

MARCH 11, 1920

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THE FARMER'S ADVOCATE

AND HOME MAGAZINE

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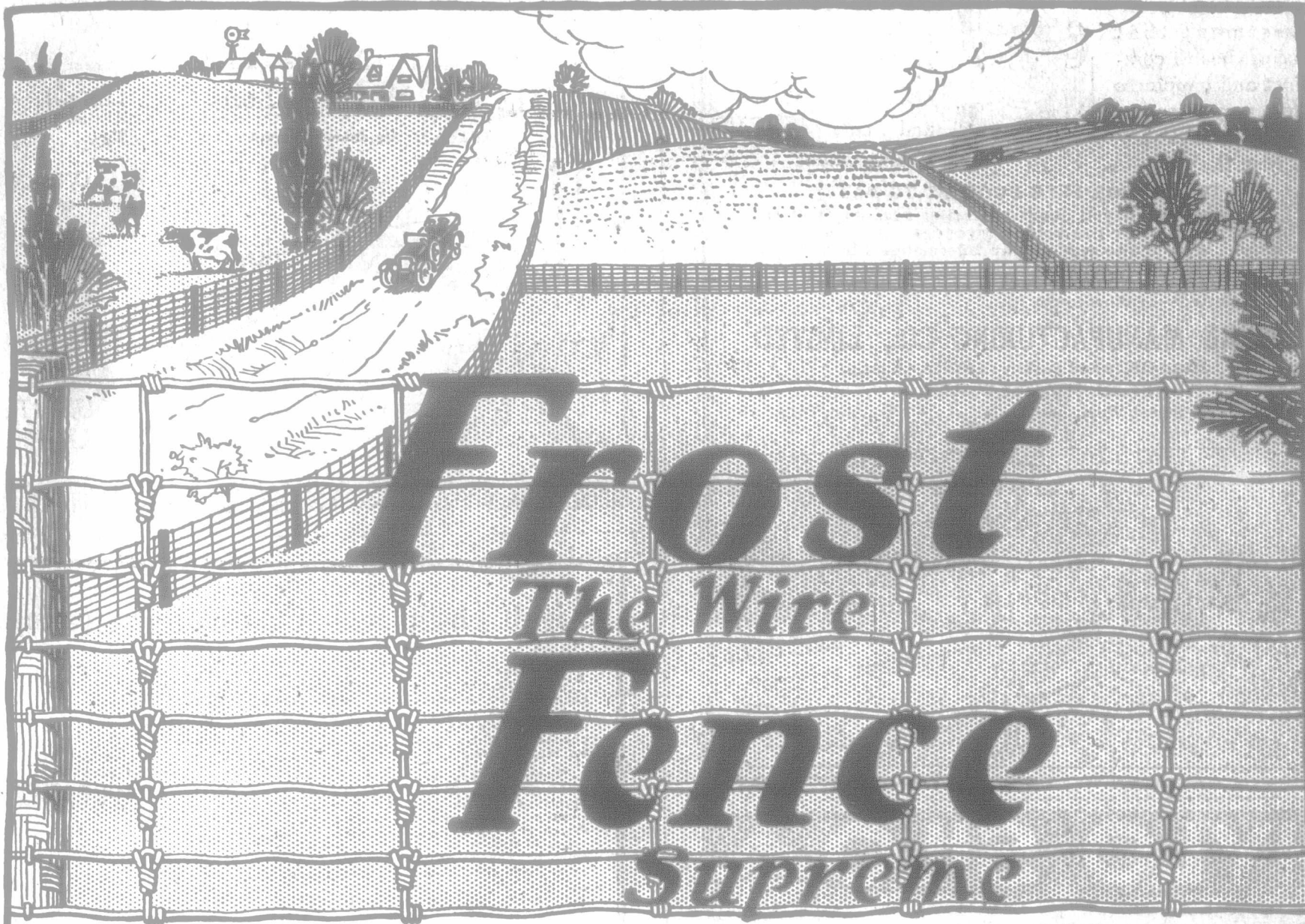
Dairy and Gold Storage Com-
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Dept. of Agriculture
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L.V.

