first link" in the "chain of cold storage service" which the Government is endeavoring to establish, connecting the producers in Canada with the consumers in Great Britain. As the matter is of such great moment to Canadian farmers, it is right that every one should be acquainted with the steps which the Department of Agriculture is taking to establish this chain. We, therefore, publish the bulletin in full, and are much pleased to be able to preface it with an introduction which the Agricultural and Dairy Commissioner has, at our request, kindly prepared for it.—EDITOR FARMING.]

The natural resources of Canada in soil, climate, water supply, and available labor of the rural population, are thoroughly adapted for the production of enormous quantities of the best quality of fine food products. Many of these fine food products are essentially perishable in their nature. Such products are not valued in the markets even according to their nourishing qualities; they are valued mainly according to the daintiness of their flavor.

This is the particular quality that fetches the high price. If a man were to value peaches according to their intrinsic worth as a food, he would never pay the price at which they are sold from time to time. *Daintiness of flavor* is the quality which will gain for Canadian products the best class of customers at the highest prices that the market can afford. Such products, and particularly butter, should be protected against deterioration or decay during transportation, and also while awaiting for a profitable or suitable market.



Professor Robertson.

The butter made in creameries in Canada is as good, when made, as the butter produced in any part of the world. But if butter be kept at a temperature above 35° F., even during a short time, the processes of change and deterioration begin and go on. The lower the temperature the more slowly do the changes occur.

Salt is added to butter to give it a flavor such as is preferred by a large number of consumers, and also to preserve it from going off in flavor. The use of salt as a preserving agent does not alter the fact that a low temperature must be provided if the butter is to be preserved.

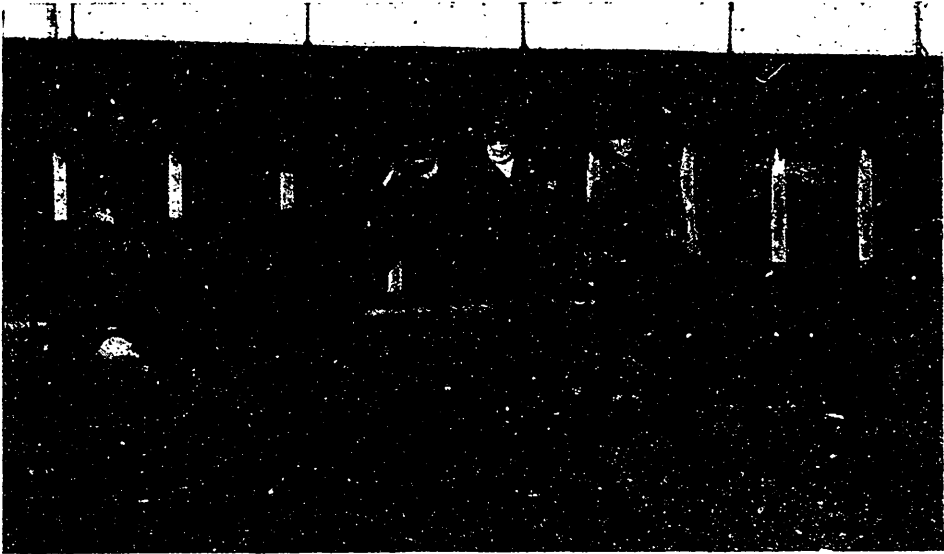
Experiments in the refrigeration of butter were

begun by Professor Fjord, in Copenhagen, Denmark, in 1885-6. Comparisons were made between the quality of different samples of butter made in the same way, but kept, in one case, in a chilled room, at a temperature of from 35° to 43° F., and, in the other case, in ordinary cellars, at a temperature of 59° F. The butter was kept from thirty to thirty-eight days, and a comparison was made of the quality, first in Copenhagen, and afterwards at Newcastle and London, England. The butter kept in refrigerator rooms was better than the butter kept in ordinary cellars in one hundred and nineteen trials, was equal in five trials, and was inferior in only one trial.

When butter has begun to spoil, it can never again be put back to its fine flavored condition.

The plan proposed by the Government to assist in providing cold storage for creameries is expected to overcome that lack of equipment, and to provide the first link in the chain of a cold storage service for butter from the points of production practically to the retail shops in Great Britain.

During the present year, some of the butter kept in simply-constructed cold storage rooms at the Government dairy stations at Moose Jaw and Prince Albert, N.W.T., was shipped to Great Britain in cold storage cars and in cold storage compartments in the steamships. The highest price realized for sales in October, in London, was 114 shillings per cwt. If Canadian creamery butter can be put on the English market in per-



First Prize "Canadian" Cow and Calf.

Shown at Montreal Exhibition, 1896. The property of M. Demers, St. Eustache, Que. Registered in the Herd Book for "Canadian Cattle," opened by the Quebec Provincial Government, and kept by Professor Couture, Quebec. For an interesting description of this fine breed of dairy cattle, the "cousins of the Jerseys," as they are called, see *FARMING* for June, 1896, page 594.

Experience has shown that less change occurs in butter at temperatures under 32° F. than above that point. If the butter can be kept at the creameries where it is made for a week or two, awaiting shipment, at a temperature of or about 35° F., and kept at a temperature under that point afterwards, until it is delivered to the consumers in Great Britain or elsewhere, it should arrive at its ultimate destination almost as good as when three days old.

In the past, four-fifths of the butter made in creameries in Canada has been slightly spoiled before it has been sent from the factory, owing to the insufficient and inefficient storage rooms used at them.

fect condition, farmers may obtain relatively from twenty to twenty-five per cent. higher prices in the same markets than they have been getting in past years. This will doubtless lead to an enormous increase in the production of creamery butter, for which there is a good and a growing demand in Great Britain when the quality is faultless.

In the course of a few years the export butter trade of Canada should almost equal in value the export trade in cheese. By directing all the increase of milk towards buttermaking the cheese market will also be strengthened. The outlook for the dairying industries of Canada is very hopeful, indeed.

COLD STORAGE FOR CREAMERIES.

BULLETIN NO. 1.

Agricultural and Dairy Commissioner's Office,
Ottawa, 26th October, 1896.

I am directed by the Minister of Agriculture to state that the sum of twenty thousand dollars was placed in the Supplementary Estimates by the Government and voted by Parliament at its last session "towards providing for cold storage and carriage of Canadian perishable food products, and to secure recognition of the quality of such products in the markets of Great Britain in an undeteriorated condition." Part of this sum is to be used in assisting the owners of creameries to provide suitable cold storage rooms.

In order to have creamery butter in a perfect state when it is delivered to the consumers in Great Britain, it should be protected in cold storage from one day after it is made. As the Government has decided to arrange for what will be practically a chain of cold storage service from the producers in Canada to the consumers in Great Britain, it is necessary that the owners of the creameries, the manufacturers of butter, and the farmers who furnish the milk and cream, should all co-operate to bring about the best results. Very few creameries are equipped with sufficient or efficient cold storage accommodation.

The cost of an ice-house and refrigerator room adequate to store the make of butter at a creamery for two or three weeks, while awaiting shipment, is estimated at from four hundred (\$400) to six hundred dollars (\$600) per creamery. At most creameries there is already an ice-house, and at least a room that goes under the name of a cold storage room. The necessary alterations and improvements to those existing buildings would cost probably from one hundred (\$100) to two hundred dollars (\$200) per creamery.

Plans showing the style of construction to be adopted for the insulation of the cold storage room, and the method which is recommended for the storing of ice and the cooling of the room, will be furnished on application to the Agricultural and Dairy Commissioner, Ottawa.

These require that the inside of the walls of the cold storage room shall have two dead-air spaces, measuring together not less than three inches in thickness, with an inside finish of two thicknesses of one-inch lumber, with building paper between. The dead-air spaces can be made most economically and effectually by the use of a thick, tough quality of building paper. The bottom of the outer dead-air space is to be filled with mineral wool, or sawdust, to a depth of at least six inches, to prevent the admission or exit of air. Where the air can enter or escape from the hollow space in a wall, it becomes a flue rather than a dead-air

space, and is not efficient as part of a non-conducting wall.

The hollow and dead-air spaces on the sides of the cold-storage room are to be continued on the ceiling, without interruption at the corners; and each thickness of paper used on the sides is to be continued on the ceiling and under the top thickness of lumber on the floor. The floor is to be at least two inches thick with two thicknesses of building paper between the top and underneath the boards or planks of the flooring.

The cooling is to be effected by means of cylinders to be filled with ice or ice and salt as shown on the plan, or by some other efficient method, to the satisfaction of the Department of Agriculture. The temperature is to be maintained under 38° Fahr. continuously.

The buttermaker must keep a record of the temperature of the cold storage room, taken once a day. Forms for the keeping of the record will be supplied by the Department of Agriculture in duplicate for each month; and one copy when filled up, is to be sent at the end of the month to the Agricultural and Dairy Commissioner, Ottawa.

The quantity of butter to be manufactured at the creamery from the 1st of April to the 1st of December shall not be less than 15,000 pounds.

To encourage the owners of creameries to provide the cold storage accommodation which is so desirable, the Government will grant a bonus of fifty dollars (\$50) per creamery to every creamery which provides and keeps in use a refrigerator room according to the plans and regulations, during the season of 1897; the Government will pay a bonus of twenty-five dollars (\$25) per creamery to every creamery which provides and keeps in use a refrigerator room according to the plans and regulations, during the season of 1898; and the Government will pay a bonus of twenty-five dollars (\$25) per creamery to every creamery which provides and keeps in use a refrigerator room according to the plans and regulations, during the season of 1899.

It will thus be seen that the owner of a creamery who provides the necessary refrigerator room and keeps it in use according to the regulations during the years 1897, 1898 and 1899, may receive a bonus of one hundred dollars (\$100) per creamery.

The owners of the creameries, which already have ice-houses and cold storage rooms, will please send specifications of the same, together with a statement of the materials used in construction, and a sketch or plan of them. Plans and specifications will then be furnished showing the alterations, additions, or improvements which are required to meet the regulations of the Department of Agriculture.

JAMES W. ROBERTSON,
Agricultural and Dairy Commissioner.

Appreciative Words.—Scarcely a day passes without bringing us some evidences of appreciation from our agricultural friends in the United States; and there is hardly a state in the Union that has not contributed its quota of commendatory letters during the past two months. MR. F. A. CRANDALL, of Falcon, New York, a prominent breeder of Shropshire sheep in that state and the owner of a noted prize-winner, Rarity 57443, took a three-months' trial trip with FARMING while attending the Industrial

Fair in September last. He now writes: "Can you send me a few sample copies of FARMING that I can hand to my neighbors? I am convinced that it only needs an introduction to get them to subscribe, and I am too choice of my own copies to allow them very far from home. I shall renew my subscription at the end of the three months, and if there are any charges for the sample copies I will pay them then. I think FARMING the most practical paper that I ever had in the house."

A CHEAP AND SUCCESSFUL COVERING FOR THE SILO.

The invention of Mr. WILLIAM RENNIE, O.A.C., Guelph.

One great drawback in the use of the silo has been the loss of ensilage that always occurs at the top, due to fermentation, etc.



Mr. Wm. Rennie, O.A.C.

All kinds of coverings have been tried to prevent this loss, but with varying success. No covering has yet been invented which has overcome all loss; but the

covering which has been invented by Mr. Rennie, Farm Superintendent of the Ontario Agricultural College, seems to be most successful of all, and it has the additional excellent features of being cheap and easily made and used.

Mr. Rennie had been experimenting in the matter for a number of years. This fall he had a sheet of cheap (five-cent) cotton made the size of the top of the silo. Part of it he had coated with

crude petroleum; another part with seal oil having a little carbolic acid in it; and the remainder he left uncoated.

The sheet was first tried on the round silo at the dairy barns. When examined, it was found that there was no loss under the crude petroleum, but that there was about three inches in depth of loss under the seal oil, and more than this depth where the sheet was uncoated.

This led to a second trial at the large barn. A sheet was made and given a good coating of the crude petroleum only, and then put on the silo. Planks were laid on the edges of the sheet against the walls of the silo, and occasionally a man would walk around on these planks to press them down, but nothing was done with the centre.

This silo was recently opened, and it was found when the covering was removed that there was no loss whatever under the crude petroleum. The only loss that occurred was between the edges of the plank and the walls of the silo, and this Mr. Rennie is confident of being able to prevent another year by filling the space between the planks and sides of the silo with salt.



Filling a Silo.

The above illustration is made from a photograph taken during the operation of filling Mr. Joseph E. Gould's large silo at Uxbridge, Ont. (see FARMING for September, page 23). As will be seen by the illustration the machinery consisted of a threshing machine engine, a large cutting box, and the elevators. The corn had been grown in hills made forty inches apart each way. Two men cut the corn, using common reaping hooks, and carefully laid the stalks from every two hills together. Two teams with teamsters, and one man in the field to help load, and three wagons, were employed to convey the corn from the field to the machine. Three men were required to feed the machine, and one man worked in the silo. Thus there were nine men in all, besides the engine man. The cost was as follows: Nine men at \$1 per day, \$9; two teams without drivers, \$2; engine and man, \$2; total, \$13 a day. One hundred and twenty tons were put in the silo in three days, less one hour. The cost per ton was therefore about thirty cents. The corn grew upon ten acres. The seed was "Compton's Early."

The sheet, when coated, was put on wet with the petroleum. This tainted the top of the ensilage slightly; but a very light raking off (of about one-half inch) removed all of the taint.

Some people have advocated the watering of

the top of the silo as a means of preserving it. The use of this covering makes this unnecessary, as it retains all the moisture.

The sheet can be dried and laid away for use another year.

CORN FOR FODDER: SHALL IT BE PRESERVED IN THE SILO?

A question raised by MR. E. MORRIS, Fonthill, Ont.

Our illustration of the field of corn standing in shocks is an interesting one. It certainly shows that there was a very heavy crop. The corn grew on the farm of Messrs. Morris, Stone & Wellington, proprietors of the well-known Fonthill Nurseries. Mr. Morris, who grew and harvested the crop, estimates that it ran from thirty to forty tons an acre; that is, green, when cut. No special preparation of the soil was made when the seed was planted. The ground was manured about four years ago for nursery stock; this stock was taken off last year, and no fertilizer has been applied since. The corn was planted in drills two and a half feet apart, the grains being about five inches apart in the row, and was covered with the cultivator, run through twice. A great proportion ran from ten and a half to twelve feet high.

PRESERVING CORN FOR FODDER WITHOUT A SILO.

Mr. Morris, who, in answer to our request, kindly gave us the above particulars, further says:

"I would like to say a word or two to farmers who wish to grow corn for fodder, but who have no silo, or other convenient way of keeping it. It is well known that corn, when stacked, or mowed away in the barn, will not keep without heating, fermenting, and spoiling. I used to grow corn for fodder quite extensively about thirty years ago, before silos were introduced, and the plan that I adopted to save it was as follows:

"At cutting, the corn was bound in sheaves, and then put in round shocks, and left that way until it was partly cured. I would then arrange to have my threshing done, and have the corn hauled with two teams, and thrown in the straw stack in alternate layers with the straw. The straw would absorb the moisture of the corn, and the cornstalks would come out in the winter as bright and sweet as could possibly be desired; and when this fodder was fed the stock would take in preference to almost any other feed, and would even chew up stalks an inch and a half thick. The cornstalks also flavored the straw.



An Abundant Crop of Fodder Corn.

Grown on the farm of Messrs. Morris, Stone & Wellington, Fonthill, Ont., 1896. This crop grew to a height of from 9 to 12 feet. The yield ran from 30 to 40 tons per acre, green. The ladder shown in the illustration was necessary to enable the men to build the sheaves into shocks properly.

which caused a great deal of that to be eaten as well.*

"In my opinion, when this method of preserving corn can be carried out it causes less work, and gives a feed more valuable, than when the corn is cut up and made to go through the process of fermentation in the silo."

Mr. Morris also would like to call the attention of the readers of *FARMING* to the following bulletin on "Shredding Corn Fodder," issued by Professor C. S. Plumb, director of the State Agricultural Experiment Station of Indiana. If it can be established that corn can be preserved as fodder without the trouble of putting it into a silo, and without the expense of *building a silo*, certainly that would be good news to farmers. But it must be remembered that the climatic conditions of Indiana are not quite the same as those of Ontario, and while it would be possible for shredded corn to be preserved perfectly in a barn mow in Indiana, it might not be quite so practicable in Ontario. The experiment, however, is well worth trying.

SHREDDING CORN FODDER.

By PROFESSOR C. S. PLUMB, Director of the State Agricultural Experiment Station of Indiana.

"During the past few years unusual interest has been taken by farmers in the subject of shredding fodder. Many have hesitated to shred, thinking that the shredded corn would not keep well in the mow or stack. When shredding was first practised, more or less fodder was shredded in a somewhat damp condition. When such corn was used, it invariably heated in the mow, became musty, and gave unsatisfactory results. A know-

*Our readers who have followed Mr. Morris thus far will be interested in remembering what Mr. T. G. Raynor, of Rosehall, had to say on the same subject in *FARMING* for November, page 171, first column.—[Ed. *FARMING*.]

ledge of such unsatisfactory preservation has restrained some people from shredding their fodder, although had the crop been properly handled there is little doubt but these same persons would have become endorsers of the process.

"Fodder that is to be shredded should not be run through the machine until it is entirely dry and well cured. It would be better to be over-dry than not dry enough. Last season, at the Indiana experiment station, we shredded all of our corn fodder (stover) and with the most satisfactory results. It kept well in the mow, and was free from mustiness. The cattle and sheep ate it freely, and it was used well into the spring with the stock. This fall we will shred nearly all of our 1896 crop. Shredded fodder presents several important points in its favor:

"(1) It is more economical to feed than the uncut corn. (2) It is eaten up cleaner by the animals than most cut fodder is, there being less waste, due to the absence of the hard, sharp-edged, short butt pieces of stalks usually found in cut fodder. (3) The refuse makes better material for bedding than do whole stocks or cut pieces, being finer and softer. (4) It handles far better in the manure pile than does the entire stalk. (5) It does not make the mouths of cattle sore, while that of coarsely-cut fodder oftentimes does. (6) It packs more economically in the mow than does uncut fodder.

"The feeding value of shredded and cut fodder is practically the same.

"Shredding is coming more and more into practice, and many farmers are making use of the process. Shredders and huskers combined are made, or the shredders may be bought separately.

"Shredded corn furnishes a valuable class of coarse food for horses, cattle, and sheep. A ton of shredded fodder contains over three-fourths of a ton of digestible food for the animal body."

DECEMBER MEETINGS.

The Provincial Fat Stock and Dairy Show. This show will be held at Guelph on Tuesday, Wednesday, and Thursday, December, 8, 9, and 10.

The Dominion Cattle Breeders' Association. The annual meeting will be held at Guelph, on Monday, December 7, at 7:30 p.m.

The Dominion Sheep Breeders' Association. The annual meeting will be held at Guelph, on Wednesday December 9, at 7:30 p.m.

The Dominion Swine Breeders' Association. The annual meeting will be held at Guelph, on Thursday, December 10, at 7:30 p.m.

A Joint Public Meeting. A joint public meeting of the members of the foregoing associations and others will be held at Guelph, on Tuesday, December 8, at 7:30 p.m., when several notable speakers will be present.

The Ontario Agricultural and Experimental Union. The annual meeting will be held at the Ontario Agricultural College, on Thursday and Friday, December 10 and 11, when addresses will be delivered by the Hon. John Dryden, Minister of Agriculture for Ontario, the Hon. Sydney Fisher, Minister of Agriculture for the Dominion, and others.

The Canadian Hereford Breeders' Association. The annual meeting will be held in Guelph, on Thursday, December 10, at 10:30 a.m., at the Commercial Hotel.

The Ontario Beekeepers' Association. The annual meeting will be held in Toronto, in the city council chamber, on December 8, 9, and 10, beginning on the 8th at 2 p.m.

The Fruit Growers' Association of Ontario. The annual meeting will be held on Wednesday, Thursday, and Friday, December 2, 3, and 4, at the Dairy School, Kingston.

THE PORK PRODUCTION OF CANADA.

By F. W. FEARMAN, Pork Packer, Hamilton.

I wish to say a few words to the farmers of Canada on the importance to them of our pork-producing industry and of the possibilities of its

Our trade then was wholly a Canadian one. Heavy, fat pork was most in demand. A great deal of lumbering, land-clearing, rail-splitting, road-making, and other hard work was being carried on by our people; our town and city population was much less than it is now; the self-binder, horse-rake, steam-thresher, stump-puller, and many other labor-saving machines were hardly in use at all; and the rich, strong food which good, fat pork supplied was relished by those who had so much outdoor work to do.

Now that is all changed, and lean, mixed hams and bacon are desired by country people as well as by the artisan and mechanic of the town.

OUR TRADE WITH BRITAIN.

The trade with England has also increased very much of late years, and the demand for our Canadian hams and bacon is large and growing, and we are competing with Ireland and Denmark very closely in that market; but, in order to obtain and hold the English market, Canadian packers must obtain from the farmers who supply them the style of hogs that will make the meats that the English people (who are, as is well known, very particular customers) require.

OUR HOG PRODUCT IS IMPROVING.

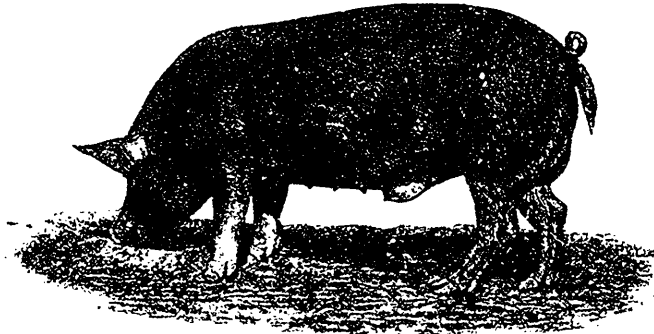
I am often asked what breed or style of hogs will suit me, and after I have given the answer I am told that I cannot get such hogs in Canada. But I do get them, and so do other packers in this country, and I am glad to say that it is easier to get them year by year. Our breeds of hogs have much improved. The old short Berkshire, Essex, Suffolk, Chinese, and other fat-producing stock are not wanted, and are therefore not so largely produced as formerly; but the long-bodied, deep-sided, light-shouldered Berkshire,



F. W. Fearman.

increase. My warrant for doing this is that I have been engaged in the pork business for the last forty years.

It is now nearly forty years since I built the first packing-house ever erected in Canada for slaughtering and packing hogs; it was, however, erected twenty years too soon. I speedily found that I could not stand the competition of the States, and I had to discontinue the business and sell my machinery, buildings, and site, and I became a much poorer man, if not a wiser one, for my experiment.



First Prize Young Tamworth Boar.

Bred and exhibited by H. George & Sons, Crampton, Ont., winner of first prize in his class at Toronto, Montreal, and Ottawa. Recently sold to His Excellency Lord Aberdeen, Governor-General, for his stock farm in British Columbia.

Improved Yorkshire, Tamworth, and Chester White, and the crosses of these, all at six to eight months old, not too fat, and weighing from 150 to 200 lbs., will bring, when delivered in the summer, the top price of the market. As a consequence farmers are breeding this sort of hog more and more, and find that it will pay them to do so rather than the other sort. They find, also, that the weights mentioned above, when attained at the ages mentioned, are the most profitable weights for them to strive to produce.

OUR BACON AND HAM EXPORTS ARE INCREASING.

I find in *The Canadian Gazette*, published in London, England, the following figures, which

Hams.

	1893.	1894.	1895.
From Canada.... cwt.	57,780	50,576	81,707
" United States "	920,961	1,075,270	1,203,157

"The Canadian trade is clearly expanding satisfactorily, but there is still abundant room for growth."—*Canadian Gazette*, London.

It should be remembered that the Danish pork trade is very practically favored and encouraged by the Danish Government. That is one reason why their trade with Britain has been able to attain such large dimensions, and to do this so rapidly.

THE QUALITY OF OUR BACON EXPORT.

It is gratifying to know that, as compared with American pork-producers, we are gaining



Prize Bacon-Curer's Hog.

Bred, owned, and exhibited by Mr. Joseph Featherston, M.P., of Streetsville, Ont. At the Montreal Exhibition this year a prize of \$20 was offered by the Laing Packing and Provision Company, of Montreal, "for the best bunch of hogs of any kind, ten or more in number, suitable for the export bacon trade, weight to be 140 lbs. to 190 lbs., live weight. Hogs to be in good condition, and not too fat." There were three entries. The prize was won by Mr. Featherston. The hog shown in the illustration was picked out by the judges from Mr. Featherston's bunch as being the best and most typical animal of the lot for the bacon trade. Of Mr. Featherston's bunch of ten, two were Tamworth and Berkshire crossed; three were Yorkshire and Berkshire crossed; two were Poland-China and Berkshire crossed; and three were Berkshire. The animal represented in the engraving was from a Yorkshire boar and a Berkshire sow.

will indicate the increase in the Canadian ham and bacon trade. Gratifying as these figures undoubtedly are, it is evident that there still is great room for increased production of hogs in Canada, if we are to have any considerable proportion of Great Britain's total trade:

"Britain's Imports of Hams and Bacon."

"According to the British Board of Trade returns the British imports of bacon and hams stood thus in the years 1893 to 1895:

Bacon.		1893.	1894.	1895.
From Canada....	cwt.	193,773	254,443	268,886
" United States "	"	2,177,293	2,561,203	2,649,482
" Denmark....	"	711,854	766,828	1,013,930

ground in the English markets, and producing a more satisfactory class of meats than they.