LONDON, ONTARIO, MARCH 11, 1920.

No. 1433



Frost

The Wire

Fence

Supreme

Consider the time required to build a fence; consider the peace of mind you have in knowing that your stock is not tearing your fence to pieces; consider the pride you will have in knowing that you "have done the job right." Is it not worth while putting up a Frost Wire Fence?

Frost Fence is woven from full gauge and well galvanized No. 9 hard wire. The Frost Tight-Lock is unsurpassed and gives service year in year out. All styles combine strength and neat appearance. Try out Frost Fence for your own satisfaction.



Frost Steel and Wire Co., Limited, Hamilton, Canada

Manufacturers of Galvanized and Bright Wire, Hay Wire and Bale Ties, Woven Wire, Farm and Ornamental Fence, Galvanized Gates, Manufacturers' Wire Supplies.

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Drink Pure Water

—not from a wooden storage tank, but direct from the well, spring or cistern—by means of an Empire Water Supply System.

Just turn a faucet—saves all carrying. Also saves your time and strength. The progressive farmer looks upon the

Empire WATER SUPPLY System

as a sensible investment that brings health, comfort and happiness to every member of the family every day in the year.



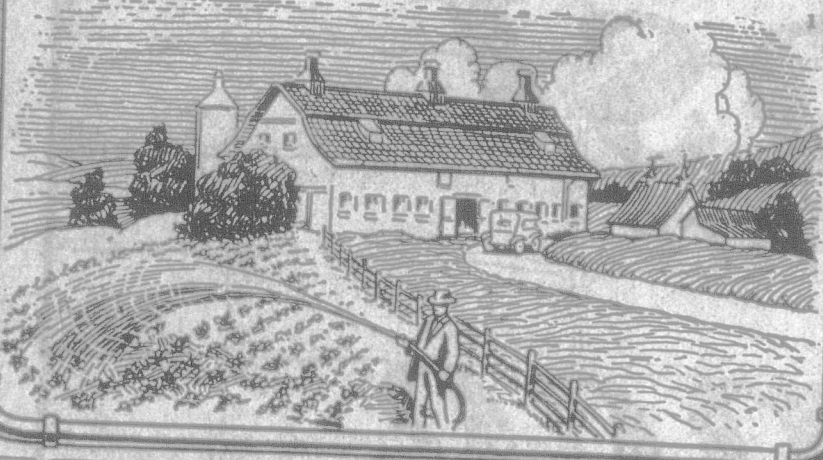
Fresh Water—and plenty of it—also improves the health of live stock and cuts down feeding costs.

WRITE FOR FREE BOOKLET TO-DAY

We want to tell you about the many advantages of the Empire System. Our free booklet gives descriptions and illustrations. We will also send you an Information Blank, which, when filled out, will enable us to send you full particulars and the cost of a system adapted to your particular needs. Get posted—write us to-day.

EMPIRE MANUFACTURING CO., LIMITED

Head Office and Factory: London, Ontario
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119 Adelaide Street West. Toronto, Ontario



HYLO SILO

THE everlasting silo—yields 100% profit on the investment every season—sweet, fresh ensilage down to the last forkful.

Exclusive patented features of great value—specially selected, imported material of the highest quality, and careful workmanship, explain why the Hylo is the choice of the most progressive and prosperous farmers in each community. Some territories still open for live agents.

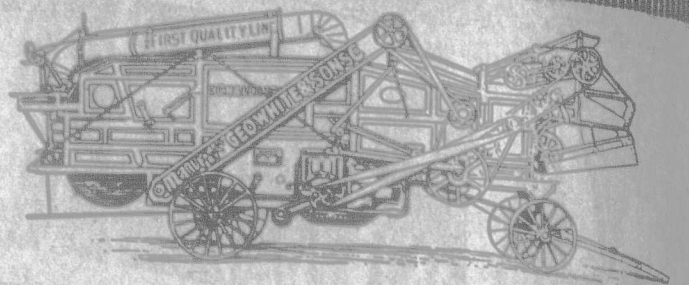
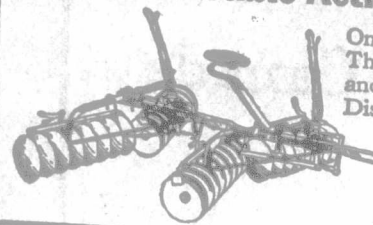
Write for free silo book today.

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BISSELL Double Action Harrows

will thoroughly cultivate and pulverize any soil. One Harrow is Out, Throw; the other is In. They are simply constructed, rigid and durable. The Gangs are flexible and the Disk Plates are so designed that they "hang" right into the soil. Bissell Harrows are built in sizes and weights suitable for horse or tractor use. Write Dept. W. for free catalogue. 98 T. E. BISSELL CO., LTD., Elora, Ont.



What does a breakdown cost?

Threshing is a short-season business. Every day counts. If you miss a day or two, or even part of a day during the threshing season, you lose a part of your profits, with no chance to make it up again.

But that's only one loss. You have a gang of men on high wages. They are idle if you have a breakdown.

Then there's the cost of the repairs.

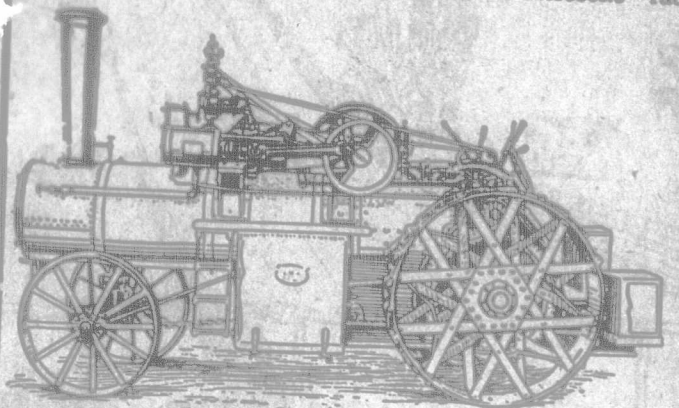
Altogether, breakdowns are very expensive for a thresherman. That's why it pays to get good machinery at the start, and that's why we build our machines with such great over-strength in every part. That's why we choose the highest grade of material. That's why we are so particular about the workmanship that goes into "The First Quality Line."

For two generations we have made a specialty of Threshing Machinery, and have won the reputation of producing high-grade machinery. It is to your interest to see the White Threshing Machines and White Tractors before you make your investment.

Full information and descriptive catalogue will be sent on request

The Geo. White & Sons Co., Limited

Makers of the White-Allwork Kerosene Tractor



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Brandon, Man.

"THE FIRST QUALITY LINE"

Light Draft and Thorough Spreading

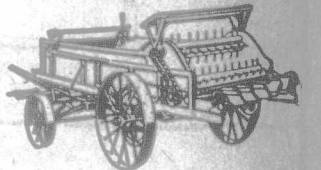
FROM a quarter to half a ton less dead weight for your horses to pull—a straight line of drive through direct connection of front and rear axles, and freedom from choking—these three light-draft features alone often sell T.A. Spreaders. And its direct chain drive is the lightest running drive yet contrived.

Thorough Spreading—even spreading—is assured by double cylinders running in opposite directions. And then to make assurance doubly sure our exclusive, special design distributor that takes care of odd lumps of manure that might happen to get through. Get the rest of the description by writing now for interesting catalogue.

Tudhope-Anderson Co., Limited

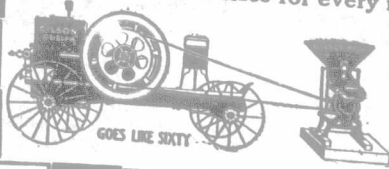
ORILLIA, ONTARIO
Western Distributing Houses: Winnipeg, Regina, Saskatoon, Calgary, Edmonton.
Eastern Distributing Houses: London Ont.; Smiths Falls, Ont.; J. Clarke & Son, Ltd.; Fredericton, N.B.; Lunenburg Co., Ltd., New Castle, N.B.