The principal trouble with the American corn-fed hog is that it is too fat, and this is being found to be true both for home consumption and for foreign trade. *The National Provisioner*, Chicago, of Feb. 1, points this fact out, paying a tribute, at the same time, to the Canadian hog. After referring to the abhorrence of the American consumer for fat pork, *The Provisioner* says:

"The European consumer has the same fault to find with our bacon that our home consumer finds, and is emphasizing the fact by sending his

orders to Denmark and Canada. The farmers of these countries have realized what is requisite, and are, to their pecuniary advantage, paying a great deal of attention to both breeding and feeding. The results are very apparent and convincing. Of course, England is the great competing market, and we cite it as a criterion. In 1893 the exports of bacon from Denmark to that country were 711,854 cwt.; in 1894, 766,828 cwt.; and in 1895, 1,013,930 cwt. Canada's exports for the same years were: In 1893, 193,773 cwt.; in 1894, 254,443 cwt.; and in 1895, 268,886 cwt. The figures from the United States were: In 1893, 2,177,293 cwt.; in 1894, 2,565,203 cwt.; in 1895, 2,649,482 cwt. This shows an increase for the United States, it is true, but nothing in proportion to the increase which Canada and Denmark made during the same years. These figures tell their own story, and provide an object lesson for the American farmer. We want him to understand that quality is wanted, not quantity."

THE MAGNITUDE OF OUR BACON EXPORT TRADE.

It is evident, from the following figures relating to the exports of Canadian bacon during the past five years, that our bacon products are giving satisfaction to our foreign customers:

Year.	Quantity in Lbs.	Value.
1891.....	7,150,756	\$ 590,852
1892.....	11,544,295	1,094,205
1893.....	17,288,311	1,830,368
1894.....	26,826,840	2,754,479
1895.....	37,526,058	3,546,107

An increase of exactly 500 per cent. in five years!

These figures are certainly most gratifying to those interested in the Canadian pork-producing industry; but they become much more so when it is remembered that this increased trade has been almost wholly with the world's great consuming market, Great Britain, where we needs must compete with the exporting countries of the whole world, and where, also, our bacon must be of the choicest sort in order to gain a standing at all.

The favor which Canadian bacon has reached in the English market may be gathered from the following extract taken from *The Mark Lane Express*, in its review of the English provision trade for the year 1895: "Canadian pea-fed bacon has also made astonishing progress in its sale during the year, it being much esteemed by customers in the country districts for its delicacy and mildness of flavor, and it has often met with ready purchasers when other classes of meats have been neglected."

THE QUALITY OF BACON REQUIRED FOR FOREIGN MARKETS.

What the European consumer wants is bacon well streaked with lean, and this fact should be impressed upon farmers in the strongest possible way; for if we increased our exports of bacon to Great Britain by nearly ten million pounds in a year of severe depression (see figures above for 1894-5), what may we not do in a year when these unfavorable conditions are absent? It will be remembered that during most of the year 1895 the bacon trade of Great Britain was characterized by a very severe depression.

THE INCREASE IN OUR HOG PRODUCTION IN TWENTY YEARS.

The figures regarding the increase in number and value of hogs raised by Canadian farmers during the last twenty years are still more interesting, and I am sure the readers of *FARMING* will be much pleased to read them. I give the statistics as prepared by the *Cincinnati Price Current*, which is the highest authority on the pork industry on the American continent. The figures are for the last ten years, and are compiled from the returns made by the principal packers of this country. These statistics do not include the hogs that are cut and cured by the small meat shops of the country, and also not those that are kept by the farmers for their own use:

YEARLY PRODUCTION OF CANADIAN HOGS.

	Summer.	Winter.	Total.
1875-76.....	25,000	119,189	144,989
1876-77.....	58,544	186,198	244,742
1877-78.....	12,957	151,781	164,738
1878-79.....	8,579	115,775	124,354
1879-80.....	37,447	157,932	195,379
1880-81.....	37,857	156,763	194,620
1881-82.....	57,016	129,971	186,987
1882-83.....	28,715	140,314	169,529
1883-84.....	37,684	99,944	137,628
1884-85.....	55,573	154,575	210,148
1885-86.....	65,230	126,640	191,870
1886-87.....	84,811	171,674	256,485
1887-88.....	70,549	145,674	216,214
1888-89.....	35,343	143,137	178,480
1889-90.....	61,436	169,273	238,709
1890-91.....	91,910	234,970	326,880
1891-92.....	99,466	251,088	350,554
1892-93.....	123,611	227,409	356,020
1893-94.....	142,550	279,910	422,470
1894-95.....	209,010	301,640	510,655
1895-96.....	250,000	350,000	600,000

In 1875-6, as will be seen by the above table, the number of hogs bought by Canadian packers amounted to 144,989. At the average weight of 200 lbs. per hog, the total pork production was, therefore, 28,997,800 lbs. At an average price of $4\frac{1}{4}$ cents, the total amount paid to Canadian farmers for this pork was \$1,230,406.

In 1895-96 the estimated total number of hogs bought by Canadian packers was 600,000. At an average weight of 180 lbs. per hog (the average weight now ruling) the total pork production for this year was, therefore, 108,000,000 lbs. At the same average price of $4\frac{1}{4}$ cents, the total amount paid to Canadian farmers by Canadian pork-packers was the tidy sum of \$4,590,000.

We have, therefore, in twenty years the following increases: In number of hogs bought by Canadian packers, 455,011; in number of pounds of pork prepared for sale in Canadian packing-houses, 79,002,200; and in amount of money paid to Canadian farmers for the pork they produced, \$3,357,594. This is a very gratifying statement.

It should be mentioned in addition that the total number of Canadian hogs slaughtered for consumption in the season 1895-6, according to the estimates of pork-packers, amounted to 1,000,000; that is 400,000 more than the number slaughtered by the packers. I consider this figure to be nearly correct.

Another pleasing feature in the pork trade of Canada during the period of twenty years above reviewed is that our imports of pork have decreased in the same ratio that our exports have increased. The money now spent for the pur-

chase of pork in Canada goes almost wholly into the hands of Canadian farmers.

THE IMPORTANCE OF THE INDUSTRY.

The pork-producing industry is one of tremendous consequence to the farmers of Canada. It is one which every farmer can have a share in, no matter how humble his circumstances. It is one also in which the farmer who does business on the largest scale finds advantageous to follow in connection with his dairying, or beef-production, or general farming. And if we can go on improving the quality of our product, and making it year by year more acceptable to the tastes of the foreign consumer, there is no doubt that the foreign export trade which we have already established, and which, as we have seen, increased 500 per cent. in five years, will grow greater and greater every year. And let our hog producers be not afraid of over-production. We have plenty of room for expansion as long as we keep the quality right. Our total contribution to the British bacon market is only a little more than one-fifteenth of what that market obtains from the United States and Denmark alone. If we only are careful to keep improving the quality of our product our export trade with Britain ought to increase enormously.



A Dinner Party,
"Where good digestion waits on appetite."

LETTER FROM GREAT BRITAIN.

THE LONDON DAIRY SHOW—ROMNEY MARSH SHEEP—CANADIAN HORSES.

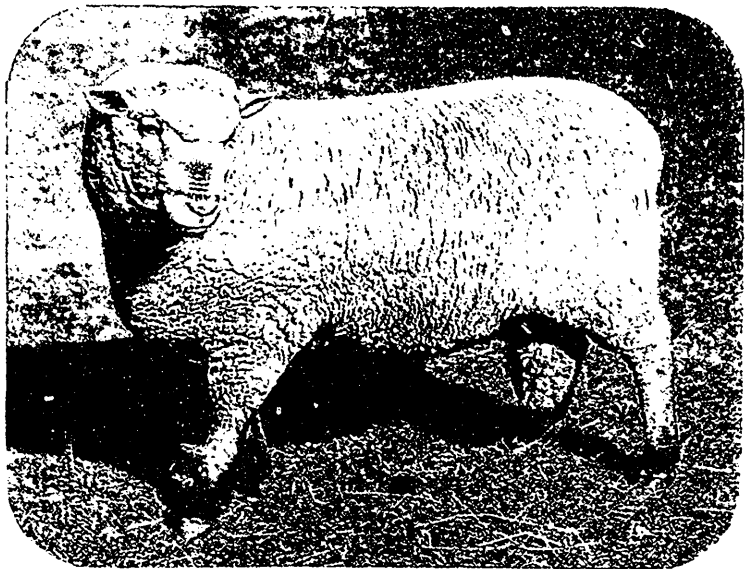
(From Our Special Correspondent.)

THE LONDON DAIRY SHOW.

The twenty-first annual show of the British Dairy Farmers' Association took place at the Royal Agricultural Hall, Islington, on October 20th and following days. This show was certainly quite the best that has ever been held by the society, and in order that your readers may fairly comprehend its scope and size I will give herewith a full list of the entries in the various divisions of the show, which, as will be seen, comprises all farm products and implements that have a connection with dairy work :

	1895	1896
Buttermaking appliances for cottagers..	—	6
New and improved inventions.....	41	28
Railway churns.....	—	8
Vehicles for conveying milk.....	27	21
Roots.....	42	111
Buttermaking contests.....	171	165

This list will, I think, fully demonstrate the immense educational value which this exhibition has, for not only does one see cows, goats, etc., but at the same time one sees the products of the dairy in all stages of manufacture from start to finish, and also one has the opportunity of see-



Prize Southdown Ram Lamb.

Owned and bred by W. Toop, of Aldingbourne, Chichester, England, winner of first prize at Sussex County Show and first prize at Tunbridge Wells and South-Eastern Agricultural Show.

NUMBER OF ENTRIES IN EACH DIVISION FOR 1895 AND 1896.

	1895	1896
Cattle.....	153	198
Milk and butter tests.....	126	180
Goats.....	57	43
Poultry.....	2,246	3,081
Pigeons.....	2,092	2,472
British cheese.....	283	319
Bacon and hams.....	46	66
Butter.....	469	420
Cream.....	57	64
Skim-milk bread.....	707	170
Honey.....	121	167
Egg packages.....	22	22

ing the various kinds of machines that are used in the dairy industry at actual work.

A detailed list of prize-winners is not needful, and, in fact, would, of course, be far larger than your space could afford. I will, therefore, say that in every section of the show there was a full competition with exhibits of the greatest possible merit all through.

The butter test prizes were strongly competed for, and, as they will be of interest to many of the readers of FARMING, I will give the full official figures for the first three cows in each section, that is, Shorthorns, Jerseys, and mixed breeds.

Breed	Age	Date of last calf	Days in milk	Milk yield	Butter yield	Ratio; that is, lbs. of milk to one lb. of butter	Awards	
Shorthorns	5½ years	Aug. 30, '96	52	lb. oz. 46 14½	lb. oz. 3 2	15.01	First	
	7 years	Sept. 29, '96	22	55 12½	3 1	18.20	Second	
	5-3 years	Sept. 2, '96	49	44 8	2 12½	16.18	Highly com'd	
Jerseys.....	yrs. m. d.							
	5 2 14	Sept. 21, '96	30	47 10½	2 10½	17.70	First	
	5 7 7	Sept. 17, '96	34	40 12	2 10	15.52	Second	
	3 6 7	July 10, '96	103	30 8	2 9¼	11.83	Third	
Mixed Breeds	Ayrshire..	8 0 0	Sept. 21, '96	30	42 12½	2 8	19.11	1 Silver medal
	Cross bred	5 9 21	Sept. 5, '96	46	61 0	2 5½	20.02	2 " "
	Red Pole.	7 3 7	Sept. 8, '96	43	43 9½	1 13¾	23.44	3 " "

A novel feature of the exhibition was the cheesemaking demonstrations and lectures in the typical French, Swiss, Italian, and British dairies. These were a source of great attraction as well as of interest; for the visitor was able to see the different modes in vogue in the different countries, and also to see how different varieties of cheese were made.

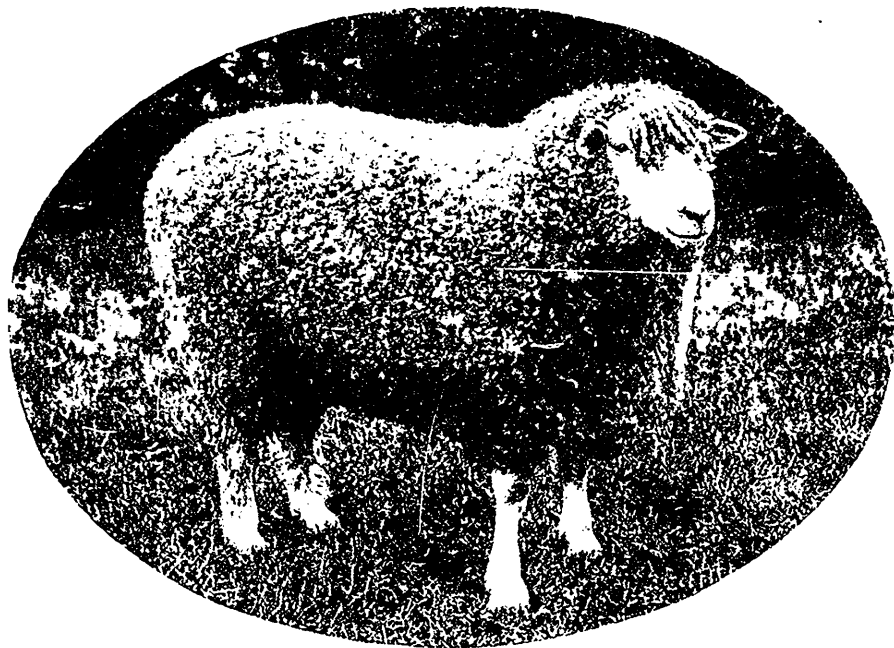
Whilst I was watching these demonstrations and thinking of them afterwards, it occurred to me, as one who knows and admires Canada, if it

would not be possible for a Canadian dairy to be added to the show in future years; for surely it would be of the greatest interest to dairymen at home to see how things are managed in your grand country.

Poultry both alive and dead, as well as pigeons, came in for great attention.

A TRIP TO CANADA PROPOSED.

I regretted much to learn that the council have decided that the association, owing to lack of sufficient support, found themselves unable to fix



A \$1750 Lincoln Ram.

Bred by Henry Dudding, of Riby Grove, Great Grimsby, Lincolnshire, England, and purchased by S. E. Dean & Sons, of Dowsby Hall, Folkingham, Lincolnshire, England, for 350 guineas, being the first Lincoln ram that ever made this price. See FARMING for November, page 213. This photo-engraving is a perfect likeness of this grand sheep, who for his perfect type, symmetry, and character, and for his magnificent fleece, is perhaps without exception the best sheep of his breed existing to-day, alike creditable to its breeder and honoring to his present owners.

upon Canada for their next year's annual trip. What a grand trip that would have been, and how valuable the lessons to have been learnt by both visitors and visited! I am, however, glad to find that although for the present the idea has to be given up, there is still left a very strong determination on the part of the originators of this grand idea to again bring forward this subject on a future occasion; and I sincerely trust that when this is done the result may be a visit to your fine country, believing, as I do, that it will be of the greatest mutual benefit all round.

AWARDS FOR NEW INVENTIONS.

The medals awarded for new inventions at the Dairy Show, London, were as follows:

To the Dairy Outfit Company, for a very simple sterilizer, a bronze medal.

To the Sterilizer Works, Frankfort-on-Main, Germany, a silver medal for the Popp-Becker Direct Steam Sterilizer; and a second silver medal for another sterilizer for sterilizing milk in bottles.

To the Dairy Supply Company, a silver medal for the Simplex Sterilizer.

SALES OF ROMNEY MARSH SHEEP.

The annual sales of the Kent or Romney Marsh rams this year have been very successful; larger

prices have been made than usual, and a very large demand was found to exist for these sheep in Buenos Ayres, to which country over 150 rams were sent. The rapid strides which this breed has made during the last few years have been largely increased since the formation of its registered society, and I am fully convinced that it would well repay some of your breeders to test the value of the Romney Marsh by importing them into your country, knowing well, as I do, that when they do go to you they will go to stay.

CANADIAN HORSES IN ENGLAND.

Canadian horses are being sent here largely, and I am bound to say are being well sold; and what is better news for your breeders is that in most cases they are being very highly appreciated.

I came across the other day, at Folkestone, Kent, when riding with a Southdown breeder, a "bus" drawn by two grand horses, and as they passed us I said: "What a grand pair!" "Yes," said my friend, "they are two of a lot of thirty Canadian horses which I bought for the bus company, and a grand lot they were; they are giving the greatest possible satisfaction."

Thus you see that here, at any rate, your produce is being appreciated all round.

THE FARMERS' INSTITUTE STAFF OF SPEAKERS AND LECTURERS FOR 1896-7.

We published last month in full the bulletin of the Superintendent of Farmers' Institutes, believing that the information contained in it could not be too widely distributed. The better use that is made of the institute system, the better it will be for the country as a whole, and for every farmer who takes part in it. As for ourselves, we are going to "preach Farmers' Institutes" on every opportunity, in season and out of season. It is *the* organization, more than any other, that will develop farming into what it ought to be—a profitable, a healthful, and an enjoyable occupation, not merely for some farmers, but for all farmers.

Farming is a healthful occupation now. But it is not so profitable to anyone as it ought to be, and to a good many we fear it is hardly profitable at all. And no occupation can long be enjoyable to anyone when it is not remunerative.

There is no *real* reason, however, why farming should not be profitable to those who are engaged in it. We do not mean under present conditions of things; because there are many conditions which can be improved to the farmer's advantage,

and which now work to his disadvantage. But farming is the one occupation that the whole world depends on; upon which every other occupation in the world must stand or not stand at all. In this country, too, farmers are by a long way in the numerical majority. Why, then, if conditions exist that are unfair and unjust to farmers, should not farmers unite and get them made right?

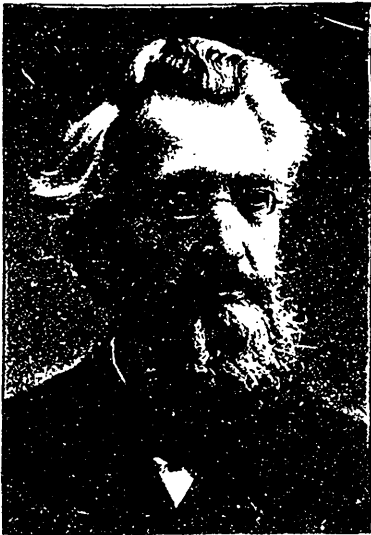
We are not, however, advocating any heedless running to overments for the amendment of matters that we should mend ourselves. What we are advocating just now is that farmers should take counsel with one another—*often, systematically, and with set purpose to learn*. This can better be done in our Farmers' Institutes meetings than in any other way. Then, as certainly as daylight comes with the sun, so will improvement come with knowledge; and with knowledge also will come that wisdom and discretion in voicing public opinion that no government will dare to ignore, will even think of ignoring.

To do what we can, therefore, to lend an interest to the coming Farmers' Institutes meetings

throughout Ontario, of which we are glad to see there are to be no less than 450, we publish again a full list of the staff of lecturers and speakers that have been chosen by the Superintendent to take part in the work this year; and with each name we print a portrait—made, in almost every case, from a recently taken photograph obtained expressly for the purpose. We also print short biographical sketches to accompany the portraits.

These sketches, we believe, will furnish most interesting reading to all our readers. To our younger readers, especially, they will, we trust, be as object lessons of encouragement and hope. The lives represented in them are among the best that our country has produced—earnest, useful, purposeful lives, that have achieved honor and distinction, and in many cases competency, by virtue of character and energetic industry. They are the sort of lives that give our country the standing it has for intelligence, integrity, industry, and thrift. To our young readers, therefore, we can give no better advice than this: "Follow their example, and emulate their good deeds."

MR. D. W. BEADLE may fitly be described as the veteran fruit-grower of Ontario. He was born in St. Catharines in 1823, and though in early life he followed the profession of law for some years he was for over forty years a professional



D. W. Beadle, M.A., Toronto.

nurseryman. The well-known St. Catharines Nurseries were his. Its trees are bearing fruit all over Ontario, and in many parts of Quebec, and in the United States from New England to California; also in England and France. This is a capital record of one man's enterprise. In 1890,

at Dr. Mills' request, Mr. Beadle began to lecture at farmers' institute meetings, and he has been engaged at the work ever since. Perhaps no man on the staff has a more intimate and practical knowledge of his own particular subject than Mr. Beadle has. Mr. Beadle has the honor of being a graduate of the University of Toronto, having received his degree in 1845. We are pleased to note the fact that a son of Mr. Beadle's is superintendent of the Vanderbilt Herbarium at Biltmore, N. C.

MR. ALFRED BROWN, of Picton, began business for himself on a farm so run down that tenants would not stay on it more than one year at a time. The farm is now fertile, and improving in fertility, and Mr. Brown attributes his success to having established and followed out persistently



Alfred Brown, Picton.

a three years' rotation: a pea crop, succeeded by a grain crop, and this seeded with clover. When he first began farming, he stocked his farm with cattle and sheep, and used two silos. But having a natural taste for horticulture, he has, during the last four years, gone in more for fruit-growing, especially plums and small fruits. He takes pains always to send his fruit to market in the neatest and most attractive form, and always to have it carefully graded, and in doing so realizes satisfactory prices. He uses a first-class spraying outfit for both field and garden work. His delight in horticulture has led him to plant the roadsides of his farm with maple trees, and his farm has thus acquired its name, "Maple Glen Farm." Mr. Brown has also made a specialty of potatoes, and has originated a large number of new varieties, some of which are very promising. Another of his specialties is poultry-raising. Although but a lad when farmers' institutes were first organized, he has taken an interest in them from the beginning, and has been honored with the office of president of his own county institute.

MR. MARTIN BURRELL, of St. Catharines, is of English birth and education, and came to this country in the spring of 1883. His original intention was to enter into farming

in Manitoba, but, attracted by the possibilities of horticulture, he decided to settle in the Niagara peninsula. For



M. Burrell, St. Catharines.

three years he made a practical study of fruit-growing in the districts of Grimsby, Niagara, and Winona, and in 1886 purchased his present farm near St. Catharines. Here he has devoted himself to the culture of a great variety of fruits, and to the study of the various conditions affecting horticulture. Mr. Burrell has for some years past taken an active part in institute work; he is a regular contributor to *FARMING* and other agricultural periodicals; and in 1895 he was appointed to take charge of the Niagara District Fruit Experiment Station, the specialty thereof being "tender fruits."

MR. G. C. CASTON, of Craighurst, in the county of Simcoe, is considered one of the best authorities in all



G. C. Caston, Craighurst.

matters relating to fruit-growing to be found in his section of the province. He has been for many years a director of the Ontario Fruit Growers' Association, and he has, since 1888, by choice of the association, represented that organization in the annual delegations selected to address farmers' institutes. Two years ago he was appointed by the Department of Agriculture to take charge of the Simcoe Fruit Experiment Station, the specialties assigned to him being hardy apples and hardy cherries. He has now of these and other kinds of fruit some 300 varieties planted. During the fall fair season Mr. Caston is much in demand as an expert fruit judge. He has also served as director and secretary of his local agricultural societies, and has been for some time secretary of the Centre Simcoe Farmers' Institute. Mr. Caston was born in the village in which he lives, and on the farm, of which a part is now occupied by his own fruit plantation. The love of fruit-growing was an early passion with him, and he has been devoted to it all his life.

MR. THOMAS A. DUFF, of Toronto, is one of the best-known poultry-men in Canada. His devotion to poultry is the result of an inborn enthusiasm which he cannot repress. He is by education and profession a lawyer; but his success at poultry-keeping and poultry-breeding has been so marked that his poultry interests are getting greater and greater every year. His poultry yards are situated about two miles north of the city, and comprise, in addition to



Thomas A. Duff, Toronto.

buildings, about five acres of orchard so that his fowl have plenty of shade. He has made a close study of the best methods of poultry management, and his houses, yards, and appliances are all models in their respective ways. And every part of the work relating to the care and management of his fowls is carried on with the utmost regularity and thoroughness. Mr. Duff studies poultry-raising with reference not only to what it will do for himself, but also to what it will do for others. He is at present engaged in a series of experiments with foods, from which he hopes to obtain valuable information, which he intends to make public. He was also one of the first in Canada to experiment with fertile and infertile eggs, with different sorts of poultry buildings, etc. We have been informed that he

was also the first man who ever prepared and read an essay before the Ontario Poultry Association. Believing, as he does, that there is nothing on the farm (when capital is taken into account) which will pay such a profit as poultry, he has at every opportunity urged the Poultry Association to devote more of its time to essays and discussions, with a view to extending the poultry interest among farmers, and it is largely through his efforts that this is now being done. Mr. Duff is one of the most noted of Canadian poultry prize-winners. In 1891 a pullet of his won first premium and special prize for best White Minorca at Madison Square Gardens, New York, and since then he has never been beaten in this breed of fowls in any showroom on the continent. He is also now recognized as the foremost breeder on the continent of Black Minorcas. He has been almost equally successful with Barred Plymouth Rocks, birds of this variety of his breeding having won the highest honors at the Crystal Palace, Royal, and other large English shows, and at all leading American and Canadian exhibitions, including New York and Toronto. For three successive years also he has won the Toronto Industrial Association medal for the largest and best display in the Mediterranean class. As a writer, Mr. Duff is recognized as one of the leading authorities on poultry matters, and articles from his pen appear in all the leading poultry and agricultural papers on the continent. He was for some time editor of the Poultry Department of *FARMING*, and is now a most highly valued contributor to its columns. As an institute speaker on poultry matters, Mr. Duff is exceedingly popular. His addresses are always eagerly and attentively listened to. He has the knack of making people understand what he means, and catch some of his own enthusiasm.