Tudhope-Anderson MANURE SPREADER



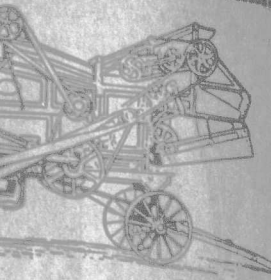
SAVE DOLLARS WITH A GILSON FEED GRINDING OUTFIT

DON'T throw away your Dollars by feeding whole grain. Get a GILSON 100% SERVICE FEED GRINDING OUTFIT. It will pay for itself in one season. Investigate the Gilson before you buy. Made in Canada. Buy direct from the Manufacturer. We are not jobbers or middlemen. All sizes for every requirement. Special Introductory Offer to the first purchaser in every locality. Write us for large catalog and full particulars to-day.



GILSON MFG. CO. Ltd.

919 York St., Guelph, Ont.



breakdown cost?

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I have won the reputation of pro-
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your interest to see the White
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ons Co., Limited

Kerosene Tractor

LONDON,
ONT.

Moose Jaw,
Sask.

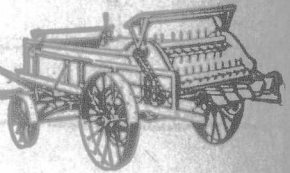
Brandon,
Man.

"THE
FIRST
QUALITY
LINE"



ough Spreading

Tudhope-Anderson
MANURE
SPREADER



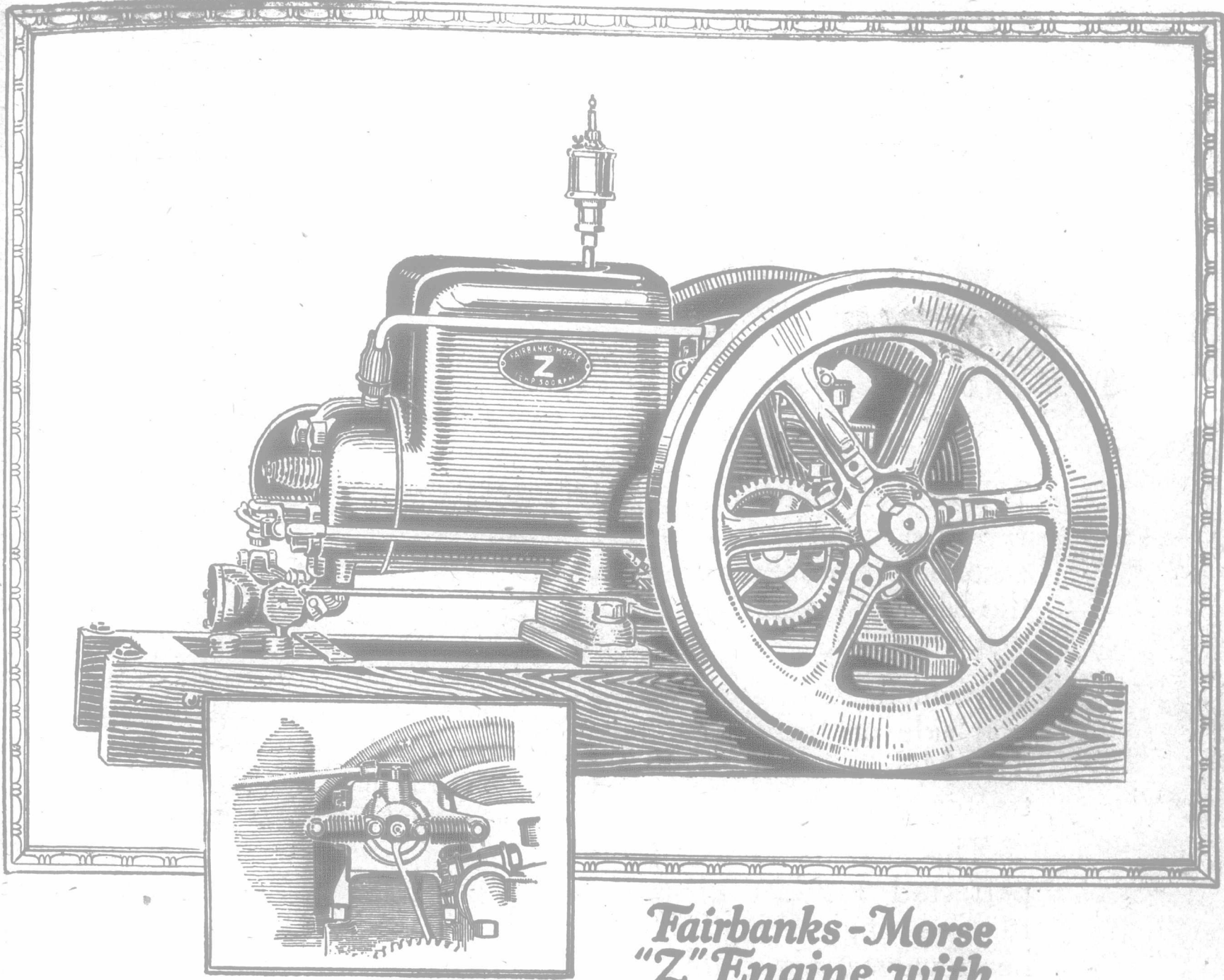
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We are not jobbers of
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*Fairbanks-Morse
"Z" Engine with
Bosch Magneto*