Mr. G. E. DAY, B.S.A., of the Ontario Agricultural College, was born near Guelph in 1863, being the son of Thos. Day, one of the pioneers of Wellington county. Mr. Day lived on his father's farm till he was twenty-one years of age, and during this part of his life he obtained a thorough practical knowledge of the management of live stock and



G. E. Day, Agriculturist, O.A.C., Guelph.

the details of farm work. He then entered the Guelph Collegiate Institute, and for the next seven years spent his time in either studying or teaching. In 1891 he entered the O.A.C., and in the following year received his Associate's diploma, and was also awarded the gold medal for general proficiency, and in the next year (1893) he received his degree of B.S.A. During the summer of 1893 he had charge of one of the college "Travelling Dairies," and in the autumn of that year he was appointed Lecturer on Agriculture and Live Stock, with charge of the live stock

experiments. Mr. Day's turn of mind is that of an investigator. He is a close student and an accurate observer, and we may confidently hope for good work being done by him as a live-stock experimenter. He is at present engaged in experiments tending to show the aptitudes of different breeds and crosses to lay on flesh conforming to present market requirements. Of course such experiments as these, to be worth anything, require a long time of trial. As a teacher Mr. Day is an acknowledged success.

MR. H. H. DEAN, B.S.A., the Professor of Dairy Husbandry at the O.A.C., is one of the best known and most popular dairy instructors in the province. Immediately on his finishing his course as a student at the college, in 1890, he was appointed to take charge of its newly constituted Dairy Department. For three years his occupations, in addition to giving regular dairy instruction at the college, were principally the giving of special dairy lectures in dairying districts, attending farmers' institute meetings, and taking charge of the travelling dairy, or else the doing of special dairy experimental work at the college. In 1893 the Dairy School was established, since which date his whole time has been given almost wholly to dairy instruction in connection with the school and college, or else to dairy experi-



Professor Dean, O.A.C., Guelph.

ments. He has found time, however, to write some important dairy bulletins. One of these, advocating the addition of two units to the indicated percentage of fat when paying patrons of cheese factories for the milk they supply, was very severely criticized at the time. Since the publication of the bulletin, Mr. Dean has pursued a long series of experiments to further test the soundness of his theory, and he claims to-day that this method of division is the most just and equitable yet devised. In 1895 Mr. Dean made an extensive tour through foreign dairying countries, and investigated the methods of dairying pursued in Denmark, Sweden, Germany, Holland, Scotland, England, and the islands of Jersey and Guernsey. The knowledge obtained in this prolonged investigation Mr. Dean finds to be of the greatest practical benefit to him in his present work.



Andrew Elliott, Galt.

MR. M. W. EVERTTS, of Smith's Falls, is the son of Mr. M. K. Everttts, of the same place, one of the pioneers of the cheese manufacturing industry in Eastern Ontario, whose business was begun as long ago as 1869. Mr. M. W. Everttts has all his life been associated with his father in cheesemaking, and for the last seven years has been his business partner. They now manage and operate twelve factories, most of them very large ones. They consider the interests of the farmers whose milk they purchase to be quite identical with their own, and therefore



Milton Everttts, Smith's Falls.

endeavor in every way they can to bring about improvements in the management, feeding, and care of the dairy

cattle of their district; also improved methods in general farming. Some years ago Mr. M. W. Everttts took a course at the Dairy School at Guelph, and since then he has made a special study of the methods by which the dairy farmer can increase his profits. To achieve this he believes the farmer must raise a variety of crops, and not depend (as so many do) wholly on one or two.

MR. J. B. EWING, of Dartford, although yet only 37 years old, has for many years had full control of the old homestead farm of 300 acres situated three miles from the village of Warkworth, in Northumberland county, which was first settled by his U.E. Loyalist grandfather, the late Benjamin Ewing. Mr. Ewing is both a progressive and a successful farmer, and as such enjoys the confidence of his fellow farmers to a very great degree, and has in consequence been voted by them into many positions of honor and trust. He has been the secretary of the East Northumberland Farmers' Institute for nine years, and in



J. B. Ewing, Dartford.

his riding is a very prominent member of the Patrons of Industry. Mr. Ewing is quite an extensive breeder of horses and purebred sheep and swine, roadsters, Shropshires and Berkshires, being the breeds he is most engaged in. He has also carried on very extensive and successful experimental work on the cost of the production of pork. He has been employed as an institute speaker for some years, and his enthusiasm and ability as a speaker always gain for him the good will of his audiences, while his practical turn of mind, his well-known success as a "general farmer," and equally well-known conscientious devotion to everything that tends to promote the interests of farmers, gain for him their highest respect.

MR. W. S. FRASER, the proprietor of "Helmsdale Farm" near Bradford, in the county of Simcoe, is well known for the "advanced methods" which he employs in his farming. For a sketch of his work as a farmer, and



W. S. Fraser, Bradford.

also for a most practical article by him on "Raising Hogs with Profit," see *FARMING* for October, page 90.

MR. D. Z. GIBSON is the author of the article entitled "The Farmer's Fertilizer" which appeared in *FARMING* for October, page 98, on which page also the reader will



D. Z. Gibson, B.S.A., Willow Grove.

find a short sketch of Mr. Gibson's work as a farmer, and also as a speaker at institute meetings, in which employment he has always been highly successful.

MR. HENRY GLENDINNING, of Manilla, is a well-known member of the Dominion Grange. For six years he was its Grand Secretary, and then he was elected its Grand Master for two years in succession. He is now a member of the executive committee of that farmers' organization. Mr. Glendinning's farm is known as "Rosebank." It is devoted to "mixed farming," and carries a herd of Jersey cows, from which butter is made and shipped weekly to Toronto. But Mr. Glendinning is also an enthusiastic

fruit-grower and seedsman. He carries on a large business in seeds—grain, grass, and clover—and makes a specialty of recleaning them before selling them for the export trade. Mr. Glendinning's institute talks are always



Henry Glendinning, Manilla.

most highly appreciated, especially by farmers who take a delight in grain growing. His business as a seedsman showing him unmistakably what an awful loss the country suffers every year through the weed nuisance, he is an enthusiastic advocate of clean farming, and several of his addresses deal practically with the growing and cleaning of grain, grass, and clover seeds so as to secure a good, pure product that will always command the highest market price.

MR. J. E. GOULD is author of the article on "The Round or Stave Silo," which appeared in our September number, and which excited so much interest at the time. The reader will find in *FARMING* for that month, on page



Joseph E. Gould, Uxbridge.

42, a short sketch of Mr. Gould's methods as a farmer. Mr. Gould is secretary of the North Ontario Farmers' Institute, and one of the most enthusiastic institute workers we have.



A. C. Hallman, New Dundee.

For an interesting account of MR. HALLMAN'S life and work as a farmer, see FARMING for October, page 82.

MR. GEORGE HARCOURT is now well known as the Stock and Farm Editor of FARMING, which position he accepted in August last. For two practical articles by Mr. Harcourt, see FARMING for November, page 156, and



George Harcourt, B.S.A., Toronto.

FARMING for this month, page 251. For a short sketch of Mr. Harcourt's work as a farmer, student, and professor, see FARMING for September under "Publishers' Desk."

Robert Harcourt B.S.A., O.A.C., Guelph.

For a portrait of Mr. Robert Harcourt, and also for a short sketch of his work as a student and teacher of agricultural subjects, see FARMING for this month, page 241.

MR. F. C. HARRISON, B.S.A., of the Ontario Agricultural College, was educated in England, but he also attended courses at the O.A.C., and received his degree of B.S.A. from the University of Toronto in 1892. Since his graduation he has remained continuously associated with the college. For two years he was assistant in the Biological Department and Librarian. In 1895 he was appointed to his present position, that of Bacteriologist. He also has charge of the Library and of classes in Vegetable Pathology and Cryptogamic Botany. Mr. Harrison is a student. For several years he has pursued special lines of investi-



F. C. Harrison, Bacteriologist, O.A.C.

gation during the summer months, and has attended for that purpose the universities of Wisconsin, Michigan, and Cornell, and has also made himself acquainted with the bacteriological equipment of Yale, Harvard, Chicago, the Wesleyan, and other universities. The equipment which has been put in his own department was ordered in Germany, and is the best of its kind; but it has only recently arrived, and so Mr. Harrison has not as yet had much chance to use it. The study of bacterial action and disturbance is of the utmost consequence to the dairyman, the fruit-grower, and the veterinarian, and also to the ordinary farmer and stockman, and we are glad to see that the Department of Agriculture has determined to assign to it in the work of the college the position which its importance demands.

MR. R. F. HOLTERMANN, of Brantford, the well-known bee specialist, was born in the city of Hamburg, Germany, 1860. He came to Canada with his parents when but a child, and spent his boyhood's years in what was at that time an unsettled portion of the county of Renfrew. But the wild and beautiful lake and forest scenery by which he was surrounded made a deep impression upon his mind; and, perhaps, what has been the best part of his education was obtained by himself in those early days in studying by actual observation the habits of plants, animals, insects, birds, fishes, etc., before he had the opportunity of attending a regular school. He had, however, afterwards the benefit of a good scholastic education, and also for two years he attended the Ontario Agricultural College, where his course was a most brilliant one. At the O.A.C. he became interested in beekeeping and determined to follow it as a profession. He spent two years with Mr. D. A. Jones, of Beeton, the well-known apiarist, and soon afterwards

became himself quite prominently known as a beekeeper and honey producer. For many years he was president of the Brant County Beekeepers' Association, and he is now president of the Ontario Beekeepers' Association. He



R. F. Holtermann, Brantford.

has also held every important office in the North-American Beekeepers' Association, including that of president. He is at present president of the South Brant Farmers' Institute. Mr. Holtermann is editor of *The Canadian Bee Journal*, and for many years he was editor of the apiary department of *FARMING*, and is now one of its regular contributors. Mr. Holtermann is also a very successful poultryman, especially in Barred Plymouth Rocks. Some time ago Mr. Holtermann was appointed Lecturer on Agriculture at the Ontario Agricultural College, and his name is prominently mentioned in connection with a Department of Agriculture at the Dominion Experimental Farm.

Mr. HILBORN'S very practical article in the October number of *FARMING*, on "Apple Culture in Our Northern Counties," will be remembered by every reader. For an



W. W. Hilborn, Leamington, Ont.

interesting account of Mr. Hilborn's work as a fruit-grower, see *FARMING* for October, page 103.

Mr. H. L. HUTT is the well-known Horticulturist of the Ontario Agricultural College. For an excellent, prac-



H. L. Hutt, B.S.A., Horticulturist, O.A.C.

tical article from his pen, and also for a sketch of his work as a farmer, student and horticulturist, see *FARMING* for November, page 172.

Mr. ELMER LICK, of Oshawa, who received his Associate's diploma from the O.A.C. in 1887, although still a young man, has been president of the South Ontario Farmers' Institute for six years, having resigned only recently. During his term of presidency the membership increased from zero up to upwards of 250. This is the sort of worker we like to see the O.A.C. turn out. Previous to entering the college he had already won two prizes of \$25 each for essays contributed to the prize-essay competitions at that time held by the Agriculture and Arts Associ-



Elmer Lick, Oshawa.

ation. Mr. Lick farms 200 acres, which he rents from his father, and he also assists his father in working two other farms. Two specialties are followed: apple-growing and dairying. Corn is largely grown and put into two silos. Nearly everything except apples and milk is fed on the place, and considerable quantities of fodder are purchased. The cows used are Jersey grades, selected natives, and a few thoroughbred Jerseys. The milk is sold in Toronto. Mr. Lick believes clover to be one of the most profitable crops the farmer can raise. Surface cultivation is followed as nearly as circumstances will permit. Mr. Lick has always had a fondness for experimenting, and has tried many varieties of grains, corns, roots, potatoes, etc., and

has also tried different methods of cultivation. At the present time he is president of the Ontario Agricultural and Experimental Union.

MR. THOMAS H. MASON, of Straffordville, has the honor of having been one of the first lot of young men that were enrolled as students of the Ontario Agricultural College. The classes then formed were taught in the old farm house that had belonged to Mr. F. W. Stone, the previous owner of the land now occupied by the college farm. This was in May, 1874, when Mr. Mason was only sixteen years old. Mr. Mason remained at the college for over two years, and then was one of the first class of Associates that were sent out from the college. This was in September, 1876. In April, 1877, Mr. Mason settled on



Thomas H. Mason, Straffordville.

a small farm of 50 acres, that was only in a partially cleared condition. He remained on this farm until he paid for it, and then after accumulating a little more money he sold it and purchased his present farm of 175 acres. On this farm Mr. Mason has given special attention to dairying and hog-raising. All the direct products of the farm with the exception of wheat are fed upon the farm; and, in addition, a large amount of bran, shorts, and cotton-seed meal is purchased. At the World's Fair at Chicago in 1893 Mr. Mason received a medal for his butter. With such a record as the above Mr. Mason may, without hesitation, be pronounced a successful farmer, one of the sort that ought to command attention at any insitute mee-ing.

MR. J. E. MEYER, of Kossuth, the well-known breeder of Silver laced Wyandottes, has been breeding poultry for ten years, and has tried many varieties of thoroughbred

fowls, but prefers the Wyandottes to all others. The Silvers he has had from the beginning, and they are still his first choice of all fowls. Here are his words: "I find them a very hardy, rapid-growing, early-maturing fowl, of medium size. They have a beautiful, clean, yellow leg and yellow skin. They are wonderfully plump as chickens, and they are ready for table use at any time after they are ten weeks old. As layers of good-sized eggs they are excelled by none excepting some of the non-sitting breeds. Their low, rose combs do not freeze in winter, and they are covered with an abundance of fine, soft feathers which enable them to withstand the rigors of our climate well." Mr. Meyer breeds not only Silver-laced, but also Buff, Golden, and White Wyandottes, but though he finds the same general characteristics in all these varieties the Silver-laced, as said above, are his first choice of all fowls. In these he has been especially fortunate as a prize-winner, and has frequently won the highest honors for them at the Toronto Industrial, as he also did at the World's Fair, Chicago. Mr. Meyer is a thorough believer in artificial means in the raising of poultry. He uses both incubators and brooders of his own invention and manufacture; and he has found them so successful in his own practice that he now manufactures them for sale, and his orders have already been so numerous that he is build-



J. E. Meyer, Kossuth.

ing twice as many this year as he did last year. While Mr. Meyer is very fond of his thoroughbred birds, and likes to admire their fine points, yet a bird is of no value to him unless it is *useful*. His words are: "I breed poultry not merely for their fancy points, but also for their money-making qualities, when used exclusively for laying eggs or for table use. There is, it is true, a very great pleasure in having birds as perfect in feather as possible. There is a great pleasure in breeding such birds. But I always look for usefulness as well as beauty; however, I must say that my best exhibition birds have been nearly always among my most useful birds as layers and breeders." Mr. Meyer raises annually from 400 to 500 chickens. All of these that do not come up to his standard he sends to market ruthlessly. The rest are kept for breeding purposes or for sale. His trade extends over all parts of Canada and through the United States. As Mr. Meyer believes in reasonable prices that will be within the reach of all, he very frequently has more orders than he can fill. It should be mentioned that Mr. Meyer is not only a poultryman; he is a successful stock farmer as well, and his large farm is well stocked with thoroughbred Shorthorns, Cotswolds, and Berkshires. Mr. Meyer attributes his success as a poultryman to the following facts: (1) He started modestly, and for some time went ahead very slowly until he gained experience. (2) When once he had gained experience he considered it the best policy to pay \$20 for one really good pair of birds, bred by a reliable breeder, than

to spend the same amount of money in getting ten pairs of poor birds. (3) He gave his birds the same care and attention that he gave to his cattle, sheep, and pigs. (4) He never ceases to try to learn more than he already knows about his fowls.

Mr. NELSON MONTEITH, of Sunnyside Farm, Fairview, near Stratford, was born in 1862, and received the ordinary farmer's son's education; but after farming a few years he determined to have something better, and so entered the Ontario Agricultural College, where he spent three years, receiving his Associate's diploma in 1889, and his degree of B.S.A. in 1890. Since leaving college he has been working upon his own farm, steadily improving it in every possible way—not only in utility, but also in looks—by underdraining, thorough cultivation, and tree-planting, and by remodelling the farm buildings. Mr. Monteith is one who

places where an interest in fruit-growing is taken. His business is fruit-growing and raising nursery stock. He grows nearly all the kinds of fruit that the climatic conditions of his locality will permit. His currant plantation has been much admired. He cultivates all his fruits "early, late, and often." He allows others to grow weeds. He finds that there is no market for weeds; nor do his customers want them. He not only believes in thorough cultivation, but in keeping one's place, whether farm or fruit plantation, as beautiful as possible. He maintains that every occupant of land should "clean and curry it" as they would a horse. "The face of nature should not be left untidy." Mr. Morden is public-spirited. In 1895 he organized a local Horticultural Society, and became its secretary; and this, like his institute, is strong financially and otherwise. His fellow-directors on both boards are earnest and energetic; and all work together harmoniously for the public good. This, M.



Nelson Monteith, B.S.A., Stratford.

believes it to be a citizen's duty to serve the public whenever he is called upon to do so, and can do so worthily. He has, therefore, accepted a number of calls to public service, and in consequence has occupied a number of important positions. For ten years he has been associated with the North Perth Agricultural Society as director, vice-president, or president. During the past five years he has been director, vice-president, or president (his present office) of the South Perth Farmers' Institute. He has also been councillor, deputy-reeve, and (for three years) reeve of his township. And he is a director of the Ontario Agricultural and Experimental Union.

Mr. E. MORDEN, of Niagara Falls South, is one of the most enthusiastic institute workers that we have. In March, 1888, he called together the first institute meeting ever held in Welland county, and enrolled fifty members for it, and he has been the secretary of the Welland Institute ever since. He is also one of the most enthusiastic institute lecturers that we have; and being an easy, off-hand speaker, and his subjects embracing almost every phase of fruit-growing, he is much sought after in all



E. Morden, Niagara Falls South.

Morden claims, is essential to the running of an institute well; namely, hearty co-operation on the part of the officers. He is also an advocate of good roads, and has been such for many years. Mr. Morden takes an interest in matters municipal, and as such has taken part in one or two agitations. One of these was to bring it about that markets in cities, towns, and villages should be free, absolutely free; and he hopes to see the day when town and city corporations will not be allowed to raise their taxes by market fees. In this FARMING heartily agrees with him. The imposition of fees and license taxes has become a nuisance, and should be abated at once. Why do not farmers use their united strength to bring about reforms in these matters? Will they always forget that they are the real rulers of the country?

Mr. JAMES McEWING, of Drayton, is of the sort of men that do honor to our Ontario agriculture. They are to be found everywhere throughout our fair province; but, perhaps, there are few who have turned disadvantages to advantages and won success out of apparent impossibilities to the extent that Mr. McEwing has. Born, as he

says, in a shanty in the backwoods, and left an orphan at the age of four years, he realized to the full all the hardships and privations of a pioneer life. But, nevertheless, he has achieved distinction and success out of it all, and now has a farm of 188 acres in the county of Wellington, said to be one of the best even in that county of magnificent farms. Mr. McEwing is, like so many other of our successful farmers (it would be a grand thing for Ontario if we could say "like all our successful farmers"), an enthusiastic institute worker. He was the first president of the West Wellington Institute (when it was organized in 1886, being one of the first that was formed in the province), and he has been its secretary ever since. He attended every meeting of the Central Farmers' Institute, was many times a member of its executive board, and was its president in 1884. He is secretary and manager of one of



James McEwing, Drayton.

the most successful farmers' mutual insurance companies in the province. As a farmer he follows "mixed farming." He describes himself as being an early convert to the gospel of underdraining, and takes pleasure in reflecting that he has done a good deal of missionary work along that line, both by precept and example.

MR. JOHN McMILLAN, M.P., of the township of Hullett, in the county of Huron, is one of the best known farmers in the province. He was a member of the Agricultural Commission appointed in 1880, whose report, issued in 1881, constituted the most notable contribution to agricultural knowledge which up to that time had ever been made in Canada, and one of the most notable in the history of agriculture the world over. (See FARMING for September, page 3.) He is also a member of the Advisory Board of the Ontario Agricultural College, and takes a deep interest in the success of the Experimental Farm. And for a number of years past he has been a most valued member of the Farmers' Institutes' delegations, visiting in that capacity almost every part of the province. In partnership with his two sons, Robert and Thomas, Mr. McMillan does a large business in buying and fattening cattle, and shipping them to the British market, and in this business the firm has been remarkably successful. Mr. McMillan



John McMillan, M.P., Seaforth.

is a firm believer in the dehorning of cattle, for the reason that it makes them quiet and easy to be managed. He also believes that it is better to keep cattle in loose boxes rather than tied in stalls, for the reasons (1) that the cattle have more freedom; (2) that it requires less labor to care for them; and (3) that then the manure they make needs to be taken out only three or four times during the winter, when it can be spread directly on the land, and thus produce the very best results. He also believes in growing corn and preserving it in the silo as the cheapest and best bulky fodder that can be raised.

MR. THOMAS McMILLAN, of Seaforth, is a farmer who is an enthusiast in his business. He believes that he is



Thomas McMillan, Seaforth.

-engaged in the most noble and enjoyable of occupations, and he maintains that, even with the present low prices of farm products, farming, when pursued with intelligence and skill, can be made remunerative, and that he himself is practically making it so to a very fair degree. He is one of the members of the firm of John McMillan & Sons (of which Mr. John McMillan, M.P., is the senior partner), of Seaforth, who formerly made a specialty, in connection with general farming, of the breeding and importing of Clydesdales, and of breeding Canadian heavy draughts, but whose specialty now is the feeding of beef cattle for the British market. Mr. McMillan has been connected with farmers' institutes in his own locality ever since they were started, and has been a member of the staff of institute speakers for two years. He handles his subjects as one who is thoroughly familiar with them, as may be gathered from the excellent paper of his on land drainage, which appeared in *FARMING* for October.

Our readers will, of course, remember the two able articles from Col. McCrae's pen that appeared in the



Lieut.-Col. D. McCrae, Guelph.

November number of *FARMING*. For a sketch of Col. McCrae's life and work as a farmer, see that issue, p. 144.

Mungo McNabb, Cowal.

Our readers will find two very interesting and able articles by Mr. McNabb in this number of *FARMING*. Also on page 243 his portrait, and a sketch of his life and work as a farmer.

MR. A. McNEILL, Walkerville, is another example of men, of whom there are not a few in Ontario, who have been brought up as farmers, and who have afterwards become teachers, but whom their inborn love for the soil, and for growing things upon the soil, finally attracts back to farming. Mr. McNeill was brought up on his father's farm in Middlesex. As a young man, he spent some time in practical cheesemaking, having had full charge of a cheese factory that took the milk of 300 cows. But meanwhile he

had been privately preparing himself for teaching; and so, after having attended the Toronto Normal School, he went into that profession, and remained in it for seventeen years, the last ten of which he was science master in the Windsor High School. He then bought his present farm, which is beautifully situated on the banks of the Detroit River, and determined to devote himself to fruit-growing, in which



A. McNeill, Windsor.

pursuit, indeed, he has been very successful. For some time he made a specialty of grapes, but more lately he has found other fruits more profitable. Mr. McNeill has always taken a deep interest in farmers' institutes, and has been an active worker in his own institute ever since it was first organized. For several years past he has been a member of the staff of farmers' institute lecturers. Since 1890 he has been a director of the Provincial Fruit Growers' Association. Mr. McNeill is exceedingly fond of flowers, and enjoys considerable local reputation because of his successful cultivation of them.

MR. W. J. PALMER, B.S.A., of Toronto, is the proprietor of the Kensington Dairy, an institution which is making a most praiseworthy attempt, amid many difficulties, and in face of a very discouraging opposition on the part of less scrupulous and less public-spirited competitors, to supply the people of Toronto with hygienically pure milk and cream. Mr. Palmer, ever since he became the owner of his dairy business in Toronto, has been most assiduous in trying to get a pure milk product for his customers. But on November of this year he started on an even higher plane, and now guarantees to supply milk and cream as pure and free from bacterial or other contamination as it is possible to get them. He has adopted what is known as the "Copenhagen system," the city of Copenhagen, in Denmark, having been the first city in the world to undertake a reform in the methods of procuring its milk supply. The chief features of this system are (1) an abundant supply of pure drinking water for the cows that supply the milk; (2) a frequent, regular, thorough, and systematic examination of the cows by a competent V.S.; (3) the removal at once of all cows not coming up to the standard of health required; (4) a constant supervision by a competent inspector of the food and surroundings of the cows, to secure that

the milk obtained from them shall be free from bad odors or taints caused by bad food or unsanitary surroundings; (5) an agreement with the farmers owning the cows that they shall at all times exercise the greatest care in selecting food for their cows, and not feed frozen roots, brewers' grains, or slops of any kind, but only the best of grain, hay, roots, and corn; (6) the removal at once of the milk when drawn from the cows from the stable to a suitable milk house, and from there, until the milk reaches the consumer in the city, the constant exercise of the utmost care to ensure absolute cleanliness and freedom from injury, even the slightest, from taints, odors, unfit temperatures, floating bacteria, etc. Mr. Palmer believes that by adopting these methods he can not only confer a benefit upon the health of the people of Toronto, but also benefit his own business as a profit-earner. FARMING wishes him every success in this good enterprise. It is a noble enterprise, and one that ought to have the endorsement of all who are interested in improved dairying methods. Mr. Palmer's own dairy methods and appliances in his city depot are all of the highest sanitary character, and are frequently visited as models by



W. J. Palmer, B.S.A., Toronto.

dairymen from other places. Mr. Palmer was born in Prince Edward Island in 1869. He is a graduate of the Ontario Agricultural College, having taken the full three years' course there, and received the degree of B.S.A. He has always been an enthusiastic dairy student. For some time he was a student under Professor Henry and Dr. Babcock at the Wisconsin Dairy School. He has also done a good deal of dairy teaching in connection with the Ontario Agricultural College Dairy School and the Travelling Dairy.

Mr. J. Hoves Panton, M.A., F.G.S., Professor of Geology and Natural History in the Ontario Agricultural College, is one of the best known members of the staff of that institution, as his appointment to his present position was made eighteen years ago, and also because he has been associated with the Farmers' Institute work since its beginning in 1885, having taken part with Dr. Mills in the twelve institute meetings held in that year, and having gone out

as a lecturer every year since. Professor Panton is a distinguished scientist. His career at the University of Toronto, whence he was graduated in 1877, was a most brilliant one. Even before he entered the University he had won a well-deserved reputation as a scientific observer, and ever



Professor Panton, O.A.C., Guelph.

since his graduation he has devoted himself wholly to scientific investigation. And he does not forget the practical side of things in all his investigations. Professor Panton's work in respect to weeds, their prevention and eradication, has been for many years of great mutual benefit to the farmers of this province. So, too, has been his work with respect to insects. When the army worm invaded Ontario last summer, Mr. Panton was "on to him" at once; and the pestilent fellow had scarcely time to get a "move on" out of the professor's way before he had studied his life-history, determined the habits of his pupa and imago, got acquainted with and described his natural enemies, and bulletinized the whole thing, and sent it broadcast throughout the country for the information of farmers generally. In 1885 Professor Panton was, without solicitation, elected a fellow of the Geological Society of England (F.G.S.), and in 1887 a member of the Victoria Institute, two honors of which he may well be proud.

A. W. Peart, B.A., Burlington.

Our readers will find in the November number of FARMING a portrait of Mr. Peart, a sketch of his life and work as a fruit-grower and farmer, and also a very practical article by him on "Apple Culture."

Mr. L. PATTON, of Oxford Mills, like so many other sons of farmers, is one who became early dissatisfied with the education he was able to get at a country school during the winter months. So at the age of eighteen he started out for himself to obtain a better education. Studying at a high school and teaching thus occupied his attention for some years; but in 1886 his old love for the farm asserted itself, and he decided to get back as near to it as he could; and the cheese business, which at that time was rapidly growing and becoming the most important industry in his neighborhood, seeming to him to present a favorable opening, he engaged in it, and he has been connected with dairying ever since. Mr. Patton was a member of the first class (1895) the Dairy School at Guelph ever turned out, and since that time he has been manufacturing butter in winter; and now, besides his cheese factories, has two winter creameries in successful operation. Mr. Patton has taken a deep interest in farmers' institute work ever since the work began. Since 1890 he has been secretary of the North Grenville Institute. For three years he has been on the provincial staff of institute lecturers, and has lab-



L. Patton, Oxford Mills.

ored most zealously to promote dairying in every possible way, believing, as he does, that dairying is the most profitable part of farm work that a farmer in Eastern Ontario can devote himself to.

MR. ALBIN RAWLINGS, of Forest, is one of the most extensive graziers in Western Ontario. He was born in Wiltshire, England, and he received there a thorough training in farming and stock-raising. He came to Canada in 1852 and took up a farm in the county of Lambton. His farm, when he bought it, was wholly bush, but he at once set to work to clear it with his own hand. He had, of course,



Albin Rawlings, Forest.

to endure all the hardships and privations of the early settler; but he was successful in them all, and now has four excellent farms on the borders of Lake Huron, containing in all over 400 acres. In the year 1859 Mr. Rawlings commenced grazing cattle. At first he shipped his fattened stock to Buffalo, Toronto, and Montreal; but of late years he has been shipping to the old country. He now grazes on an average over one hundred head per year. Mr. Rawlings has been honored by many public positions connected with our agricultural interests; and his advice and assistance are always considered very valuable in the promotion of any new scheme that has to do with the farming industry. For twenty-five years he has held office in his township and county agricultural societies. For many years he was a director of the Agriculture and Arts Association, and in 1890 he was its president. He has a beautiful home in the town of Forest, and as he drives about from one of his farms to another superintending his grazing operations it must be considerable satisfaction to him to reflect how changed are his circumstances from what they were when, axe in hand, he undertook to clear his own bush land. Mr. Rawlings is an ex-warden of the county of Lambton, and was the first mayor of the town of Forest.

Our readers will remember Mr. Raynor's excellent article on "Fodder Crops" which appeared in the Novem



T. G. Raynor, B.S.A., Rosehall.

ber number of FARMING, where also will be found, on page 169, his portrait and a sketch of his life and work as a farmer.

PROFESSOR J. H. REED, the Veterinarian at the Ontario Agricultural College, is a graduate of the Ontario Veterinary College, from which institution he was graduated with the highest honors and the gold medal in general proficiency in 1882. He immediately afterwards began the practice of his profession in Guelph, and soon won for himself an excellent reputation and a large business. In 1892, on the resignation of Professor Grenside, he was appointed to his present position. Professor Reed was born in the county of Halton, where his father farmed extensively, and as he remained on the farm with his father until he was twenty-four years of age he has a thorough appreciation of the



Professor Reed O.A.C., Guelph.

sort of instruction in veterinary science which should be given to young men who intend to follow farming as a business, and his subjects when engaged in institute work cover the same range.

MR. SIMPSON RENNIE, of Kelvin Farm, in the Township of Scarboro', has, like his brother, Mr. William Rennie, of the O.A.C., a well-deserved reputation as being one of the best farmers in the province. Born in 1840, he took charge of his father's farm in 1864, and, although at first only renting the farm, he began at once to improve it by removing stumps and stones, underdraining it, destroying weeds, fencing it, putting up buildings, etc. This work of improvement was continuously kept up, and when, in 1883, the prize farm competition, instituted by the Agriculture and Arts Association, included the district in which Mr. Rennie lived, he was awarded the gold medal for the best managed farm in the group of counties (six or seven) to which the competition was restricted; and when, in 1896, the competition comprehended all the farms that had previously won medals throughout the province, Mr. Rennie was awarded the sweepstakes prize for the best managed



Simpson Rennie, Mi.iken.

farm in Ontario. In their report upon the farms in this competition the judges especially commended Mr. Rennie's system of rotation, the absence from the farm of all kinds of weeds, the thorough state of the tillage, and the neatness with which all the work of cultivation was done. It goes without saying that in his farming operations he follows a regular system of rotation. For a number of years past Mr. Rennie has made a specialty of feeding hogs and cattle; the latter he usually ships to England. But it is as a root-grower that Mr. Rennie is best known to his fellow farmers. He has taken more prizes for field roots at the Industrial Exhibition in Toronto since it was first established than any other exhibitor; and his mammoth and luscious-looking turnips, mangolds, carrots, etc., are always the first things that one sees when entering the building devoted to these products.

Wm. Rennie, Farm Superintendent, O.A.C.

MR. WILLIAM RENNIE, Superintendent of the Experimental Farm at Guelph, in connection with the Ontario Agricultural College, is one of the best-known and most highly thought of agriculturists in Canada to-day. As a *farmer*—that is to say, as a tiller of the soil and a producer of crops—it is safe to assert that Mr. Rennie has no superior, even in this province of good farmers. He was born in the township of Scarboro' in 1835, and in 1860 began farming on his own account in the township of Markham. Ten years later he started in Toronto what was soon to be known as one of the most prosperous and most honorably conducted seed businesses of the country. This business, on his being appointed to his present position in 1893, he resigned to three of his sons, who now conduct it. Mr. Rennie's success as a farmer has been due (among other things) to the methods which he pursues to retain and increase the fertility of the soil he cultivates. By a carefully planned system of rotation of crops, he managed to have a clover sod plowed under on every part of his farm every four years. This left the land rich in vegetable matter and also restored to it the nitrogen it lost in cropping. In fact, his soil was always as rich in fertility as it was in its virgin state. Inasmuch as his farm was run in connection with his seed business it was largely devoted to the raising and testing of new varieties of grains, field roots, and vegetables. In this way Mr. Rennie's experience with crops of every sort, and of the methods of cultivation best suited to produce them abundantly, became very great. When he was appointed to the Farm at Guelph he followed out the methods of cultivation he had previously been so successful with on his own farm, especially shallow cultivation and the regular plowing down of clover sod. The result is that the farm is producing remarkably heavy crops. Mr. Rennie has a love for a beautiful landscape. This shows itself in the taste which he displays in making improvements on the land he tills. His own farm was proverbial for being as "pretty as a picture"; and the work of adoration which he is accomplishing at the Farm at Guelph will certainly end in making that naturally fine piece of landscape one of the most beautiful in the country. A most practical benefit to the province is gained from this, for even now many farmers send him drawings of their farms to have him suggest to them plans of improvement, in order that their homes may be made more attractive; and we have no doubt that the influence for good which Mr. Rennie is creating in this direction will be greatly increased when the merit of his work is more generally known. For a portrait of Mr. Rennie, and also for an account of a useful contrivance of his for the keeping of ensilage, see this number of FARMING, page 265.

A. J. REYNOLDS, of Danforth, county of York, was born in Darlington, in Durham county. He was for many years a school teacher, having taught thirteen years in the school in which he had received his own early education. In 1884 he bought the family homestead, and for some years taught school and farmed as



A. J. Reynolds, Danforth.

well. In 1890 he resigned his school, and sold the old farm and bought another and a better one situated in Scarboro' township, near Toronto. Mr. Reynolds has always taken a warm interest in institute work, both in West Durham and East York. His subjects as an institute lecturer relate principally to general farming.

MR. J. B. REYNOLDS, B.A., of the Ontario Agricultural College, is a farmer's son, who by dint of his own efforts worked his way through a public school, a high school, and a college course, taking a magnificent stand all along the line until, in 1893, he was graduated from the University



J. B. Reynolds, B.A., O.A.C., Quelph.

of Toronto with the highest honors. This, of course, was not accomplished without a good deal of self-denial, and the earning of money between times as a teacher, and in

vacations as a farmer's help. But it was accomplished finally, and Mr. Reynolds had his reward by being immediately appointed to a position which he prizes very much, namely, a lectureship in the Ontario Agricultural College. Mr. Reynolds is still a farmer's son, and, as he says, not all the colleges or universities in the world could educate him out of his fondness for the plow-tail. As a teacher in the college and as a resident master Mr. Reynolds has been a distinct success. To use a convenient method of expression, the students "like him"; and this is a great matter in a residential institution. The reason of this probably is to be found in Mr. Reynold's faculty of sympathy and fellowship. He is and always has been a personal friend to those under his charge; and therefore harsh measures are abhorrent to him. This characteristic was once rather amusingly expressed by a trustee in Mr. Reynold's old public school teaching days, who, when asked by a resident of the section how the "new master" was getting on, replied: "Oh, he gets on all right; the scholars all like him; but it 'pears to me he don't lick quite enough."

W. C. Shearer, Bright.

On page 251 of FARMING for this issue will be found a portrait of Mr. Shearer, and also an account of his methods as a dairy farmer, which, as will be seen by the account, have been very successful.

On page 102 of FARMING for October will be found a portrait of Captain Sheppard and of his life and work as



Captain Sheppard, Queenston.

fruit-grower; also an article of his on the growing of strawberries.

MR. D. F. SMITH, B.A., of Churchville, was for several years the manager and part owner (his two brothers being the other owners) of the Credit Valley Stock Farm, which carried in its time (until the partnership referred to

was dissolved by mutual consent) one of the largest and most noted herds of purebred Holstein-Friesian cattle ever assembled in Canada. The firm also did a large business in dairying, and in breeding Improved Yorkshire swine and saddle and carriage horses. Mr. Smith's success as a breeder of Holsteins brought him into prominence among stockmen generally; and he also enjoyed in a special degree the good will and confidence of his fellow Holsteiners. He was the first secretary of the Dominion Cattle Breeders' Association (1892); and he has been both president and secretary of the Holstein-Friesian Association of Canada; and he was the first registrar for this association, and he edited and published their first herdbook. He also wrote and published a small work entitled "The Farmer's Most Profitable Cow and How to Feed Her." He has also been appointed a judge of dairy cattle for several important exhibitions. Mr. Smith is a well-known farmers'



D. E. Smith, B.A., Brampton.

institute worker. He has been president and secretary of Peel Farmers' Institute, and for four years, 1891-5, he was a much appreciated member of the institute lecturing staff, and this year he goes out again. His subjects, which relate to dairy work, are always most practically handled. Mr. Smith has had the advantage of a liberal education; and is not only a graduate of Toronto University, but was also for some years, before he became a stockman, a successful high school teacher.

Mr. WILLIAM SMITH, of Columbus, Ontario county, is a well-known breeder of Clydesdale horses, Shorthorn cattle, and Cotswold sheep. He is an ardent lover of the Clydesdale, and as such took an active part in organizing the Clydesdale Horse Association of Canada, and he was for several years its president. He, however, is a firm believer in "mixed farming" for the Canadian farmer; and prefers to describe himself in that way rather than as a specialist, for in his opinion the climatic conditions of Canada are better suited to mixed farming than to special lines. Mr. Smith is well known to



Wm. Smith, Ex-M.P., Columbus.

the country generally from the fact that some time ago his experience and success as a practical farmer, and his general abilities as well, made it seem likely that he would be selected as Minister of Agriculture for the Dominion; and prominent farmers on both sides of politics united in strongly urging his qualifications for that position. Mr. Smith had been a member of the House of Commons for two sessions, and had he been appointed to the office in question there is no doubt but that he would have done everything that was possible to do to promote the interests of agriculture in the legislation of the country and as a member of the Cabinet. Mr. Smith is most highly esteemed in his own county, and has occupied almost every position of trust that it is possible for his brother farmers to confer upon him.

Mr. R. S. STEVENSON, of Ancaster, near Hamilton, is Vice-President of the Holstein-Friesian Association of



R. S. Stevenson, Ancaster.

Canada, and one of the best-known breeders of Holsteins in the country. Mr. Stevenson has followed farming for about twenty years, but for the last ten years he has been making a specialty of dairying, and the production of dairy cattle. He early made choice of the Holstein-Friesians as the breed best adapted to his purpose, and, as said above, he has been breeding them with great success. In his dairy work Mr. Stevenson tests all his cows, and any of them that do not come up to his standard he gets rid of at the first opportunity; for, as he says, in these days of close competition and small margins of profit, it will never do to keep two cows to produce the milk that one ought to produce. Mr. Stevenson built a silo many years ago; in fact, he thinks he can claim to be a silo pioneer in his county. He asserts that he could not possibly carry the stock he does without using ensilage as their main ration in winter. Mr. Stevenson's farm of 256 acres is peculiarly adapted to dairying, inasmuch as there is about 60 acres of very fine pasture land upon it, possessing numerous springs, so that his cattle never have to go any distance for water. But he also has a plentiful supply of water pumped up to his barns by means of an hydraulic ram, so that his stock have an abundant supply of the best water in both winter and summer, without which, as Mr. Stevenson says, no cow can be expected to give good, wholesome milk. The produce of Mr. Stevenson's dairy is all sold as cream, except the skim-milk, which is used for raising calves and feeding pigs.

Mr. ROBERT THOMPSON, of St. Catharines, unlike so many other fruit-growers, believes in combining fruit-growing with general farming. By feeding all the roots, corn, and coarse grains grown on the farm to his cattle, sheep, and hogs, he secures the manure that his fruit



Robert Thompson, St. Catharines.

trees need so much, and secures it cheaply. This plan has worked so well as to practical results that even now, when fruit is down to ruinously low prices, he has both his farm and his fruit trees on a paying basis. Mr. Thompson's success, his energy and public spirit, have contributed to make him one of the best known of the

many prominent farmers and fruit-growers of the Niagara peninsula. He was, indeed, one of the very first to begin to grow fruit for sale in his section. He was also one of the first to see the necessity of producing an undoubtedly superior article and of shipping it direct to the consumer, and he has built up his large and profitable fruit-growing business by following out these methods. He was also one of the first to take steps to organize the township associations of fruit-growers which have been of so much benefit to the fruit-growing industry in his district—a benefit so great, indeed, that only those who were familiar with the difficulties that fruit-growers had to contend with before they [were established] can fully appreciate it. Mr. Thompson is a director of his own county farmers' institute, and vice-president of his own township fruit-growers' association.

Mr. T. C. WHEATLEY, of Blackwell, was born in 1841 in the county of Lambton, in which county he still resides. Though he was not, strictly speaking, brought up on a farm, he always lived among farmers, and in early life he developed a strong liking for the cultivation of fruits and



T. C. Wheatley, Blackwell.

flowers. At length in 1868 he bought his present farm of fifty acres (situated on the shores of Lake Huron, six miles east of Sarnia) with the sole view of engaging in fruit-growing, but intending to give preference to the peach, for which fruit this locality was thought to be particularly adapted. Of late years, however, he has given preference to small fruits and vegetables, thinking these safer for a regular income. Some ten years ago Mr. Wheatley, in connection with two or three friends, undertook the study of botany, and made a collection of the flora of the locality in which he resided. This led him to notice the weeds which were being introduced into it from time to time; while his strong determination to secure the profit as well as the credit of having a clean farm led him to study the most approved methods of cleaning his land. His frequent enquiries among farmers about new weeds, as well as his habit of trying to induce everyone to clean up their road-

sides and other weed harbors, led people to regard him as a weed specialist. This resulted in his being requested, in 1893, to exhibit his "pressed" specimens of weeds at a number of local farmers' institutes and to give addresses upon the same. These addresses seemed to excite so much interest and to be so practically useful that several institute leaders commented very favorably upon them, and recommended the Superintendent of Institutes to place him upon one of the deputations. This has been done, and Mr. Wheatley now goes out for the first time.

MR. AND MRS. JOSEPH YUILL, of Carleton Place, have the honor of having constituted the first "Travelling Dairy" that ever travelled in Canada. It came about in this way: In June, 1888, Mr. Yuill was speaking on butter-making at an agricultural picnic held at Galetta, in the county of Carleton. Mr. A. A. Wright, of Renfrew, who

Wright, and Mr. and Mrs. Yuill. Mr. Wright bore all the expenses, and Mr. and Mrs. Yuill contributed their time, knowledge, and experience. The meetings were well advertised by Mr. Wright, and proved to be a grand success. Mr. Wright avers that he never laid out money that paid him so well. Every year since that time Mr. and Mrs. Yuill have gone out giving practical instructions in dairying, their students numbering as many as 130 a year. Students who have first received instruction from them often afterwards take a complete course at the O.A.C., and Mr. Yuill claims that their work as dairy instructors serves to induce students to go to the provincial dairy schools. Mr. and Mrs. Yuill are both well-known institute speakers, and have been employed as such for a long time. Mrs. Yuill's subjects embrace such domestic ones as "Buttermaking on the Farm," "The Care of Milk," "Raising Calves," "Raising Chickens," "How to Care for Fowls in Winter," etc.



Joseph Yuill, Carleton Place.



Mrs. Joseph Yuill, Carleton Place.

deals largely in butter, being present, was much interested in Mr. Yuill's address, and asked him if he would not go to the Farmers' Institute meeting at Renfrew the following winter and talk on butter-making. This Mr. Yuill consented to do. Before the meeting came off Mr. Wright conceived the idea that it would be a good thing for Mrs. Yuill to assist Mr. Yuill in his lecture, and to practically demonstrate correct methods in dairying by personally making butter on the platform. This Mrs. Yuill agreed to do. When the meeting came off the hall, which held 600, was so crowded that there was not standing room. The crowd was so great, indeed, that it was possible for only a very few persons who happened to be near the churn to see what was being done. Mr. Wright's next idea was to get Mr. and Mrs. Yuill to give a series of public lessons on butter-making. In June of the next year (1889), they went out for a week, holding two meetings each day. The "Dairy" consisted of four persons, Mr. and Mrs.

Mr. C. A. ZAVITZ, of the Ontario Agricultural College, is perhaps, for so young a man, the most widely known agriculturist in the province. As experimentalist to the Ontario Agricultural College, secretary of the Agricultural and Experimental Union, and director of co-operative experiments in agriculture for Ontario, Mr. Zavitz is undoubtedly doing a work which directly brings him into touch with more farmers in their actual business as farmers than any other man in the province. Mr. Zavitz was born in 1863, at Coldstream, Middlesex county, where his father still lives. Having received a good public and high school education he attended the Agricultural College, where he spent three years and had a most brilliant career, not only taking a full part in all the wholesome student-life of the college, but also pursuing his studies so well that he gained enough of prizes to establish for himself a first-class scientific library. Immediately at the closing of his college

course in June, 1886, Mr. Zavitz was appointed assistant superintendent of the experimental department of the college. After serving in this capacity for seven years he was appointed to the position of experimentalist, which office he still holds. But Mr. Zavitz is almost as well known for his work in connection with the Ontario Agricultural and Experimental Union as he is for his work directly connected with the college. For nine years he has been editor to the union, and for ten years secretary of the committee on co-operative experiments, and for the same length of time director of the



C. A. Zavitz, B.S.A., Experimentalist, O.A.C.

experiments When Mr. Zavitz first became connected with the experimental work of the college there were only fifty-six field plots in the experimental department, and there was no co-operative experimental work conducted in Ontario. Since that time the whole system of experimental work has been a rapid but also a substantial growth, until now there are about 2,200 field plots in the experimental department of the college, and 11,124 plots in connection with the co-operative work of the Experimental Union, the latter of which are located on 2,260 different farms situated in as many different

parts of Ontario. During the last ten years the publication of the results of these experiments has taken up 44 distinct bulletins, 580 pages of the annual reports of the O.A.C., and 180 pages of the annual reports of the Agricultural and Experimental Union. Mr. Zavitz is an enthusiastic worker in any sort of work that he takes up. In institute work, for example, he has taken part in no fewer than 220 separate sessions. He has also done a great deal towards placing the agricultural work of the college before the public by means of exhibits at leading fairs, and the very striking and attractive exhibit of Ontario agriculture which was made at the World's Fair, Chicago, was designed and arranged by him.

SUPPLEMENTARY.

MR. ANDREW ELLIOTT, of Galt, whose portrait appears on page 278, was born of Scotch parentage a little over fifty years ago on the farm which he now owns. It is a 320-acre farm, and he had the entire management of it when only twenty-three years of age. Mr. Elliott was one of the earliest as well as one of the most extensive barley-growers in his county (Waterloo). As at the same time he grew turnips and clover, and during winter fed lambs and cattle quite extensively, although he sold so much barley he kept his farm in a high state of fertility. When the United States tariff cut off our barley market and crippled the market for lambs, Mr. Elliott began to feed lambs for the British market, and still does so, and he has a large flock of Shropshire sheep. During the last few years he has gone into dairying, and has a herd of thirty dairy cows, fifteen of them being A. J. C. C.'s, the remainder being high-bred Jersey grades. Eight years ago he built the first silo put up in his township, and now grows corn largely. Mr. Elliott's son, who is an associate of the Ontario Agricultural College, and also a graduate of the Dairy School, is associated with his father in the management of the dairy. They use a cream separator, and have all the modern dairy appliances, and have no difficulty of selling all the butter they make in Galt at profitable prices. Mr. Elliott takes quite an active part in institute work. He has been secretary of the South Waterloo Institute for some years. He has also for many years been associated with the agricultural society of his riding, as director, vice-president, or president. He is a director of the Dominion Swine Breeders' Association. He has been a member of the institute lecturing staff for four years, and by reason of his wide experience, his extensive reading, and his habits of careful observation, he has little difficulty in gaining and holding the attention of his hearers.

PROFESSOR J. W. ROBERTSON, Dairy and Agriculture Commissioner for Canada, writes: "I see in FARMING regularly the familiar faces of many good men with whom I have had the honor, at one time or other, of being associated in forwarding the interests of the farmers of Ontario. These men, by the intrinsic value of their labors, are the untitled noblemen of the province."

MR. ANDREW ELLIOTT, Galt, writes: "I have followed the evolution of FARMING for the last twelve months, and I am impelled to write and tell you what I think of your work. I receive a number of agricultural periodicals, both American and Canadian, and I am proud to say that FARMING is by far the best I have ever seen. If we could only get agricultural publications like FARMING

into the hands of all our farmers, it would be a grand thing for the country."

MR. JOHN CAMPBELL, of Woodville, writes: "Not long ago I heard a prominent and very successful eastern breeder maintain that FARMING was the best agricultural paper printed in these modern days, and not one of the many listeners disputed the statement."