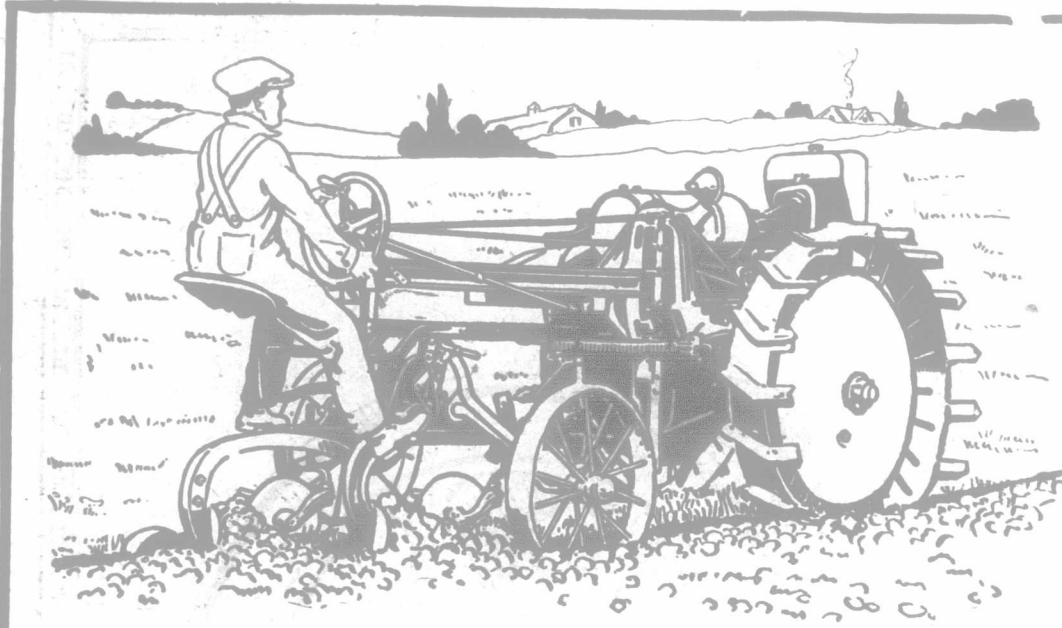
Now-There is Only One Farm Engine

JUST think of the famous "Z" Engine with a Bosch high-tension, oscillat-
ing magneto—which delivers a steady succession of hot, intensive sparks.
Every farmer in Canada should at once call on the nearest "Z"
Engine dealer and see the result of this recent epoch-making combination—
FAIRBANKS-MORSE "Z" ENGINE WITH BOSCH MAGNETO.
Mechanical perfection, plus power—and right price—to date sold the "Z"
Engine to over 250,000 farmers. This quality and quantity production
enabled us to contract for a large proportion of the extensive Bosch facilities
for making this one possible "Z" betterment, which establishes a new farm
engine standard. And all Bosch Service Stations throughout Canada will
assist our dealers in delivering maximum engine service.