MR. W. S. FRASER, Bradford, writes: "I shall be glad to recommend FARMING wherever I have opportunity. I wish you every success. Your portraits are excellent. They are as valuable to me as an album."

MR. A. C. HALLMAN, New Dundee, writes: "FARMING for November was certainly the best number of an agricultural publication I have ever seen."

THE ONTARIO AGRICULTURAL COLLEGE AS A MODERN EDUCATIONAL INSTITUTION. SOME OBSERVATIONS AND SUGGESTIONS.

By J. E. BRYANT, M.A.

Educational methods in progressive institutions of instruction are by no means what they were twenty or twenty-five years ago. Just as there have been improvements in the art of farming, of stock-raising, of fruit-growing, and of every other art, so have there been improvements in the art of education. For, of course, education is an art, like every other practical effort of the human mind. Not the principles which now underlie the art of education are different from what they ever were. Principles are eternal, and exist from the beginning. It is only that, as the world makes progress, these principles are better understood, and men are able to make a wiser application of them. With respect to the great principles which should underlie all good educational effort, modern educationists believe that

they understand them better than their predecessors of twenty or twenty-five years ago, and that they try to follow them out more closely.

MODERN EDUCATION.

The cardinal feature of modern educational methods, as compared with those in vogue a quarter of a century ago, is the training of the

mental faculties by constantly engaging them in some practical effort; and the nearer this practical effort can be made to coincide with the sort of effort which the student has decided to devote himself to in after life, the more valuable is the educational result produced.

A boy goes to an agricultural college, for example, with the avowed intention on his part to pursue in after life some branch or other of farming. It is needful, of course, that his mental faculties be trained to the highest degree possible in the time that he has to spare for this education.

Now modern educationists assert (as distinct from their predecessors) that this mental training can be given to him with an entire reference to his future occupation; and not only so, but that it is *best* given him when the correspondence is

made the closest possible; and still further (and this is the most important point of all), that in his study of the scientific principles of farming he shall also all the time be acquiring a practical experience in the best methods by which good farming is to-day carried on; and be constantly illustrating his scientific knowledge by the experi-



James Mills, M.A., LL.D.
President of Ontario Agricultural College.

ence he thus gains, and be confirming his belief in the soundness of the scientific principles which he learns by seeing for himself in his everyday experience the good results of the practical application of these principles.

This is modern education; and we regret to say that there is, as yet, but very little of it in this country.

The farmers of Ontario are especially to be congratulated that they possess an institution, erected and maintained for the education of their sons, where such an ideal system of education is possible. They are almost the only class in this country for whom such an education is possible.*

tions of dormitories and eating-rooms should find no place in a modern educational institution. Where the students are young it means an absence of the home influences that are so essential to the development of character at that stage. Where the students are older it means the existence of conditions that have no counterpart in actual life, and, therefore, to a large extent occasion a misdirection of educational effort. If it were possible, it would be infinitely better for both the professors and the students that the students should live in houses of their own selection, amid conditions very similar to those which will surround them in after life. The character



Class-Room Work in the Live Stock Department.

Mr. G. E. Day, Agriculturist, assisting his students in "scoring" for beef points a thoroughbred Hereford. Nine breeds of cattle, nine of sheep, and five of swine are kept on hand all the time, that the students may become thoroughly familiar with their respective merits.

The object of this paper is to point out to what extent the Ontario Agricultural College is conforming to the ideal of education above outlined.

THE RESIDENCE SYSTEM IN THE ONTARIO AGRICULTURAL COLLEGE.

The Ontario Agricultural College is a residential institution. By the conditions of its existence this is, perhaps, necessary. It is, however, none the less unfortunate. Big aggrega-

* The facilities which the province provides for the education of teachers are of this sort.

developed in this way would undoubtedly be of a sturdier sort than that possible in a large residence, where all the conditions are more or less artificial.

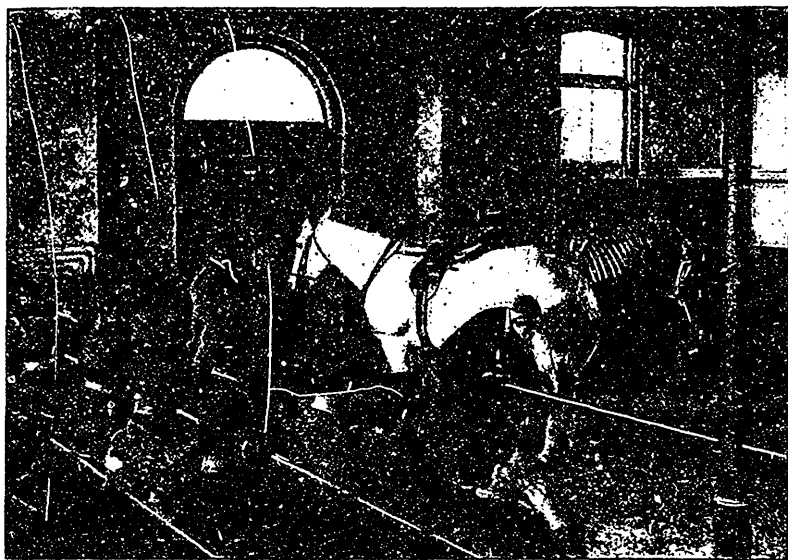
There are various reasons, however, why the present arrangement is preferred. One is the apparent difficulty of securing a sufficient number of suitable dwelling-places for the students near at hand to the farm and college. Another, perhaps, is that the residence system permits the college to do far more for the students in the way of cheapening the cost of their education than what

it could do if it did not provide for them a residence.

When we come to the residence itself, we must confess that it appears to be not as well suited to its purpose as it ought to be. This, however, is wholly due to the piecemeal manner in which, necessarily, it was built. As in the case of every progressive educational institution, the buildings of the Ontario Agricultural College have been erected from time to time, as circumstances demanded. The main building, therefore, which is the residential building, is a thing of accretions. It was "now a little and then a little" in the method of constructing it. And what with its storeys, wings, annexes, and subdivisions, unless a more than ordinary spirit of manliness

to use his influence to do away with the residence system altogether.

In England, in the more modern residential schools, the plan is to have the individual masters take as many of the boys into their houses as possible. Where this will not accommodate the whole attendance, special boarding-houses are erected, and placed under the charge of suitable persons, each one being supposed to take in not more than ten or twelve boys. We do not believe that, with the class of students who attend the Agricultural College, it would be necessary to build special boarding-houses. The professors need to have houses erected for them near the college, and when this is done they should be encouraged to receive students into their houses,



Class-Room Work in the Veterinary Department.

Dr. Reed, the College Veterinarian, giving a demonstration in veterinary pathology. Every lesson in this department is, if possible, made a practical demonstration.

and good sense prevail among the students, discipline in such a place can neither be natural nor easy. One evil-disposed lad, in one of these secluded corridors, could convert the whole corridor into a nest of disorder, and even of sedition, before its existence might even be suspected. The resident master, amid such conditions, can never have a single hour of security from apprehension.

We have heard Dr. Mills remark that if it were not for the difficulties connected with the residence the whole work of governing the college would be reduced to infinitesimal proportions compared with what it is now. We believe him. And we would go further, and recommend him

though by *no means compelled* to take them in. We believe that all those students that could not be accommodated in that way could be easily accommodated in private families within easy reach of the farm and buildings. Some provision would have to be made for a noonday, and, perhaps, for a morning meal: but this would be an easy matter.

Should it be found, however, wholly impossible in the meantime to do away with the residence, we should recommend at once the adoption of the *prefect system*. This system would fit in well with the prevailing discipline of the place, and be a further means of developing character among the students. If from among the third-year students

a sufficient number were chosen to provide a prefect for each corridor, the choice being made by the inmates of the corridors themselves, it would be good for both the governors and the governed. It would be an education in self-government, as valuable, indeed, as far as it went, as any other part of the education given by the college.

Should such a plan be carried out it should then be distinctly understood that any student proving a cause of trouble to his corridor should be summarily and remorselessly expelled. Idleness and turbulence should have no place in *any* educational institution. In a *government* institution for *superior* instruction these vices cannot be excused at all. In no other way can the state support of places of higher education be at all justified. The country provides at great expense educational facilities of the highest class, on the supposition that those who seek the privilege to use them will do so to the very best of their ability. This good will of the state should not be thwarted to the detriment of the well-disposed by any evil-disposed one, even for an hour.

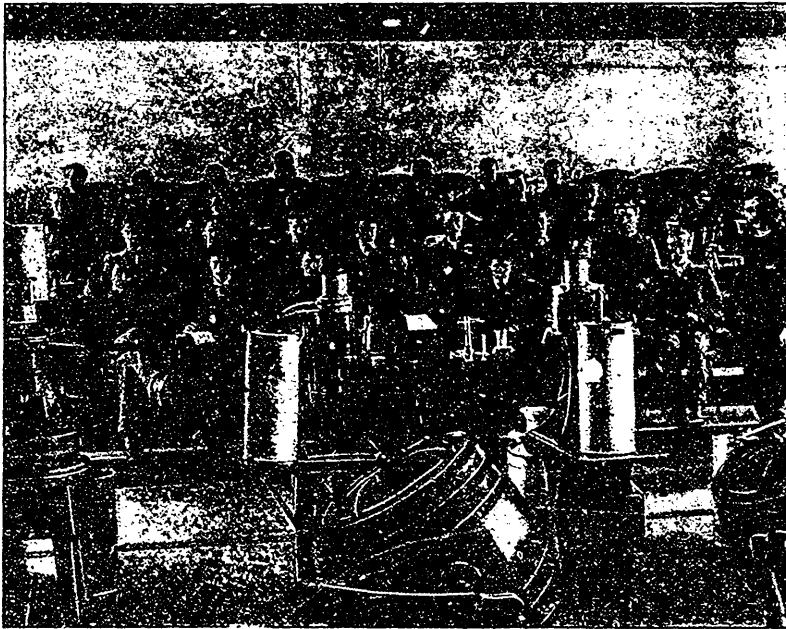
THE MORAL TONE OF THE COLLEGE.

We are glad to record that with respect to the Ontario Agricultural College the moral tone of the institution, as a place of residence and study, is good. There are several reasons why this is so.

In the first place, the students are mostly farmers' sons, and come from homes where righteousness and sobriety of life prevail. In the second place, the staff are all men of the highest character, chosen with as much regard to their moral qualifications as to their abilities. Many of them were themselves students at the college, and took its full course, and were, therefore, known to the core by the president and other governing authorities before they received their appointment. Also the manual labor done by the students is a sedative to boisterous behavior. In fact, as in every well-conducted technical school, the animal spirits which would otherwise be spent on frivolous noise-making are spent in practical industry. And also, as in every well conducted *higher* technical school, the institution is one in which each student has a definite aim in life; and he soon learns that he cannot expect to achieve anything in his life's work unless he is industrious and thoughtful, and careful of his time and privileges; and so he adjusts his student habits accordingly. In short, the moral tone of such a school cannot help but be good, except where evil spreads by secret contagion, as in the manner described above.

NEATNESS AND ORDER EVERYWHERE EVIDENT.

The most strikingly obvious feature about the



Class-Room Work in the Dairy Department.

Professor Dean giving a demonstration in the theory and practice of home buttermaking. The churns, separators, testers, lactometers, used in these demonstrations are shown in the foreground.



Class-Room Work in the Dairy Department.

Professor Dean and Mr. Stratton giving a practical demonstration in cream-separation.

whole institution, college and farm alike, main building, department buildings, and agricultural buildings, is the extreme neatness and orderliness which everywhere prevail. Of course, in a government institution, with a large staff of workmen and servants provided, this is no more than should be; but, nevertheless, order and neatness are as difficult to obtain from government employees as from any others. And it must be remembered that the college and farm are essentially busy places, where everyone is either "hustling" or "being hustled"; and that, therefore, the temptation is always great to let things "go hang." That things do not go this way is very creditable to Dr. Mills' sense of order and faculty for discipline; and he certainly should have great praise for the extremely neat and tidy appearance of the whole place. For neatness and tidiness are of great economic value in practical life; and if not acquired by people when young will never be acquired by them when they get older; and in an educational institution like the college, attended by students coming frequently from homes and farms where order and neatness do not prevail, the educational value of this reign of order can scarcely be over-estimated.

This order is not apparent in the external domains of the college only; it is equally apparent in the most intimate parts of the whole institution, and especially in the halls and dormitories of the residence. Everything connected with the

students' quarters is as methodically arranged as in a soldiers' barracks.

THE CURRICULUM.

We come now to the educational work proper of the college. In looking over the curriculum one is first struck by its comprehensiveness, and might be disposed to say that, like so many modern educational institutions (and ancient ones, too, for that matter), there is a tendency to describe on paper a greater range of studies than what is actually taken by the students. But any one who knows anything of Dr. Mills knows that such a course would be utterly abhorrent to him. In fact, as Dr. Mills himself says, there is not an atom of the whole curriculum which is not gone carefully over with the students during the prescribed two years of study.

Having examined the curriculum somewhat carefully, we can go further and say that not only is the whole curriculum a real one in all its parts, but also that it is an admirably arranged curriculum, and one wholly in harmony with the ideal of modern education as we outlined it at the beginning of this article.

The comprehensiveness of the curriculum arises from the very complex nature of the scientific principles which underlie the practice of farming as an art or profession. A little examination will make this clear, and it is worth the trouble.

Bearing in mind our definition of modern education, we see clearly enough that if a student

goes to the Agricultural College with the intention of following some branch of farming as his life's pursuit, his intellectual training will be *best* got by studying those scientific subjects which directly bear upon, or lie in the foundation of, the practice of farming as an art. Now even the simplest conception of farming requires the following subjects for its scientific explanation: geology, chemistry (inorganic and organic), botany, and vegetable physiology. And if we go a little farther, and take with farming its ordinary accompaniments, stock-raising, dairying, fruit-growing, etc., then the following scientific subjects are required in addition: animal anatomy and physiology, veterinary pathology, entomology, and bacteriology. These branches of pure science therefore, and their application to the practice of farming as implied in the subjects of agriculture proper, dairying, horticulture, live-stock practice, poultry practice, and apiculture, must constitute the body of every farmer's scientific education; and we find that these *are* the subjects prescribed in the two years' course at the Ontario Agricultural College.

But the farmer is not to be merely a skilled workman or artisan. He should also have *the power of expressing his own thoughts* clearly, and

of following quickly and easily the thoughts of others, whether expressed in prose or poetry, and whether for purposes of learning or of enjoyment; that is, he should have had practice in English grammar and composition, and have made some study of literature. Again, he is to be a *business man*, and should know how to compute all sorts of ordinary measurements and values; that is, he should know the ordinary forms and methods of keeping accounts and transacting business (in other words, understand book-keeping), and have a knowledge of arithmetic and mensuration. He should also know how, when necessary, to express his ideas pictorially as well as by verbal description, as, for example, in drawing plans for buildings, outhouses, implements, etc. (no more useful knowledge than this); that is, he should have acquired some facility in drawing. He should know, too, something about the principles by which trade and commerce are carried on, and the principles upon which our system of monetary exchanges is based; that is, he should know something of political and social economics. Lastly, he is to be a *citizen*, and should have some acquaintance with the principles upon which modern governments (municipal and national) are (or ought to be) car-



Individual Practical Work in Botany.
Professor Pantou supervising his class in the work of dissecting flowers, and describing their parts by drawing.



Experimentation in the Horticultural Department,

The engraving represents part of a plot (a little over an acre in extent), in which 155 varieties of strawberries are in test, under Mr. H. L. Hutt, the College Horticulturist. The photograph was taken in the latter part of June, about two months after the plants were planted. Each variety is plainly labelled upon a white wooden stake, as shown in the engraving. Mr. Hutt intends giving a full report of the yields made from 120 varieties that fruited this year in the next College report.

ried on, and of his relations and duties to the state and to his fellow-citizens; that is, he should have made some study of civics and ethics.

Now, the above may fitly be described as the *necessary education* which every man purposing to be a farmer should receive; and we are glad to see that (with one or two omissions, which we have no doubt will be speedily made right) it is wholly comprehended in the curriculum of the first two years' or ordinary course of the Ontario Agricultural College. This curriculum, indeed, is in every way an admirably planned one, and one that reflects the greatest credit upon its framers as modern, up-to-date educationists.

Considering the purposes for which it was designed we unhesitatingly pronounce it the curriculum closest in accordance with modern educational ideals of any in Ontario to-day.

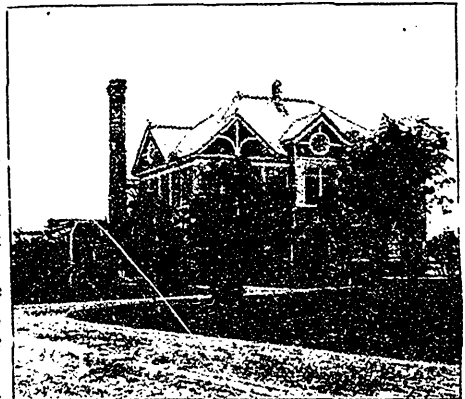
THE THIRD YEAR COURSE.

When we come to the third year or advanced course we find that, in the framing of the curriculum, the same general principles have had sway; that is, that there is the same recognition of definite, practical, real-life pursuits as the objective points to which all the preparatory scientific training is directed, and the same conjoining of pure scientific research with the practical application of it to the scientific treatment of some phase or other of the art of agriculture.

For example, taking one of the options of the course (for the course has several options), namely, that of horticulture, it will be seen that the whole course is so framed that a student concluding it will have become fully competent, so far as a college education can make him so, to take up practically any work connected with the business of horticulture; as, for instance, fruit-growing,

market-gardening, floriculture, or arboriculture; and he will have studied these arts not only practically, but scientifically, that is, as *practical sciences*; and he will also have studied the *theoretical sciences*, vegetable physiology, systematic botany, vegetable histology, etc., upon which these practical sciences are based. Besides the *special work* appertaining to an option (as here described) every third year student must take the *general course*, which comprises such a knowledge (further than that obtained in the two first years) of agriculture, chemistry, geology, and botany, as will make his work in his option all the broader and surer. He is also required to evince his progress in general culture by a somewhat further study of English.

The options referred to above are (1) *agricul-*



Biological Laboratory, O.A.C.

A portion of the college conservatories and greenhouses is seen in the background.

ture and dairying, intended for those who wish to follow farming or dairying in any of their branches; (2) *horticulture*, intended for those who wish to follow the practical businesses of fruit-growing, gardening, etc, above referred to; and (3) *biology*, (4) *bacteriology*, and (5) *chemistry and physics*, intended for students who may desire to take up special lines of scientific agricultural investigation, with a view, perhaps, of qualifying for special positions connected with modern agricultural development, as, for example, posts in experiment stations, instructorships in agricultural schools and colleges, government inspectorships, etc. Of course the great majority of the third-year students take up either option 1 or option 2.

HOW CLOSELY DOES THE ONTARIO AGRICULTURAL COLLEGE CONFORM TO MODERN EDUCATIONAL METHODS?

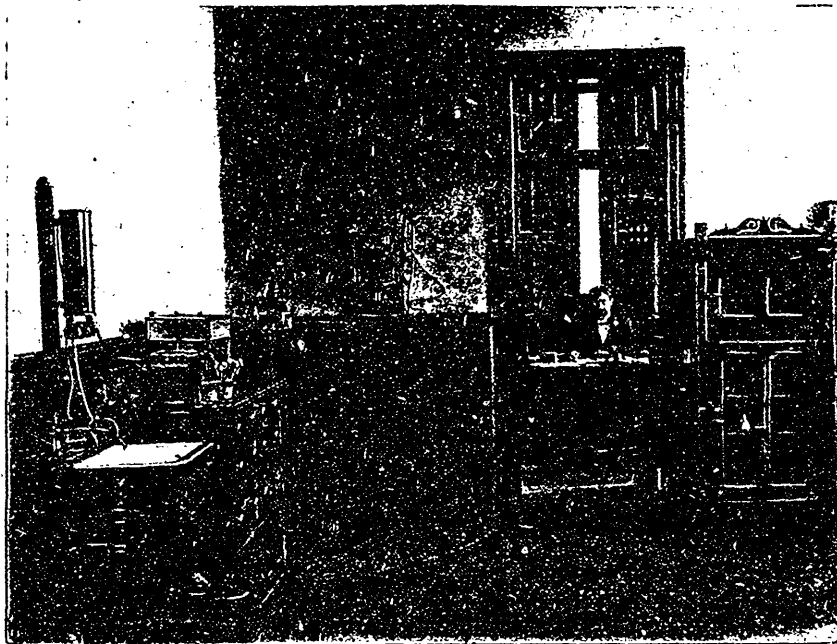
We come now to what is of most consequence in this enquiry. How closely does the actual work of instruction as carried out in the Ontario Agricultural College conform to modern educational methods and ideals?

Our treatment of this part of the enquiry must, for the sake of brevity, consist simply of a few statements and illustrations tending to show what we conceive to be the facts in the case. In the first

place, the staff, on the whole, appears to be a very able one. One great merit that it possesses is that it consists very largely of young men who have been trained in the institution itself as students. We consider that every time this rule is departed from (except for the reason that when wanted the suitable ex-student is not forthcoming) there is a direct educational loss. We know that this rule is not always acted upon in all educational institutions; but whenever it is departed from without sufficient cause there is a direct loss of power to the institution concerned. The history of every educational institution proves this. An educational institution should be like a living organism: it should *grow*, and grow from the inside outwardly. It should not be added to from the outside. Whatever *grafting* is necessary to be done should be the grafting of new fruit-bearing ideas, not of body-wood.

THE STAFF.

The members of the staff all seem also to be enthusiastic about their calling. Of course we can speak from only a very general acquaintance. But if there should at any time be any member of the staff not enthusiastic as to his calling, which, let it be remembered, is always *the education of young men to be farmers*, he should be removed



A Portion of the Bacteriological Laboratory.

The Bacteriological Laboratory has been furnished with a small but perfectly modern apparatus obtained in Germany. In the corner is seen the "fixed temperature chamber," where a temperature that will not vary a half degree in months may be maintained as long as desired at any given degree of heat. Mr. Harrison, the College Bacteriologist, is seen in the inner laboratory.



Practical Work in the Horticultural Department.

Students acquiring practical skill in the art of grafting, under directions from Mr. Hutt, the College Horticulturist.

-at once. The man who accepts a position as teacher in that institution accepts a great trust. There should be no blinking it. The institution is magnificently provided for. Its material equipment is, without question, on a splendid scale. Teaching-rooms, laboratories, apparatuses, etc., have been provided with no stinting hand. The educational results now depend upon the men who man it. If these are lacking in energy, or enthusiasm, or in power or tact as teachers, or if they work in antiquated methods, along lines wanting certainty of direction, they are failures, and no good. On the other hand, if they work true to a definite ideal, in harmony with modern common-sense methods of education, they have possibilities of good results before them such as no other educationists in the province can hope to reach.

THE MATERIAL EQUIPMENT OF THE COLLEGE.

As said above, the material equipment of the college, when considered in relation to its purpose, is admirable. Each department has a building to itself, furnished with teaching-rooms, laboratories, and apparatus, on a scale entirely adequate to its requirements. The *new chemical building* is a model of apposite arrangement. The *biological building*, where the lectures in botany, vegetable physiology, and horticulture, etc., are given, has no counterpart in the province; situated, as it is, convenient to conservatories, green-houses, forcing-beds, potting-houses, etc., its facilities for demonstration, for practical illus-

tration, and for experiment, are, we doubt not, unequalled in the Dominion. The *new bacteriological department* is supplied with a small but complete and entirely modern apparatus, procured in Germany. The facilities for demonstration and practical work in *physics and mechanics*, though not large or remarkable, are being constantly added to, and in the meantime we should say are sufficient. The arrangements made for practical teaching in *live-stock practice* are upon the most extensive scale. Not only are excellent specimens in both sexes of all the standard breeds of cattle, sheep, and swine kept all the time, but the facilities for class-room demonstration with respect to these and for *veterinary work* are very excellent. We did not notice any provision for practical demonstration in animal physiology, but this could easily be added. Specimens of all the more important classes and varieties of *poultry* are kept, and these, we have been informed by competent authority, have been admirably selected; the poultry houses are models of their kind, and the poultry instructor is considered one of the best authorities in his subject in Ontario; but we should like to see with respect to all these advantages a more definite educational provision made for the practical instruction of the student in this most important branch of agriculture. In the *dairy department* the facilities for instruction, actual demonstration, and individual practical work, are simply of the amplest and very best possible sort.

THE USE MADE OF THE EQUIPMENT.

The use made of these magnificent appliances by the various instructors is, on the whole, we believe strictly in accordance with modern educational methods. Of course all the instructors complain of the shortness of time which the students can be under them. This is unfortunately a well-grounded complaint; but it is one that cannot well be remedied in these days of business depression and keen competition. It is not likely that for some time to come students will be found willing to spend more than two years on this part of their education. The greater, then, is the need that the instructors of the college should discard antiquated methods of instruction and make use of rational ones suited to their necessities. What should be aimed at is not the imparting of a wide range of knowledge, but the setting the students in the way of acquiring knowledge for themselves. If a student is sent out from the college trained to observe, and think, and experiment, and reason correctly for himself, it is a hundredfold better than if he were sent out with a much greater range of knowledge, but not trained to observe, to think, to make trial, to reason. The curriculum laid down for the two years' ordinary course is, no doubt, a full one; and none but the brightest students can be expected to cover it wholly in the time prescribed. But that is no reason

why even students who are not so bright should not receive the wholesomest sort of benefit from attending the college. If they learn to observe, to think, to make trial for themselves, to reason correctly, in *only one department* of the whole curriculum, that in itself will be an invaluable education for them.

MORE FREEDOM IN THE CHOICE OF COURSES DESIRABLE.

We fear, however, that, as in so many educational institutions, the staff of the Ontario Agricultural College, in spite of all their progress towards educational enfranchisement, which certainly is considerable, are still slaves to some extent to the old-time examination-fetich. Unless a student makes a certain average percentage all round he must not be allowed to proceed to higher things. This idea is wholly irrational and out of place in a modern educational institution. As well expect a Hereford cow to show the milk production of a Jersey, or a Minorca hen to be equally good at setting as at laying. The *only bar* there should be to a student's progress along any line he wishes, and for so long a time as he wishes, is idleness or mischievousness. A lad may come to the college very poorly up in English or in mathematics, but he may have the natural gift of original observation in him, which, if given a chance, say, at horticultural work, may lead to



Class-Room Work in Chemistry.

Professor Shuttleworth, in the general lecture-room of the new Chemistry Building, demonstrating a lesson to first year students on the properties of gases. The profile of Mr. Harcourt, Assistant Chemist, is also to be seen.

his production of a new variety of apples or of strawberries of such value that it would add to the productivity of the country beyond all estimation. Such things have happened before, and would happen more frequently if conditions were made

branch or other) as a life pursuit. The mere ability to pass all-round examinations is wholly an academical and artificial thing. It depends largely on early opportunities. It doesn't count in the world's battles. What is wanted is a

trained faculty of observation and deduction. And that is often developed in a man whose sentences read almost as well backwards as forwards. Give a boy a chance to go to the college and study live stock and nothing else, if he will. He may develop into a Bakewell or a Tomkins, a Cruickshank or an Ellman; or to study horticulture and nothing else, if he will; he may become a Hugh White, whose discovery of the Clinton grape has added hundreds of thousands of dollars to the productive value of the great central valley of this continent.



Practical Work in the Biological Department.
Professor Pantton and a group of third year students at work at plant physiology.

more favorable. But if such a lad were kept all the time with his nose to the study of English or mathematics, so as to make "his pass," it would result in the complete repression of his natural faculties during his year or two of college life, and his opportunity of development in the one gift with which he was endowed would be gone forever. Educationists can commit no greater mistake than to try to make Jerseys out of Herefords.

We are glad to learn from Dr. Mills that some amendments to the college regulations have lately been introduced which make it possible for students with *predilections in certain directions* and deficiencies in others to take what courses they choose. This is good news. But the thing should be emphasized as one of the *glories of the institution*, and not merely allowed as a makeshift. The institution has facilities (that is, the *main facilities*) for the instruction of ten times the number of students it has. Students, then, of every sort should be encouraged to come to the college, and be encouraged to remain there; the only requirements being earnestness, industry, and an avowed intention to follow farming (in some

Of course when it comes to the granting of diplomas and degrees, it is a different matter. These have a conventional significance as to all-round culture which cannot be ignored. But we should certainly recommend the giving to any student who shows ability and achieves good results in any one branch or department of study or of practical work, a certificate showing this, quite irrespective of his standing or attainments in any other branch or department. This certificate will be something for him to cherish in after life. It may also have a commercial value to him of no inconsiderable importance. It would also show his parents and friends at home that he had not been idle and had not trifled with his opportunities.

From what has been said in the foregoing it will be seen that modern educationists attach but little importance to examinations, but that they do attach a very great deal of importance to the opportunities given to students for individual observation, experiment, and practice, in the several departments of their study.

INDIVIDUAL PRACTICAL WORK DONE IN EACH DEPARTMENT.

We are glad, very glad indeed, to record the

fact, that at the Ontario Agricultural College a great deal of opportunity is given for such individual observation, experiment, and practice.

For example, in the department of *live stock practice* not only, as has been said, are many specimens of pure breeds kept for observation and study; but the students are required to make their own observations upon them and draw their own conclusions; and neighboring herds and flocks are frequently visited for purposes of observation and study as well. The opportunities for useful, practical, individual work in this department are unlimited, and we are glad to know that the department is in the hands of an instructor (Mr. Day) who thoroughly believes in modern methods of teaching.

In fact, teaching in the old sense of the word, is not what is needed at all. It is carefully prepared suggestions as to study; carefully prepared and logically arranged courses of reading and observation, first mapped out before the students and afterwards thoroughly watched; carefully prepared questions to be first investigated, and then answered; and careful reading and valuating and criticising of the results of these studies and observations when expressed in writing by the students. This, indeed, is the sort of teaching which should be done in all the departments of the course; not merely in the purely scientific branches of study, but in the practical departments as well, and we are informed that it is the sort of teaching which is largely pursued.

Resuming our examination of the facilities provided at the college for individual observation and practical experiments work in the various departments of instruction, we find that in *horticulture* the students have not only the advantage of having before them specimens in actual cultivation of all the varieties of useful trees and shrubs, especially fruit-bearing ones, with gardens for small fruits, vegetables, and flowers, and conservatories, greenhouses, forcing-houses, etc.,

where every sort of horticultural operation is practically performed; but they are also required to assist in all the work of caring for and maintaining this complex cultivation. Not only so, but they are given specific lessons in the arts of slipping, potting, bedding, budding, grafting, pollination, crossing, hybridizing, mulching, manuring, transplanting, spraying, pruning, etc., and required to practice these arts for themselves, and to explain orally and in writing the scientific principles upon which these arts are based.

In *agriculture proper*, a somewhat similar course is pursued; although it seems to us that the department of agriculture, including, as it does, live stock practice also, is overweighted. The practical instruction given in agriculture, so far as it goes, is of the highest character, being the results of the experience of one of the very best practical farmers that Canada has ever produced, the present farm superintendent, Mr. Wm. Rennie. The students also, in their manual work on the farm, get familiar unconsciously with the farm superintendent's methods, and receive the benefit of his personal supervision and direction; but we should like to see the teaching side of this department strengthened, and the scien-



Practical Work in the Bacteriological Department.
Students at work with their microscopes in vegetable histology, under the direction of Mr. F. C. Harrison.

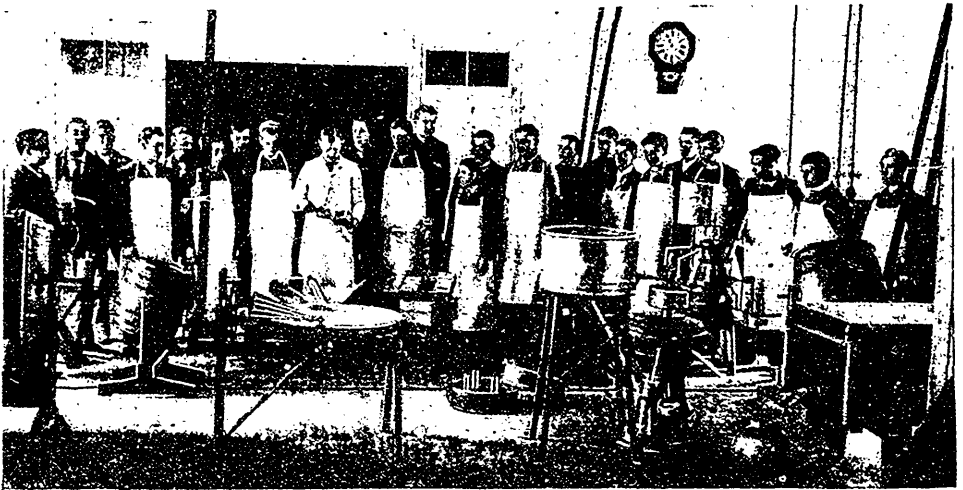
tific principles upon which the farm superintendent's methods are based more practically demonstrated than they appear to us to be.

In *veterinary science* the work is very practical in its scope and aim, and perhaps as practical as

possible in its demonstration. The college veterinarian, Dr. Reed, was brought up on a farm, and he knows exactly the sort of knowledge that would be practically useful on a farm and sticks closely to it, although his temptation to go beyond it must at times be considerable; and the practical demonstrations in the second year in veterinary pathology (that is, the treatment of disease in animals) are just what they should be. We think, however, considering the immense importance that animal husbandry has in practical agriculture, that there should be actual demonstrations and practical work done by the students in animal anatomy and physiology, and we wonder, seeing how much has been done in vegetable physiology, for example, that this has not been hitherto attempted.

the dairy school has been an immense success. It is, in one sense, merely an exemplification in *one* department of what we contend should be allowed in *every* department, namely, the pursuit, whenever desired, of special courses to the exclusion of others.

In the more scientific departments of instruction we are glad to say that the same general methods of instruction are pursued. In the departments of *biology, zoology, vegetable physiology, botany, and entomology*, Professor Panton assures us that not a single chance is let slip of giving the students practical work to do: microscopic examinations, dissections, identifications, classifications, preparations, mountings, etc., etc. Unfortunately, the course covers so wide a ground, and so much need of haste is al-



Practical Work in the Dairy School.

Professor Dean and Instructor Stratton giving a demonstration to the members of the Dairy School. The testers, separators, churns, vats, etc., used in large dairy work are seen in the foreground.

The nature of the instruction given in the *dairy department* is too well known to need anything more than passing reference here. While every possible precaution is used to base it upon a foundation of *sound scientific knowledge in the students*, there is also every pains taken to make it thoroughly practical!—not merely practical in its demonstration, but practical as to the personal experience of every student. The whole department is magnificently equipped and well manned, and is, perhaps, the most popular department in the institution.

Out of the dairy department has grown the *dairy school*, attended for two months in the year by special students who are not required to reside in the institution. Everyone knows that

ways felt because of the ever-approaching examinations, that the temptation to substitute formal lectures for well-planned courses of individual study is always present, so that it would not be a *matter for great wonder, or indeed for great complaint*, if individual practical work were somewhat perfunctorily looked after. The remedy, of course, is to provide sufficient assistance to the professor-in-charge, so that the work may always be done in the most desirable way.

In *chemistry* there is, as said before, a magnificent building provided; a model of completeness and convenience, with every facility for practical demonstration by the instructors and also for individual practical work on the part of the students. And there is a competent staff of in-

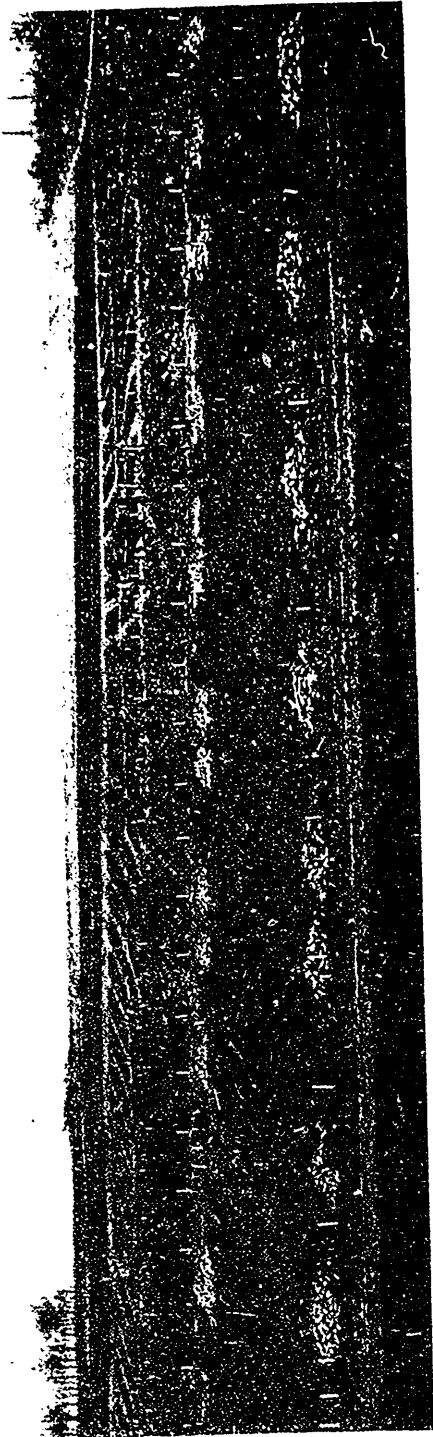
structors, who are enthusiastic and anxious to excel, and to make their department of practical value to the students and to the country, and we cannot but look for the best results.

In *bacteriology* there are an excellent demonstrating-room, laboratory, and set of apparatus; and there is an enthusiastic instructor fully impressed with the idea of developing the practical side of his work, who occupies every spare moment that he has in pursuing investigations connected with his department, the results of which, when determined, will be of great practical value to the country, thus affording to his students not only an illustration of the useful value of the science they are studying, but also the opportunity of taking part in work which will be of great educational advantage to them.

In *physics and mechanics* the instructor has constantly going forward experiments in which the students take part, tending to illustrate the laws under which the great forces of nature operate—attraction, heat, light, electricity, etc., forces to which almost all our great modern mechanical contrivances owe their usefulness, forces too, by which the great phenomena of nature, rain, snow, hail, moisture, dew, evaporation, wind, freezing, thawing, etc., etc., are produced. The students, also, are not only required to participate in these experiments, but also to institute and prosecute others for themselves. The work, therefore, in this department seems to be as individual and practical as the conditions make necessary.

A TEMPTATION AND A DANGER.

Admirable as, from a modern educationist's point of view, all this practical sort of instruction is, we know that there is a temptation always present to beset the instructor and cause him to depart from it: this is to revert to the old methods of formal lecturing and "drill," because these cover the ground faster, and secure what are apparently better results at examinations. On the other hand, there is always a danger present into which it is only too easy to fall; this is to follow (apparently so) the line of modern educational methods, but to do so in an ill-prepared, illogical, irrational fashion. This deviation from the true line of educational work is by no means an uncommon occurrence. In fact, it is so common that what we have called modern educational methods have been too often thrown into contempt by reason of it. Good teaching is never an easy process, no matter by what methods it is carried on. Let no one suppose that, because in what we have called "modern methods" the instructor appears to do but little, he does really do little. Modern methods require very careful



Ontario Agricultural College : Farm Experimental Department.
Pulling and weighing roots grown in the experimental plots.

preparation, very thoughtful criticism, very laborious work, generally, on the part of the instructor.

THE SEMINARY SYSTEM.

We have no doubt, however, but that such enthusiastic instructors as those connected with the Ontario Agricultural College will persist as they have begun; and as they have made such a good beginning in modern methods will endeavor in every possible way to carry them forward to the fullest possible extent. The substance of the modern educational method lies in the "seminary"; that is, in the *small class, working co-operatively, under thorough supervision and helpful direction, along definite lines, towards definite ends*. There is no reason why the seminary system in the Ontario Agricultural College should not be extended so as to include almost all the work done at the college. It is now used there to a considerable extent, and whenever so with the best possible results. Its extension so as to cover the whole work of the college would make the institution *wholly* what it now *almost* is, that is to say, a thoroughly modern educational establishment.

The extension of the seminary system would mean, perhaps, the providing of a few more assistants to the present staff of instructors. But, when an institution is already so magnificently equipped and manned as the Ontario Agricultural College is, it would be the veriest "penny wise and pound foolish" policy not to go a little farther and provide the slight additional service of assistance necessary to make its educational methods as really useful as they ought to be.

It would also mean a more extensive use of the library; and this is what should be. The present library, though small, is well adapted to its purpose. It is been admirably catalogued by the librarian (Mr. Harrison), but the facilities for using it, though not bad, are not by any means of the best. In this respect, perhaps, it differs little from other educational libraries in the province; but that is not to the point. A much greater use could be made of it if it were open at all hours, and could have the services of a constant attendant; and a much greater use *would* be made of it if the seminary system were made to cover the whole of the college course instead of, as now, only some portions of it.

With reference to the teaching of English we have a suggestion to offer. The great thing to be desired is the ability to express one's thoughts easily and accurately. This can be acquired only by practice, and practice, mind you, in expressing your thoughts about things that concern you. The way to get this practice in such an admirably equipped institution as the Ontario

Agricultural College, where, however, time is short and everyone is working at high pressure, is by making every class-room and seminary exercise an exercise in language-expression, and turning it over to the instructors in English as a practical essay in their department, to be dealt with by them as they would deal with an exercise of their own setting. For example, a student is given by the instructor in live-stock practice an investigation which involves when completed the description of a good beef-producing animal in general, of a good Hereford as an illustration of his theory, and of one certain Hereford in the college herd as a more particular illustration of his theory. This investigation requires individual research, reading, the looking up of authorities, the asking of questions, the making of personal observations, etc., and the arranging of the ideas suggested by all this work in an orderly description, and the setting forth of these ideas in clear, accurate language. When this work is finished it comes before the seminary, let us say, and is commented upon and criticized by the other members of the seminary, and by the instructor. It is then amended by the writer and made complete. It has now served its purpose as an exercise in live-stock work; but it has all the time been serving a purpose to the student as an exercise in language composition. But, to be to the writer the benefit it should be in this respect, it should now be passed over to the English instructor, to be dealt with by him as if it had been an exercise originally set by him.

THE WORK DONE BY THE INSTRUCTORS AT THE COLLEGE AS EXPERIMENTERS AN INSPIRATION TO THE STUDENTS.

One educational advantage of the greatest value the students of the Ontario Agricultural College have which yet remains to be mentioned. This is, that nearly all their instructors are not *merely* instructors, but are also, by virtue of their position, *experimenters*, constantly engaged in working out problems of great practical importance to the agricultural interests of the country.

For example, Prof. Dean's experiments, by which he shows that to add two units to the readings of the fat-percentage in the milk supplied to cheese factories makes a fairer basis of distribution than if the actual fat-percentages themselves are taken; Mr. Day's experiments, showing the relative values of sweet whey, sour whey, and water, for mixing with meal in feeding hogs; Mr. Harcourt's experiments to show the relative values of the different sorts of wood ashes when used as fertilizers; Mr. Harrison's experiments to ascertain the bacterial origin of "foul brood" in apiaries, and the best way of eradicating it; Mr. Hutt's experiments with

seven or eight score varieties of strawberries, all growing at once under exactly similar conditions, to discover their relative merits; Professor Pantton's experiments to discover which are the most serviceable enemies of the pestilent army worm—and how best these can be encouraged to kill the worm—all these going on under the students' eyes, watched by them, discussed by them, and criticized by them, are of the greatest educational benefit to them—a benefit none the less real because it comes to them unconsciously.

Then there is the magnificent series of experiments conducted by the College Experimentalist, Mr. Zavitz, 2,200 of them, going on at once, all bearing directly upon the practical everyday work of their farms at home—how can these, when watched, and even participated in, by the students themselves, fail to be but an inspiration of the greatest potency to careful experiment and close observation or their own parts, in their own

practical work as farmers, as soon as opportunities permit?

And, finally, there is the farm itself, under the magnificent management of its superintendent, Mr. Rennie, with his fertility-restoring, weed-destroying system of sod-reduction and shallow cultivation—a system which scientific teaching as well as practical experience shows to be the nearest akin to nature's own method of keeping up fertility that agricultural husbandry has yet hit upon—how valuable an object-lesson it must be to every student intending to follow farming as a practical pursuit it is impossible to estimate.

CONCLUSION.

Such is the Ontario Agricultural College, an educational institution magnificently equipped, enthusiastically and ably manned, and admirably conducted in every way, its ideals being intensely practical, and its methods, for the most part, thoroughly modern.

PRACTICAL NOTES.

By GEORGE HARCOURT, B.S.A.

Sunflowers with Corn for the Silo.—Many farmers have found that they could increase the feeding value of their silage by mixing the heads of an acre or so of sunflowers with their corn as they cut it and put it into the silo; but the trouble has been that it requires some time to do this and to get the sunflower heads evenly mixed through the corn. It is a busy time with the farmer when the silo is being filled, and work must be carried on as simply as possible.

Mr. T. W. Charlton, of St. George, thinks he has found a simpler way of handling sunflowers for the silo. Some years ago a wheelbarrow-load of green sunflower stalks was left standing in the farm lane; the cows found it and ate up the sunflower stalks as well as the heads. This set Mr. Charlton to experimenting with the sunflower stalks. He tried the cows in the stables in various ways with the green stalks, until he was satisfied that the cattle would eat them and seemed to relish them. His next move was to cut some of the stalks along with the corn, and put them in the silo. His cows ate the cut sunflower stalks when the silage was fed, and seemed to enjoy them quite as much as the corn silage. He saw no evil effects from feeding the cows the cut stalks.

The next year he mixed the sunflower seeds with the corn and sowed them together. The corn and the sunflowers were cut and put into the silo together in the fall, and he found nothing but good results from feeding the mixture, and he had the added advantage of a saving in the necessary labor required to handle the crop. He told other farmers of his results, and they are giving the sunflower stalks a trial.

Mr. Charlton has a large herd of purebred Helsteins; it was to them that the silage containing the sunflower stalks was fed, and the milk produced was sent to the North Brant butter factory. We hope in due time to hear from Mr. Charlton the results of another winter's feeding, as for this past season sunflower seeds were planted with all his corn, and in the fall the stalks and corn were all cut and put into the silo together.

Turnips and Winter Butter.—Many farmers still believe that turnips can be fed to cows, and yet that no taint or odor will show itself in the milk or the butter produced from such milk. There is no doubt that by careful feeding a great deal of the objectionable odor can be done away with, so that whether cows shall be fed turnips or not has become a burning question at many of our winter butter factories.

If it is the desire of our farmers to capture the English butter market with fine butter made in our factories during winter, have they any chance of doing so if their cows are allowed to eat turnips as part of their daily ration? We think not.

Quite a number of our winter butter factories have found that it will never do to allow cows to eat turnips; and, what is more, butter having a turnipy flavor is not wanted even in our own home markets, and can command at best only a second-rate price. Therefore a number of the leading winter butter factories have refused to accept milk from farmers who feed their cows turnips.

Mr. T. W. Charlton, of St. George, President of the North Brant Dairying Co., has been instrumental in having the management of his factory decide against accepting milk from cows fed on turnips. Accordingly last spring a circular letter was sent to all the patrons of the factory, notifying them that no milk would be received from anyone that fed his cows turnips. The patrons were advised to grow carrots, mangolds, or corn for the silo. The result has been a large acreage sown to mangolds, and the crop has been a very good one.

If the farmers of Ontario desire to get hold of the English market it can be done only by co-operation, all working for the one end—the farmer, by producing his milk in the very best way, free from any objectionable taint (even if he has to stop growing turnips); and the buttermaker, by making the very best article he can from the milk given him.

NOTES FROM THE AGRICULTURAL COLLEGE, GUELPH.

Students at College.—The attendance of students at the college this fall is above the average, and considerably in advance of last year. Almost every vacancy is filled.

Varieties of Mangels.—Of twenty-six varieties grown at the college for six years in succession, Evans' Improved Mammoth Sawlog, Simmers' Improved Mammoth Long Red, and Steele Bros.' Long Red Selected, have produced the largest average yield per acre.

Varieties of Carrots.—The varieties of carrots which have given the largest yields for several years in succession are Steele Bros.' Improved Short White, Bruce's Mammoth Intermediate Smooth, and Pearce's Improved Half Long. The yields of these varieties this year were respectively 29, 29, and 28.75 tons per acre.

Seed Potatoes.—In experiments conducted by Mr. Zavitz for three years in succession, cuttings from the stem end of potatoes have produced an average yield of $186\frac{1}{2}$ bushels per acre; from the seed end, $190\frac{1}{2}$ bushels; and from the side, or middle, 192 bushels—from which we infer that it does not matter much from what part of a potato seed cuttings are taken.

Annual Sale.—The annual college sale of live stock held on the 14th October was favored with fine weather and a large attendance. Prices were not high, but the average was rather above that of last year. The stock, generally speaking, was in good form, not overfed, but in thrifty breeding condition, and the purchasers obtained good value for their money.

Chemical Laboratory.—The new chemical building at the college is a great improvement on the old one. It contains a well-furnished classroom, with preparation, glass, and chemical rooms beside it; two offices, a small library, and a weighing room; and three commodious laboratories—a qualitative laboratory for first and second year students, a quantitative laboratory for third year students, and a station laboratory for analytic work in connection with the dairy and experimental departments.

Selection of Seed.—An important feature of the field experiments at the college is the selection of seed. This work has been carried on for four years with various kinds of seed. Note, for example, an experiment with carrot seed, complete about the middle of October. Four plots sown with the large seed in a package, four with the medium seed, and four with the small seed. Result: From large seed, $30\frac{1}{2}$ tons

of carrots per acre; from medium seed, $22\frac{1}{2}$ tons per acre; from small seed, $11\frac{1}{2}$ tons per acre.

Experiments in Feeding.—The experimental feeding department at the college has been conducting some interesting experiments in feeding whey to hogs. Rations: Meal and sweet whey, meal and sour whey, meal and water. Results of first experiment: A much larger gain from whey than from water; gains from sweet and sour whey practically the same. Average daily gain per hog for 55 days: Water, 1.23 lbs.; sour whey, 1.61 lbs.; and sweet whey, 1.64 lbs. Age of hogs when sold, about eight months; average live weight, $205\frac{1}{2}$ lbs. Further experiments may give different results.