MADE IN TORONTO, CANADA, BY

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- HALIFAX
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- WINDSOR
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- SASKATOON
- CALGARY
- VANCOUVER
- VICTORIA



Here's What You Get in the Moline Tractor

NO other tractor offers you the combination of essential features found in the Moline Tractor.

No other tractor gives you convenient *one-man control*—you ride on the implement. The Moline is a four-wheel tractor, if you wish.

The Moline motor is a perfected product of automotive engineering. Overhead valves, big crankshaft, efficient oiling system.

Gears are forged steel, hardened and cut, running in oil. All moving

parts are enclosed and protected. Many Hyatt roller bearings. Electric starter, lights and governor.

Throughout the year the Moline Tractor works steadily, consistently, without fuss or bother. Speed is attained in plowing, discing, seeding, cultivating, harvesting. All belt work is done, with power to spare.

The Moline Tractor is five years ahead of competition. It is sound. It is good for years of service. See the Moline dealer and write us for illustrated literature.

Tractor Division

Willys-Overland Limited
Toronto, Canada

MOLINE PLOW CO., MOLINE, ILL.

MOLINE

UNIVERSAL TRACTOR

"Galt" Adjustable Barn Roof Lights



Provide both Light and Ventilation
at a reasonable cost

These Roof Lights are shipped complete, including the glass.

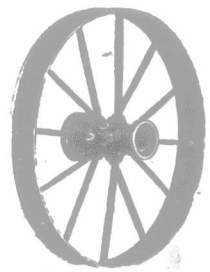
We manufacture everything in the Sheet Metal Line, and we manufacture only the best.

"GALT" Steel Shingles "GALT" Corrugated Sheets
"GALT" Ventilators [Silo] Roofs Portable Granaries, etc.

The Galt Art Metal Co., Limited

GALT ONTARIO

FARMERS! Order now if you want a set of "Cooke" Steel Wagon Wheels



Owing to the great scarcity of raw materials our factory will be able to fill only a limited number of orders this season—FIRST COME, FIRST SERVED. OUR WHEELS ARE MADE TO FIT ANY SIZE AXLE OR SKIN. Satisfied customers in all parts of Canada cheerfully testify as to their labor-saving qualities and durability. They make a new wagon out of an old one at

small cost. Write today for price list, illustrated circular and testimonials, together with order blank and free chart showing how to take measurements correctly. Remember we quote price delivered to your nearest railroad station.

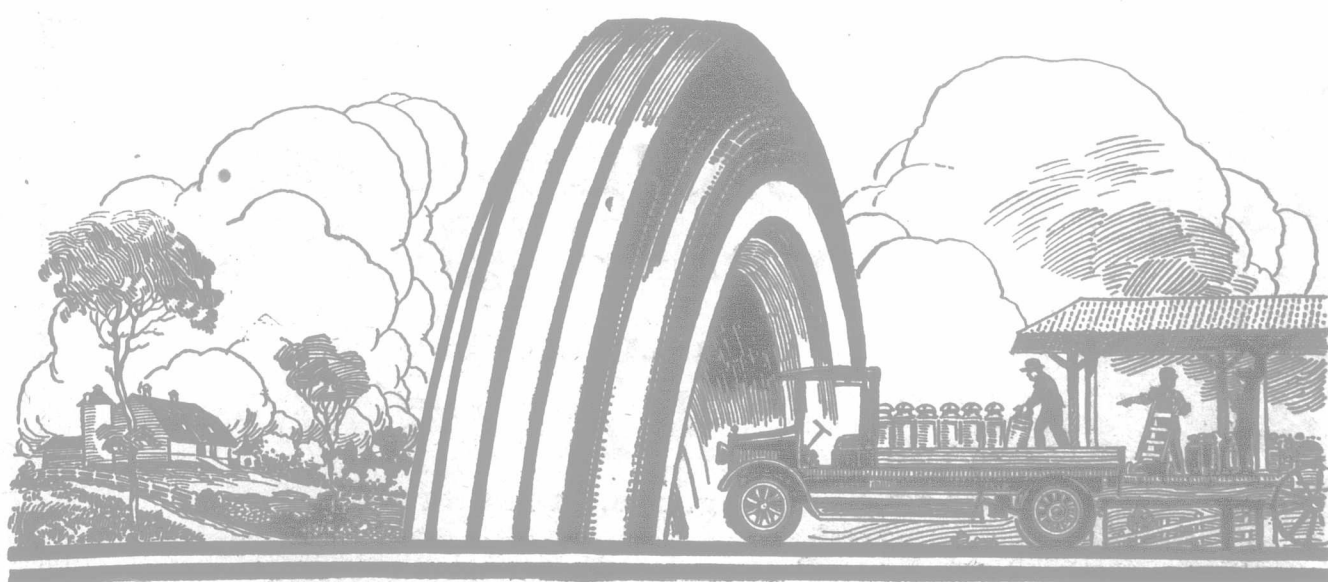
THE COOKE METAL WHEEL COMPANY,
19 West Street Orillia, Ontario