Planting Potatoes.—Potatoes have been planted in the Experimental Department 1, 3, 5, and 7 inches deep for six years in succession; and, with level cultivation, the highest average yield has been obtained from five inches deep. This year, the only exception in six years (no doubt to be accounted for by frequent showers during the summer), one inch deep gave the largest crop; but it was discounted somewhat by a considerable percentage of small and sunburnt potatoes. All things considered, five inches deep, with level cultivation, has given the best results.

Lucerne as a Fodder Crop.—One-fifth of an acre of lucerne, or alfalfa, sown on the college experimental grounds in 1894, yielded four cuttings of green fodder this summer. The dates and yields were as follows: First cutting, June 1st, 10.8 tons; second cutting, July 2nd, 6.9 tons; third, August 13th, 4.1 tons; and fourth cutting, October 26th, 2 tons. This makes a total crop of 23.8 tons of green fodder per acre. The average length of plants at first cutting was 31 inches, and last cutting, 17 inches.

Plowing Match.—The annual college plowing match took place on Monday, November 9th. Thirty-one first and second year students competed. The judges, David Tolton and William Squirrell, pronounced the work of all the prizemen exceptionally good, and said that the plowing of the first two would give them a high place at a provincial match. The winners of the prize badges were as follows: 1st, P. Scott, Lambton County; 2nd, W. J. Elliott, Huron; 3rd, C. A. Marrison, Ontario County; 4th, H. P. Westgate, Lambton; 5th, M. J. McMillan, York; 6th, A. McPhadden, Glengarry; 7th, G. H. Murdock, Victoria; 8th, D. Ross, Glengarry; 9th, W. J. Price, Dufferin; 10th, W. T. Lucas, Northumberland.



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15th of the month preceding date of publication.

W. W. CHAPMAN, Representative for Great Britain and
Ireland,
Fitzalan House, Arundel St., Strand, LONDON, ENG.

CONTENTS FOR DECEMBER.

The Ontario Agricultural College (with illus- trations)	233
By President Mills.	
A Student's Personal Experience at the Ontario Agricultural College (with illustrations)	239
By Judson F. Clark, Bay View, P.E.I.	
Lime as a Fertilizer (with illustrations)	241
By R. Harcourt, B.S.A., Guelph.	
Practical Hints to the Beef-Cattle Farmer	243
By Mungo McNabb, Cowal.	

Underdraining	246
By Mungo McNabb, Cowal.	
Apple Culture	249
By A. W. Peart, B.A., Burlington.	
The Experience of a Successful Dairy Farmer (with illustrations)	251
By George Harcourt, B.S.A.	
Co-operative Dairying in British Columbia (with illustrations)	255
By J. A. Ruddick.	
Railway Discrimination, Ocean Freights, and Cold Storage (with illustrations)	257
Cold Storage for Creameries (with illustrations). 262	
By J. W. Robertson.	
A Cheap and Successful Covering for the Silo (with illustrations)	265
By William Rennie, O.A.C., Guelph.	
Corn for Fodder: Shall it be Preserved in the Silo? (with an illustration)	266
By E. Morris, Fonthill.	
The Pork Production of Canada (with illustra- tions)	268
By F. W. Fearman, Hamilton.	
Letter from Great Britain (with illustrations)	272
The Farmers' Institute Staff of Speakers and Lec- turers (with illustrations)	274
The Ontario Agricultural College as a Modern Educational Institution (with illustrations)	295
By J. E. Bryant, M.A.	
Notes from the O.A.C., Guelph	310

OUR JANUARY NUMBER.

Our January number will contain two very inter-
esting special features. One will be an account of the
work done for the farmers of Canada by the Dominion
Department of Agriculture, Ottawa. The other will
be a series of articles on "Poultry"—poultry breeds
and varieties, poultry care and management, poultry
houses, poultry diseases, poultry keepers, etc., etc.
Both these articles will be very fully illustrated. In
the Dominion Agriculture articles there will be given
a special account of the work done for the advance-
ment of dairying in Canada by Professor J. W. Rob-
ertson, Dominion Dairy Commissioner. The poultry
articles will be written especially from the farmers'
standpoint, and will alone be to any farmer worth a
good deal more than the price of Farming for a year.
We venture to say that most of our readers will pro-
nounce our January number the "finest yet."

Our Special Swine Feature.—We announced
two months ago that in our December number we
should give special attention to the swine industry.
After having made considerable preparation for doing
so we found that in order to carry out our ideas in
the matter we should need more time. Besides, our
special Ontario Agricultural College feature took so
much space that the swine feature, even if we inserted
it, would have to be much inferior to what we in-

Publisher's Desk.—Continued

tened. We, therefore, decided to postpone our special swine feature till February or March. An announcement will be made in our January number.

A Convenient Lantern.—The great candle lantern, made by the Safety Lantern Co., of Toronto, is one of the most simple, and at the same time most practical, inventions imaginable. It is a really very handy lantern.

Waterfowl.—If any of the readers of FARMING are interested in waterfowl, and will write to T. Farner Rackham, East Orange, N.J., to that effect, he will be pleased to mail gratuitously a copy of the Water Fowl Club Catalogue.

American Guernsey Cattle Club.—The annual meeting will take place on Wednesday, December 9th, 1896, at 10.30 a.m., at the Colonnade Hotel, 15th and Chestnut streets, Philadelphia, Pa. The year just closing has been a very profitable one to the club.

National Duroc-Jersey Record Association.—The fifth annual meeting of the National Duroc-Jersey Record Association will be held in the Clifton House, Chicago, January 12th, 1897. All breeders of Duroc-Jerseys, whether members or not, are cordially invited to be present.

Dehorning.—The New Champion Dehorning Clipper, made by S. S. Kimball, of 577 Craig street, Montreal, seems to be well adapted in all respects for the purpose for which it is made. It is stated that there are more of these clippers in use than of any other kind and that they work splendidly. See Mr. Kimball's advertisement.

American Aberdeen-Angus Breeders' Association.—The officers elected on November 11th for the year 1897 were as follows: President, E. S. Burwell, of Wisconsin; vice-president, M. L. Evans, of Iowa; secretary-treasurer, Thomas McFarlane, of Illinois; directors for three years, H. W. Elliott, of Missouri; E. S. Burwell, of Wisconsin; and L. McWhorter, of Illinois.

A Handsome Catalogue.—We are in receipt of the Von Culin Incubator Co.'s new catalogue, which is really a most useful and attractive book. It is simply replete with information about raising poultry for profit, either on a large or a small scale. Of course, its chief mission is to advertise the company's manufactures, but it is, at the same time, worth many times its price to anyone who keeps, or is thinking of keeping, poultry. Send five cents to The Von Culin Incubator Co., Delaware City, Del., and they will mail you a copy. It will pay you to do so.

The Canadian Geared Airmotor.—We call attention to the interesting announcement of the Ontario Wind Engine and Pump Co., of Toronto, in our advertising columns. The windmills and motors made by this company are not only of the utmost utility, but are a prime necessity on every farm of any great extent. Being well made and skilfully designed, they have given entire satisfaction, as is evidenced by the fact that while some manufacturers have been complaining of dull times this company has been compelled to increase its staff in order to keep up with the demand. There are no better machines made than theirs.

The Bell Organs and Pianos.—We do not know that we can say anything which can by any

possibility add to the fame of these well known musical instruments. It may interest our readers, however, to know that there are nearly eighty thousand Bell organs in existence; that the company have branch establishments in England, Australia, New Zealand, and South Africa, and that amongst the many purchasers of Bell instruments are to be found the names of some of the leading musicians of Europe and America, as well as of Royalty. The Bell Organ and Piano Company adopt the very best methods, both in the manufacture of their instruments and in their dealings with the public.

A Double Root Cutter.—Tolton Bros., of Guelph, deserve the thanks of all stockmen for the introduction of so valuable an implement as their No. 1 Double Root Cutter. Many attempts were made to construct a machine capable of doing the work of two single ones in both slicing and pulping roots for fodder, but Messrs. Tolton Bros. claim that until their invention appeared all such efforts proved futile. The importance of the invention in a stock-raising and feeding country can hardly be over-estimated, and the manufacturers of it fully merit the success which they have had. It is a good machine, and we would advise those of our readers who have not already got it to read Messrs. Tolton Bros.' advertisement in another column and send to them for further particulars.

Saskatchewan Buffalo Robes.—Those who were fortunate enough to visit the Northwestern prairies before the extinction of the buffalo was consummated little dreamed that anything would ever be invented to replace the genuine buffalo robe in cold climates. It seems, however, that man's necessities only are needed to quicken man's invention, and as soon as it was realized that the buffalo was really gone, what are now known as Saskatchewan Buffalo robes appeared. They seem to possess all the qualities of the genuine skin for warmth and wear, and at the same time to be lighter and more flexible, and not so liable to be affected by wet. Newlands & Co., of Galt, are to be highly commended for the introduction of so valuable an addition to the wearing fabrics of this country.

The Meetings in Guelph.—The Fat Stock Show to be held in Guelph during the second week of December promises to be a magnificent one, and the prizes offered amount to nearly \$4,000. This show has already won the reputation of being the best winter show of cattle, sheep, and swine in America. As will be seen on another page, a number of meetings will be held during the progress of the show, and these will be of more than ordinary interest. At the "Joint Meeting" to be held on Tuesday, December 8th, addresses will be given by our two Ministers of Agriculture, Messrs. Dryden and Fisher, and by others; also, a very practical paper will be read by Charles E. Thorne, Director of the Agricultural Experiment Station at Wooster, Ohio, on "The Relative Food Cost of Beef and Butter."

Keeping Sheep and Cattle Clean.—All farmers and breeders, in order to save feed and secure the greatest gain in flesh or milk yields during the winter season, should see that their sheep and cattle go into winter quarters perfectly free from vermin. A good application of "Little's Sheep and Cattle Wash" will not only kill ticks and lice, but will clean the skin, and thus promote general health—repeat at intervals in order to make sure work. No farmer can afford to be without a tin of this very valuable preparation

in his stable, especially in these hard times. Keeping your stock clean makes and saves you money. The wash can be obtained from any druggist, or from R. Wightman, Owen Sound, Ont., who is the sole agent for Canada. To secure the genuine article see that the label "Little's Sheep and Cattle Wash" is on each tin. Read Mr. Wightman's advertisement in another column.

Efficiency the Standard.—A business course in a High School or Collegiate Institute cannot be made as efficient as that of a well-arranged business college. No young man or woman wishing a thorough preparation for business can afford to take a course that is not up to the highest grade of efficiency. The Central Business College of Toronto has demonstrated its high standing in the business community by its great number of students now holding lucrative positions, and by its constantly increasing attendance. Full information regarding this excellent and modern institution may be obtained by addressing Mr. W. H. Shaw, the principal, Yonge and Gerrard streets, Toronto.

Butter, Eggs, and Poultry.—The announcement of The Wm. Davies Co., Ltd., in another column is one that should be of special interest to our patrons. The advantage of forming a direct connection with a reliable firm requiring a large quantity of butter, eggs, and poultry for their customers cannot be well over-estimated. Not only may the best prices always be obtained, but the getting of these articles to the consumers in the most direct and profitable way will be a cause of satisfaction to all parties concerned. This advertisement will answer some of the many enquiries often asked us by our friends, who are producers of these and other products required by this firm, and we trust that mutual satisfaction and profit will result from the information it affords.

Fruit Evaporation.—Mr. W. H. Barber, the Canadian manager of The G. H. Grimia Manufacturing Company, has sent us a very fine sample of evaporated apples made by Mr. W. K. Clark, of London, Ont., who has three of the company's Champion Fruit Evaporators in use. The sauce made from the sample received is most delicious, being equal in every respect to that made from fresh, ripe apples. Mr. Barber reports that all those who have purchased their machines are meeting with success, and turning out a fine quality of evaporated fruit. We understand that experiments are being made at the Experimental Farm at Ottawa with a view to ascertaining the best varieties of apples for evaporating. We hope in a later issue to be able to give our readers the result of the tests being made, and also to publish some other valuable information on this subject.

Poultry and Pet Stock Shows.—Spratt's Patent (American) Limited, of New York, as almost everyone knows, has led in the manufacture of foods for pet stock of every kind for many years. There is another branch of their business, however, which is, perhaps, not so well known, though of equally long standing. This is the fitting up and management of dog, poultry, and cat shows. Of late years this business has developed into very considerable proportions, and a show fitted up by them certainly has many advantages over other exhibitions. Their patent wire cages, benches, and pens are simply perfect, and have been used at almost all the great exhibitions in the world, including the Crystal Palace, London, and the World's Fair, Chicago. Their methods of feeding are also admirable. This year

Horse Owners Should Try

GOMBAULT'S Caustic Balsam

The GREAT FRENCH VETERINARY REMEDY

A Safe, Speedy and
POSITIVE CURE.



Prepared
exclusively
by J. E.
Gombault
ox-Veterinary
Surgeon to
the French
Government
Stud.

SUPERSEDES ALL CAUTERY OR FIRING

Impossible to produce any scar or blemish. The Safest
best BLISTER ever used. Takes the place of all liniments
for mild or severe action. Removes all Bunches
or Blemishes from Horses or Cattle.

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

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

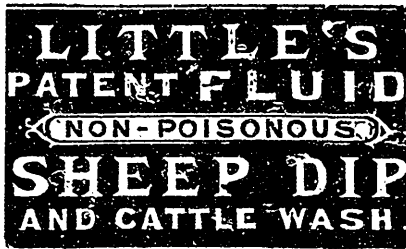
Every bottle of **Caustic Balsam** sold is **Warranted**
to give satisfaction. Price \$1.50 per bottle. Sold
by Druggists, or sent by express, charges paid, with full
directions for its use. Send for descriptive circulars,
testimonials, etc. Address

THE LAWRENCE-WILLIAMS CO. TORONTO, ONT

they are engaged to fit up Madison Square Garden, New York, Boston, Washington, and many other leading exhibitions.

Queenston Cement.—Some four or five years ago Mr. Isaac Usher and his sons, of Thorold, acquired control of the cement mills at Queenston, and began the manufacture of Queenston Cement. It is a natural rock cement made from a ledge of rock found at Queenston, Ontario. The natural rock is burned, and then ground to a powder, and in this form the cement is shipped to all parts of the country. It is especially of use in the building of cement concrete walls for stables and other buildings; silos are built of it, also road bridges, culverts, and even houses. Used instead of lime in the making of concrete, it acts as a binding agent, and makes a wall as hard as iron, thoroughly dry at all times, and frost-proof. For stable floors it cannot be excelled. It is equally as good as the best portland cement, and only half the price. Using this cement, farmers can lay up walls themselves under their barns or other places at less than half the cost of stone walls. FARMING can vouch for the good quality of Queenston Cement. Mr. Usher spends the whole of his time among the farmers, showing them how to use the cement. Personal instruction is given every farmer who uses the cement. In consequence of this attention the output of the mills has been constantly increasing. It reached three hundred barrels a day during the past season. This winter, to meet the growing demands of the business, the capacity of the works will be increased to five hundred barrels per day. FARMING would bespeak for the Queenston Cement the patronage of its readers. Investigate its claims before you build.

TO STOCKMEN AND BREEDERS



For the destruction of Ticks, Lice, Mange, and all Insects upon Sheep, Horses, Cattle, Pigs, Dogs, etc.
Superior to Carbolic Acid for Ulcers, Wounds, Sores, etc.
Removes Scurf, Roughness and Irritation of the Skin, making the coat soft, glossy, and healthy.

The following letters from the Hon. John Dryden, Minister of Agriculture, and other prominent stockmen, should be read and carefully noted by all persons interested in Live Stock:

"MAPLE SHADE" HERDS AND FLOCKS.

BROOKLIN, ONT., Sept. 4th, 1890.

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

JOHN DRYDEN.

17 Gold, Silver, and other Prize Medals have been awarded to "Little's Patent Fluid Dip" in all parts of the world. Sold in Large Tins at \$1.00.

Special terms to Breeders, Ranchmen, and others, requiring large quantities. Ask your nearest druggist to obtain it for you; or write for it, with pamphlets, etc., to

ROBERT WIGHTMAN, Druggist, Owen Sound.

700

Sole Agent for the Dominion.

Stock Notes.

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

WHITESIDE BROS., Innerkip, report the sale of the bull calf Ambassador to John Cochran, Hills Green, Ont.

MR. J. G. CLARK, of Woodroffe Dairy and Stock Farm, Ottawa, writes to say that he has disposed of all his Yorkshire swine, except those which he has reserved for breeding purposes.

B. H. BULL & SON, Brampton, report sale of Ollie Boy of Brampton to Mr. Dent, of Woodstock. This calf, only eight months old, won first place at London, and second at Toronto.

R. H. HARDING, Thorndale, reports the sale of three Dorset lambs to John Cornish, Orchard, and a Chester White boar that won a third prize at London to Wm. Wright, Glanworth.

W. T. ELLIOTT, Hamilton, reports sale of a boar, first at Toronto, to Jm. Stewart, Ida; one boar, third at London, to John Brackenridge, Notwood; one boar, first at Toronto and second at London, to J. A. Myles, Thornbury; two boar pigs to John Bell, Amber; and two sows, under six months, to J. C. Nicol, Hubrey.

MR. H. I. ELLIOTT, of Danville, Que., writes: "I have decided not to exhibit my stock next year, and will dispose of any of my stock, including prize-winners of this year and preceding years, at reasonable prices. I have several young heifers and bull calves coming on, which should make their mark at next year's fairs."

HARD TO BEAT.—MR. W. J. BIGGINS, of Elmhurst Farm, Clinton, Ont., is particularly well pleased with his thoroughbred Shorthorn bull (imported), Royal Don (64717). He is proving himself an exceptionally good getter, and is the sire of seven bulls and two heifer calves, now in Mr. Biggins' herd, which it would be hard to beat.

MR. JAMES BODEN, of Tredonock Farm, St. Anne de Bellevue, Que., writes: "We have got all our cattle in their winter quarters. The young stock have come in in splendid condition, and the dairy cows are milking fine. Hay is going to be short, but as we have a good full silo, over 175 tons of roots, and plenty of straw, there is no danger of a famine."

SOME FINE AYRSHIRES.—MR. F. W. TAYLOR, of Wellman's Corners, announces that, owing to scarcity of room, he will dispose of some of his choicest stock at very low prices. He has a number of very fine young bulls, some spring calves, and a few good cows, which can be purchased at bargain prices at any time during this month. See his advertisement.

MR. GEO. HEATHERBELL, Hornby Island, B.C., writes regarding ram and two ewes purchased from John Campbell, Fairview Farm, Woodville, Ont.: "I had them at two shows, where they got great praise, and won everything entered for." British Columbia has lately made another call on the Fairview flock, and a capital ram lamb, brother to the well-known show ram, Chancellor 53078, goes west.

MR. THOMAS GUY, of Oshawa, reports that he has on hand some eight young bulls, and several heifers of the deepest milking strains of Ayrshires and prize-winning stock, which he will be willing to dispose of at very low prices. His herd is too well known as prize-winners to require any comment from us. All we can say is that it is amongst the best in America, and that is what nearly everyone knows already.

MR. A. C. HALLMAN, of New Dundee, writes: "My Holstein-Friesians are in splendid shape. I have a very superior lot of heifers and young bulls to select from, the breeding of which is unsurpassed. In Tamworths my herd is complete. A very large herd to select from, of all ages, and both sexes. A visit during the holiday season, when railway rates are low, will repay anybody wanting stock of merit and high breeding."

T. A. COX, Brantford, reports the sale of a yearling sow, third at London, to A. D. Anderson, Wyoming; one boar, under six months, to Charles K. Brown, Bridgen; one boar, under six months, to Charles Rielly, Goldboro; first prize boar, under six months, to John H. Smith, Strathburn; one young boar to Andrew Small, Jr., Mount Brydges; a boar, under six months, to O. B. Sheppard, Toronto; and an eight months old sow to G. Hyde, Shakespeare.

AYRSHIRES.—MR. JOHN H. DOUGLAS, of Warkworth, writes: "My Ayrshires are doing exceptionally well, and lots of enquiry from Ontario and Manitoba for Ayrshires. The people are beginning to wake up to the necessity of having first-class dairy animals, and the Ayrshire seems to meet the popular demand among dairymen. I have just shipped two head, a bull and heifer, to Brandon, Manitoba, and if we could get fair freight rates we would soon open up a profitable trade with that great country."

MR. THOMAS DAVIDSON, of Spring Valley, Ont., says: "Our Holsteins have come into the stable in good shape after a good season's work. We have increased our herd by six nice heifer calves this year, and have two nice young bulls, one dropped August 29th, and the other November 20th. They are good size and nicely marked, and have breeding enough to head a herd of purebreds. Our imported bull, Catholene 5th's Sir Aggie Clothilde, has grown to be a fine big fellow for his age. His calves are coming fine and strong."

MR. JOHN DAVIDSON, of Ashburn, writes: "I have some very fine bull calves and one yearling bull, which are deserving of more than passing notice. They are, in fact, particularly good in every respect, with fine mossy coats, deep bodies, well developed, of good color, and of the very best breeding. Anyone in want of first-class Shorthorn stock will do well to see these before making a choice. We know that Mr. Davidson is not one of those who would exaggerate the merits of his stock, and are pleased to have this opportunity of bringing them to the notice of our readers."

A PRIZE WINNER.—The noted Berkshire boar, Berkshire Pride, bred by T. A. Cox, of Brantford, now owned by J. Y. Wilkinson, of Chilliwack, B.C., heads his herd, and has swept everything in British Columbia as an aged boar. At the Westminster Royal he won first in his class and sweepstakes of his breed; also the silver cup for the best pig, any age or breed. He was in competition with quite a number of imported stock. Berkshire Pride is two years old, weighs 800 pounds, possesses great length, and is considered by his owners a perfect animal in every respect. His sire was Bright Prince; dam, Inglewood Belle. The success he has obtained speaks well for the Golden Link herd of Berkshires owned by Mr. T. A. Cox.

MORGAN & MUXLOW, Cherry Grove Stock Farm, Kerwood, Ont., write: "Our cattle are in fine condition. We have four very excellent young bull calves, come this month. They are the best we ever had. Sired by a young Aberdeen bull, bred by John Miller, of Markham. They are from some of the best cows we ever had: such as Fanny, by imp. Fanny, sired by Gravesend's Heir; imp., and Queen, by Fair Queen 2nd, by imp. Statesman. This young bull seems to mate our cows right. They are massive and grand. We have also four choice young Indian Chiefs of similar breeding for sale. We have been holding for high prices, as the quality demands it; but we will sell to suit the times. We shall be pleased to show our stock at any time."

A PURCHASING TRIP TO SCOTLAND.—Mr. James Boden, of Tredonock Farm, St. Anne de Bellevue, Que., intends going to Scotland about the end of December to purchase some choice new stock for his herd of Ayrshires. He would be glad to correspond with anyone who contemplates visiting the old country for a like purpose. Arrangements might be made for two or more such persons to ship their cattle together and thus save expense in their care and management in transit. Mr. Boden would take full charge of the shipment and landing in quarantine, which would considerably reduce the expense and trouble to all parties. His experience would also be of great benefit to any other shippers who might join him. Anyone wishing to take advantage of this opportunity should write to Mr. Boden at once.

MR. JOHN CAMPBELL, of Woodville, writes: "Mr. C. E. White, Burton, Ohio, reports having had great success at seven state and other leading fairs with a show lot of Shropshires bought from me last August. Thirty-three first premiums and two seconds, the latter following where the firsts also were won, and only two firsts were missed throughout. At North Carolina State Fair all the firsts for shearing ram, one and two shear ewes, special for ram and three ewes, and diploma for best flock of any breed were secured. At Virginia State Fair the Fairview Shropshires won all the firsts competed for, and sweepstakes for ram and ewe with all the breeds competing, where imported sheep, Oxords, Hampshires, Cotswolds, and Canadian-bred Southdowns, all in high fit, were in the ring."

SHIRE HORSES IN ENGLAND.—The prices brought by Shire horses in England seem to be away above anything we hear of here in Canada. At the Tutton Shire horse sale, held Oct. 30th, Lord Egerton's horses sold as follows: 73 brood mares for \$13,640, or an average of \$1,850; 5 three-year-old fillies for \$1,645, or an average of \$329; 8 two-year-old fillies for \$6,290, or an average of \$786; 10 one-year-old fillies for \$6,450, or an average of \$645; 4 foal fillies for \$590, or an average of \$147.50. That is, 40 animals brought an average of \$725. Nyn Starlight, born 1892, sired by Bury Victor Chief, a well-known prize-winning mare, brought \$1,250. The sale was attended by all the leading Shire breeders in England, and by many leading shipping agents, among whom was Mr. W. W. Chapman, of Fitzalan House, Arundel Street, Strand, London, whose advertisement will be found in our columns.

JOSEPH YUILL & SONS' sales for last month were very considerable. The following is a list of them: Tam O'Shanter, to F. Smith, Westmeath; Roy Meadows, to J. H. Taylor, Kecul; Lady Stanley Meadows and Edith Stanley Meadows, to H. Kelso, Chapleau; Leonard Meadows, first-prize winner at Chicago in '93, at Gananoque and Ottawa in '95, sweepstakes in Ottawa and head of the gold medal herd in Almonte in '96, to A. Bennett, Renfrew; Mabel and Meadows, to Hon. W. Owens, Montreal; Seth Meadows, to Dennis Hurley, Vankleek Hill. Mr. Yuill writes: "Our herd of ninety-eight head of registered Ayrshires are now in their winter quarters, and are surpassing the butter record of past years. Our Shropshires are also doing well. We have added a stock ram from Mr. Hanmer's flock. Our Berkshires are now enjoying their new home, which we finished last week. The walls and partitions of this building are thick, and the floors of cement."

RECENT IMPORTATIONS.—The recent importations of Improved Berkshires made by Mr. S. Coxworth, of Whitby, consisted of five head. They were carefully chosen from among the prize-winners of England. This fresh addition to his herd,

Hops.

In hop culture the margin of profit is now very narrow. Those growers who treat their hop fields to liberal doses of fertilizers containing not under 8% actual

Potash

find themselves on the profitable side. Improved quantity and quality always result.

All about Potash—the results of its use by actual experiment on the best farms in the United States—is told in a little book which we publish and will gladly mail free to any farmer in America who will write for it.

GERMAN KALI WORKS,
93 Nassau St., New York.

Ingleside Herefords . .

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

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

Young Bulls for Sale.

Farm 2 1/4 miles **H. D. SMITH, Ingleside Farm,**
G.T.R. station. 536 **Cempton, Que.**

GUERNSEYS.

ALVA FARM GUERNSEYS



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

PUREST AND BEST

Windsor Salt

Is the only salt manufactured by the Vacuum Process in Canada, and is much superior to any imported Vacuum Process Salt.

Table Salt Dairy Salt Cheese Salt

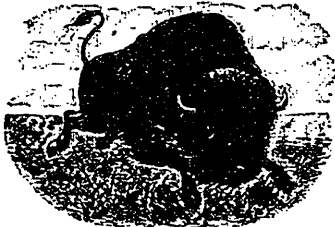
Made by a patent process solely in use at the Windsor Salt Company's plant. Each package containing these grades is marked with our trade mark.

Best quality ordinary fine salt for general purposes

WINDSOR SALT CO., LTD.
Windsor, Ont.

Gaskatchewan Buffalo Robes

Received the highest award at the World's Fair.
Have had seven years' experience in Canada.



THEY are in general use by Liverymen, Doctors, Farmers, and hundreds of others, from one end of the Dominion to the other, and one and all say that they are the coming Robe, now that the Buffalo has gone never to return, and the verdict to-day of thousands is that seven years of rough general usage does not injure any more than it would have done the old buffalo skin.

We guarantee every robe to be absolutely wind, water and moth proof, and will not wear bare in spots like a skin robe. They will dry quicker and never get hard, are as strong as leather and far more durable and warmer than any cheap fur robe.

The robe is made in three parts—the Fur Cloth, the Astrachan Lining, and Rubber Interlining. All these parts are without seams.

The increased sale of these robes are the best evidence of their popularity. None genuine unless bearing our trade mark. For sale in all towns and villages in Canada.

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GALT, ONT.

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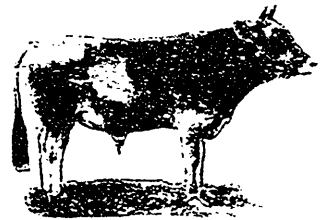
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20 Bay Street, Toronto.

Stock Notes—(Continued).

which consists of seventy-five head, of which twenty are brood sows, will no doubt enable Mr. Coxworth to make advancement along the successful road which he has been already travelling as a breeder. The boar, Manor Hero—(5140)—4117—, is one that is sure to be of great benefit to this or any other herd when he is used. He was exhibited at six leading shows in England in 1895, and was never beaten. Highclere 20th (5409)—4522—was bred by Edney Hayter, Esq., Whitchurch, Hants, Eng., who was also breeder of the champion sow in England, which was sold for eighty-three guineas. Highclere 20th is of the same family as the champion. A portrait from life of this beautiful sow will appear in FARMING in a subsequent issue. Three of the importation were young females; they do credit to Mr. Coxworth's judgment as to the proper kind to import. These were selected with a view to mating them with some of the fine stock-getters of his herd; in which at present General Jackson—3041—, a grandson of the noted Highclere Prince—2017—, holds an honored place.

JAMES S. SMITH, Maple Lodge, writes: "We have something very attractive in young bulls this year. Most of them were out in the fields all through the summer until September, and since taking them into the stables they have done remarkably well. They have an abundance of nice soft hair, and are covering well with good mellow flesh. They are of the right kind for beef, and mostly from splendid milking dams. The dam of our young stock bull, Caithness, produced, a few weeks ago, a grand bull calf, by British Flag, and her milking qualities are not, in our estimation, any detraction from the valuable points in Caithness. She has succeeded in giving us from twenty to twenty-five pounds of milk per day, after the calf gets all he will take. Some of the young bulls are by Caithness, and are no discredit to him. We have used him very largely on our herd at Maple Lodge this year, and hope through him to strengthen the already good milking qualities which we claim for our cows; and his calves are like himself—very thick, stylish fellows, on short legs. Our sheep have been doing very nicely during the fall, and are in good shape for winter. We have sold the rams we had for sale except two, but we have a few very nice ewes and ewe lambs we could spare yet."

MR. ARTHUR JOHNSTON, of Greenwood, Ont., writes: "Better than ever! Cheaper than ever! That is, we have one of the best—probably the very best—lot of young bulls we have ever bred or imported. They are healthy, sappy, thriving big fellows, and in the finest form—not by any means fat, but just what we say—in the very finest form to do our customers most good. They are not only good and cheap, but they are also numerous—seventeen fit for service at present writing (Nov. 20th, 1896). They range in ages from ten months up to over two years old. Glo'ster, the white Duchess of Glo'ster bull, now about eighteen months old, is the very best white bull we have ever bred. He is like winning in any company—a great thick, massive fellow, on short, well-set legs, and covered with the best of evenly laid on flesh—an Aberdonian of the rarest stamp and quality, as well as breeding. The roan Cruickshank lovely two-year-old bull, Indian Monarch, has developed into a show bull in any land. He is a great lengthy fellow, and in the most beautiful form. The yearlings are reds, roans, and one red and white one—all big and good. Our yearling heifers are particularly good, and in lighter flesh than the bulls. We have three better than we have ever owned before. We are fitting them for next year's shows. They will be in the list whoever competes—not at the last of it, either."

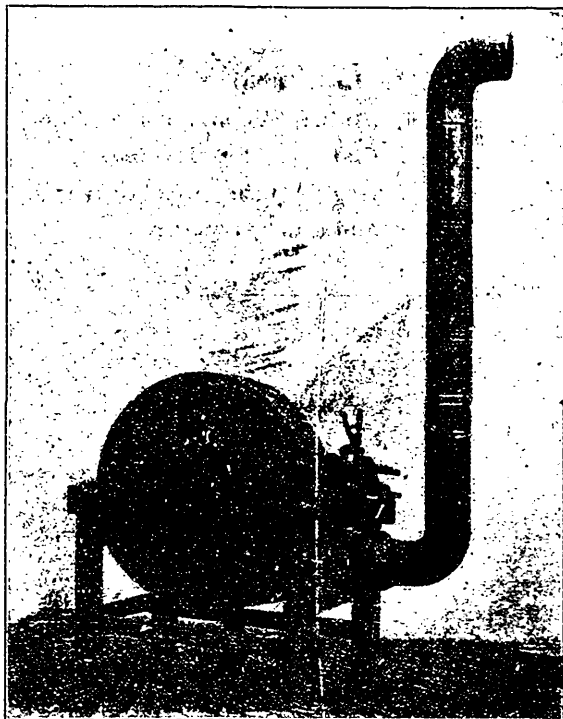


Dora's Hugo of St. Anne's. 1st prize, Ottawa, 1895 and 1896; 1st prize, Montreal, 1895.

FOR SALE. Five yearling bulls, almost full brothers to the above, all pure St. Lamberts, grand individuals, Victor Hugo-Stoke Pegis strain. Prices, \$40 to \$60, if taken soon. Write at once and get your pick.

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FARMERS OF CANADA

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Our prices are made to suit the times. If our prices are not lower than any other, for the same line of goods, pass us by.

FEED CUTTERS from \$ 5.00 up

ROOT PULPERS " 10.00 up

GRAIN GRINDERS " 20.00 up

Watson's Pneumatic Feed Elevator is the greatest improvement of the day. At a test on the farm of Mr. Andrew Elliot, near Galt, it cut a weighed ton of Green Corn in $4\frac{1}{2}$ minutes, and delivered same into his 200 ton silo through pipe.

Write for Catalogue, mailed free, fully describing this and all other machines.

John Watson Man'g Co.,
Ayr, Ontario, Canada.

The Thirteenth Annual Ontario Provincial FAT STOCK AND DAIRY SHOW

Will be held in the City of Guelph on

December 8th, 9th, and 10th, 1896

Under the Auspices of the Dominion Cattle, Sheep, and Swine Breeders' Associations, the Dairymen's Associations of Eastern and Western Ontario, the City of Guelph and the Ontario Agricultural College.

NOTICE

The following Public Meetings will be held in the City Hall, Guelph, to which all are invited:—

The Annual Meeting of the Dominion Cattle Breeders' Association, on Monday, December 7th, at 7.30 p.m.

A Joint Public Meeting on Tuesday, December 8th, at 7.30 p.m. Notable speakers will address the audience.

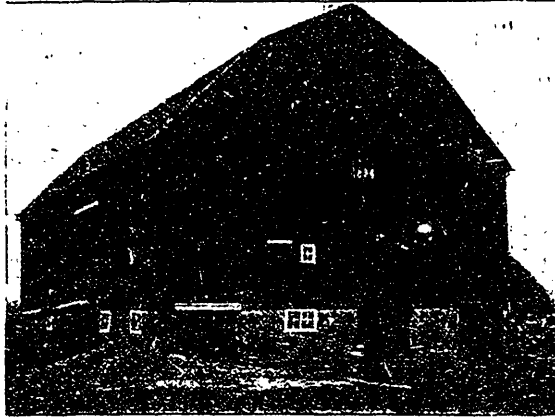
The Annual Meeting of the Dominion Sheep Breeders' Association, on Wednesday, December 9th, at 7.30 p.m.

The Annual Meeting of the Dominion Swine Breeders' Association, on Thursday, December 10th, at 7.30 p.m.

F. W. HODSON, Secretary of Association.

Queenston = Cement

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



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

Read Mr. Brown's Testimonial . . .

Brownsville, Jan. 3rd, 1896.

ISAAC USHER & SONS:

GENTLEMEN,—In answer to your enquiry in reference to your Cement, I am glad to say it has proved in every way satisfactory. As you know my barns were struck by lightning on May 10th, 1894, and entirely consumed. I then built a new barn, 50 x 80ft., using your Queenston Cement in my concrete walls. The foundations were 2ft. deep and 1ft. 8in. in width; then I built on that the walls 7ft. high (the walls were 16 inches thick), set on the center of foundation, finishing rain. thick on top to receive sills 20in. square (the joists were laid on the top of sills), making walls for my stables 7ft. 10in. in the clear. The outside face of walls were plumb; the inside face of walls were battering 4 in. We used, in the foundation and walls, 90 barrels of your Cement. I superintended the construction of the walls personally. I had in my employ four men. We were ten days in building the 9 feet of wall. We commenced to build on the 18th of June, and finished walls on the 28th. We raised the barn on the 6th of July; a very heavy frame of hardwood timber; posts 10ft. long (hipped roof). On the 15th of July we commenced hauling in hay, and then grain as fast as we could harvest it until I had at least 200 tons in the barn. The walls stood this great pressure; there is not the least crack anywhere. I believe I have as good and perfect a wall as it is possible to build, and I am sure it will stand for generations. In October I put in my floor all over the barn, all for cattle manure drops, stalls, etc. In this I used 76 barrels of your Cement, and as a comparative test I used one barrel of Portland Cement. The floors have been in daily use over a year, and I have never been able to see any difference between the Queenston Cement and the Portland Cement. I consider I have a perfect floor, that will last more than a lifetime, and at a much less cost than plank. No liquid manure is lost, and stables can be kept clean and sweet with less than half the labor with plank floors.

We have this year built another barn of the following dimensions: 32 x 56, 9ft. walls from bottom of foundations, with lighter walls 12 inches thick at ground line and 20 inches under the sills, which I consider strong enough for any ordinary barn. We used in this structure 50 barrels of your Queenston Cement; and I am satisfied that when your instructions are carried out, one will have perfect work every time.

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

Very truly yours,

E. B. BROWN.

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

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

For prices of cement and other particulars apply

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FURS! FURS! FURS!

Why pay two prices for Fur Coats, Mantles and Robes when you can get them at first cost and of best quality?

NOTE OUR PRICES:

- MEN'S GREY GOAT COATS, \$11.00. This is a heavy, first-class wearing coat.
 MEN'S NATURAL DOG SKIN COATS, \$13.50. This is a great seller to farmers for leaming, etc.
 MEN'S CORSICAN LAMB (a Black Curly Coat), \$17.00. This coat is usually retailed at \$20.00 to \$25.00.
 GREY GOAT ROBES, 42 x 66, \$5.50; 52 x 66, \$6.75.
 SASKATCHEWAN BUFFALO ROBES, 54 x 62, \$7.00.

For other Coats, Robes, etc., see our Catalogue sent to every farmer on application. We make a speciality of

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THE PEOPLE'S WHOLESALE SUPPLY COMPANY,

R. Y. MANNING,
 Manager.

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Red Tamworths and Ayrshires

A fine lot of in-calf Ayrshire Heifers and eight young bulls, 6 to 18 months old, also about 50 head of Registered Tamworths. A grand lot. Write us now and get a bargain. Prices away down.

CALDWELL BROS.,
 Briery Bank Farm, Orchard, Ont.

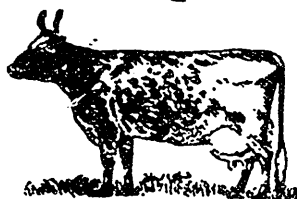
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ESTABLISHED 1854.

Fifteen excellent young Shorthorn Bulls, and a few choice Leicesters for sale just now.

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Keep Milch Cows In Good Health



IT PAYS.—It is useless to expect a lean, run-down cow to have a good flow of milk, though she will eat more than an animal in good flesh. The difficulty is the nutriment is not all extracted from the food because her digestion is out of order.

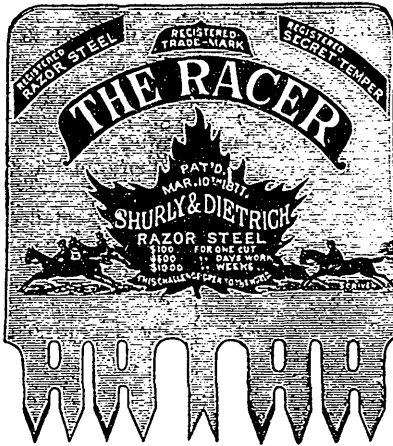
Dick's Blood Purifier

will strengthen the digestion and make the food produce milk. It will cost but fifty cents to try it on the poorest cow you have and you will get back your money with interest in a few weeks.

For sale by Druggists, at general stores or sent post paid on receipt of 50 cts.
 Dick & Co., P. O. Box 482, Montreal.



**THE RAZOR STEEL, SECRET TEMPER,
..... CROSS-CUT SAW.**



WE take pleasure in offering to the public a saw manufactured of the finest quality of steel and a temper which toughens and refines the steel, gives a keener cutting edge and holds it longer than by any process known. A Saw to cut fast "must hold a keen cutting edge."

This secret process of temper is known and used only by ourselves.

These saws are elliptic ground thin back, requiring less set than any saws now made, perfect taper from tooth to back.

Now, we ask you, when you go to buy a saw, to ask for the Maple Leaf, Razor Steel, Secret Temper Saw, and if you are told that some other saw is as good, ask your merchant to let you take them both home, and try them and keep the one you like best.

Silver steel is no longer a guarantee of quality, as some of the poorest steel made is now branded silver steel. We have the sole right for the "Razor Steel" brand.

It does not pay to buy a saw for one dollar less, and lose 25 cents per day in labor. Your saw must hold a keen edge to do a large day's work.

Thousands of these saws are shipped to the United States and sold at a higher price than the best American saws.

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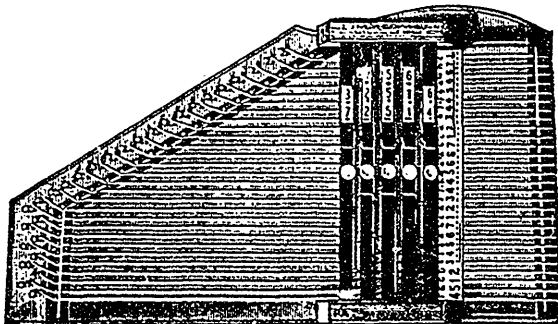
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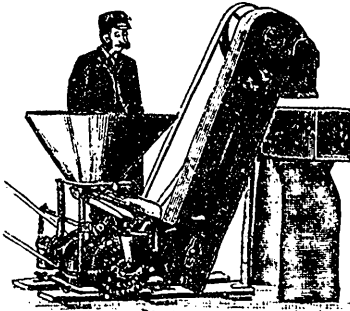
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First Prizes at Canadian Expositions.



OUR LITTLE CHAMPION GRINDER

run by horse power, especially for farmers' use.

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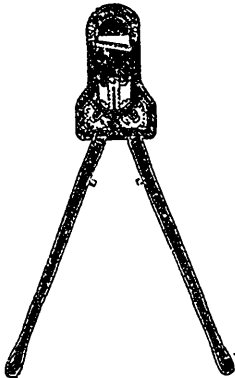
for mills, grind twenty to sixty bushels per hour as fine as desired. Always guaranteed.

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

We also furnish an improved Corn and Cob Crusher.

Send for circular. Information cheerfully given.

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NEW—

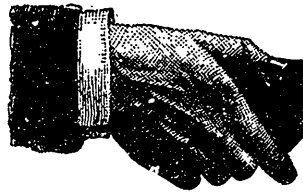
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Dr. Hess' Stock Food is a reliable tonic and flesh producer; it expels worms and cleanses the blood. Dr. Hess' Poultry Pan-a-co-a cures diseases in poultry and makes hens lay; it is not a stimulant, but a reliable tonic. Instant Louse Killer kills lice on all kinds of stock and poultry, fleas on dogs, ticks on sheep; it is a deodorizer and disinfectant, put up in round can, perforated top. These goods were tested at the Toronto Exhibition and awarded the medal; also were awarded the medal at London in '96. Sold by dealers generally, or address,

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Aged Heavy Draught Mares

These mares 1600 to 1800 lbs. Good bone, well-bred, and most suitable to work a farm and breed from.

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Having no further use in my herd for this valuable bull, he is **For Sale**. A chance worth looking after. Full particulars by addressing

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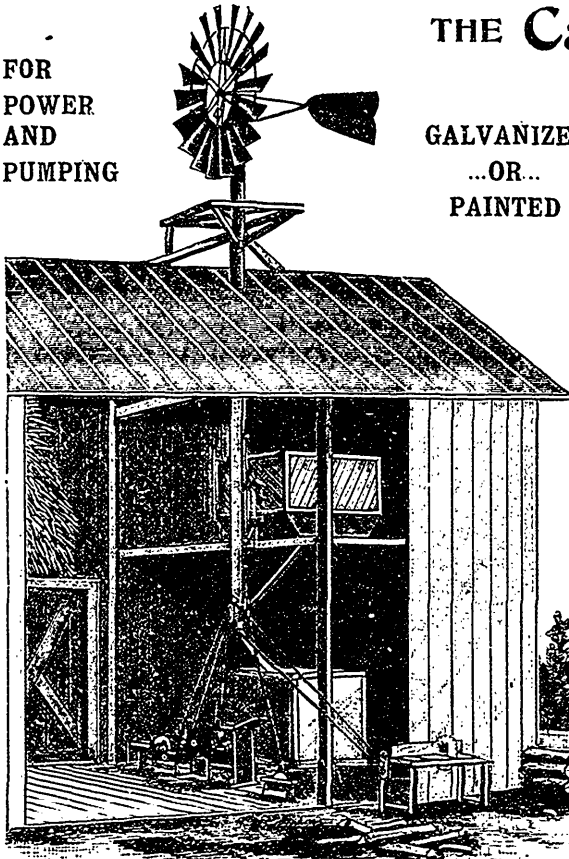
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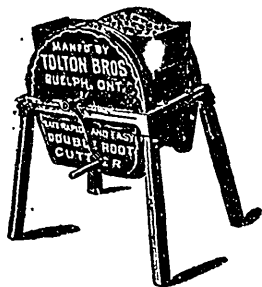
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Patented September 6th, 1894.

Is the favorite among all Pulpers, having won all the first prizes last year; also captivated the hearts of all the stockmen who have used or seen it. It is a money winner to all concerned and a saver of time and labor to the operator, and one which sets at sight after a careful inspection, as it will either pulp coarse or fine, or slice by simply turning over the centre grate and turning crank the reverse way; and is considered in either capacity superior to any single machines.

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- 1st.—To change from pulping to slicing is but the work of a moment, which can be done at the one feeding, with no loss of time and no trouble.
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- 5th.—Hence the Latest and Best, and, what has been long looked for, a safe, rapid and easy Double Root Cutter.

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High-grade Bone Fertilizers furnish the cheapest and best plant food known. Freeman's Fertilizers furnish just the plant foods needed; they are of the right kinds for each stage of growth, so that there is rapid and healthy growth from germination to maturity.

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You can restore the fertility and productiveness of your soil easier, cheaper, quicker, and more lastingly by a liberal use of our high-grade bone fertilizers than by any other known means.

Sixty per cent. more clean and smooth potatoes.

"Used your Potato Manure on potatoes at the rate of about 500 pounds per acre, which were planted on ground that had been sown to oats without manure the year previous, getting at least sixty per cent. more potatoes than where none was used.

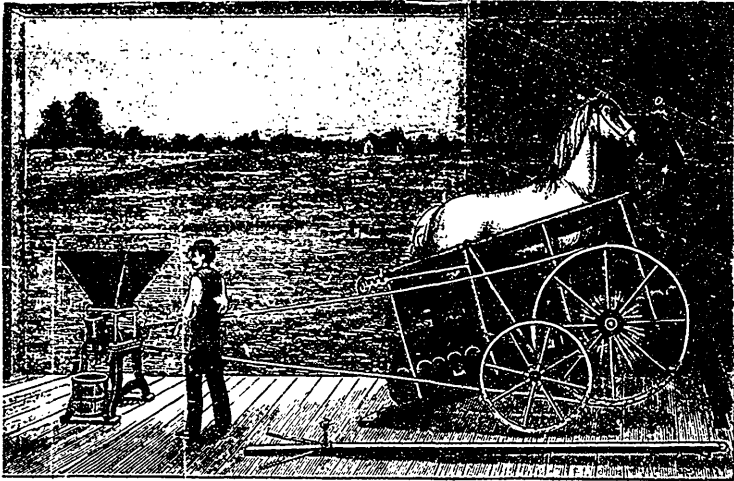
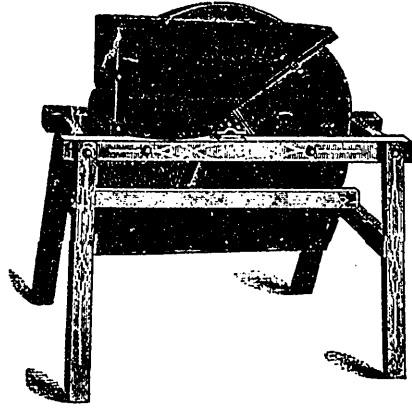
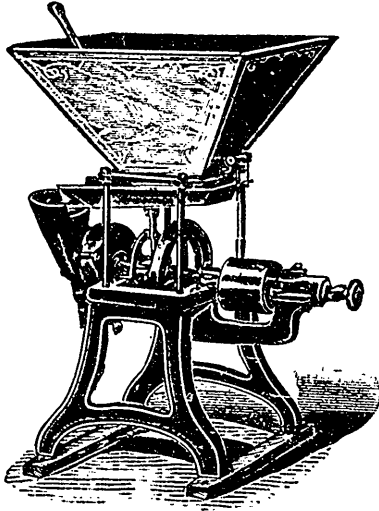
"Also used it alongside of stable manure, using about thirty dollars' worth per acre, and about ten dollars' worth of Freeman's Potato Manure per acre, the yield being about the same, but there was a wide difference in quality. Where Potato Manure was used the potatoes were clean and smooth; where stable manure was used they were very scabby.

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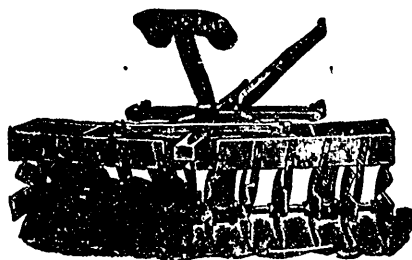


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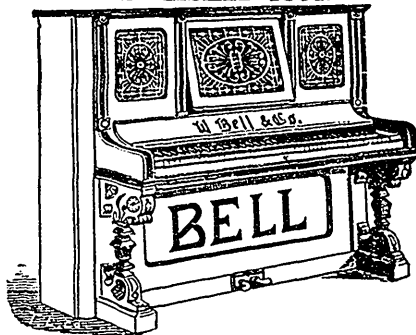
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We do not build a second-grade. Only high-grade ploughs, of the best material and workmanship.

We protect the farmer by casting our name and address in full on every head, sole plate, and point.

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