Corn That Will Grow

Canadian-Grown Seed Corn
Your money back if not satisfied

J. O. Duke - Ruthven, Ont.

"Advocate" advts. Pay



These Tires Will Suit Your Loads and Your Roads

On farm and ranch and country road—on heavy hauls to town—on pleasure bent when work is done—DOMINION TIRES will give you long and satisfactory service.

DOMINION TIRES

ARE **GOOD** TIRES

Among experienced motorists, they are known as "greater" tires—because they give greater service, greater mileage, greater pleasure in riding.

DOMINION INNER TUBES mean perfectly balanced tires. Carry an extra inner tube in the car, as well as a supply of DOMINION TIRE ACCESSORIES — which all Dominion Tire dealers have in stock.

235

Dominion Tires are sold by the best dealers.



Bill's Sugar and Syrup Wasn't Up To Much

That's what his neighbors said, they were right too, but there were reasons, this sap was not fresh enough or clean enough, his boiling outfit was out of date and he scorched the whole batch. He did a lot of hard work with poor results. It is all a question of proper outfit. With a



GRIMM CHAMPION Outfit

In your maple grove you are sure of making the best possible syrup and sugar. Do it cleanly and quickly and get more money out of it. Scrap your old outfit and make something worth while out of your sugar bush. We can help you a lot if you write us.

The Grimm Mfg. Co.
60 Wellington Street, Montreal, Que.

TOWERS WATERPROOF CLOTHING

The Twenty-Two Coat

Keeps you bone-dry in wettest weather.

Fine for Motorists
Farmers and
Teamsters

Diagonal fastening across front, protects knees and legs. Satisfaction guaranteed on every Fish Brand Garment.

Sold Everywhere.

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SEEDS

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Alfalfa Genuine Ontario Variegated.....	\$45.00
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Situated in one of the best seed-producing districts in Ontario, and having the very best of cleaning machinery we are in a position to offer high-grade seed, acclimatized and much superior to imported seed.
Write for catalogue—mailed free.

DOUGLAS & ROY, Seedmen
Box 254 Brantford, Ont.

Ontario Seed Corn Co-Operative

Organized for the growing and marketing of No. 1 standard varieties of seed corn. Special attention to Farmers' Clubs. Write:

Walter Anderson, Secretary
Amherstburg, Ont.
Or J. F. McGregor, Sales Manager
Wardsville, Ont.

Choice Seed Grain

O.A.C. No. 72 Oats, 2nd generation, Imp.
O.A.C. No. 21 Barley, both grown from my prize-winning seeds of Guelph, Ottawa and Chatham Fairs, also Marquis Wheat, Alsike and Sweet Clover.

OSCAR KLOPP - Seed Grower
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"Advocate" Advts. Pay.

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Owing to the great scarcity of raw materials our factory will be able to fill only a limited number of orders this season—FIRST COME, FIRST SERVED. OUR WHEELS ARE MADE TO FIT ANY SIZE AXLE OR SKIN. Satisfied customers in all parts of Canada cheerfully testify as to their labor-saving qualities and durability. They make a new wagon out of an old one. Write today for price list, illustrated testimonials, together with our free chart showing how to take measurements correctly. Remember we quote prices from our nearest railroad station.

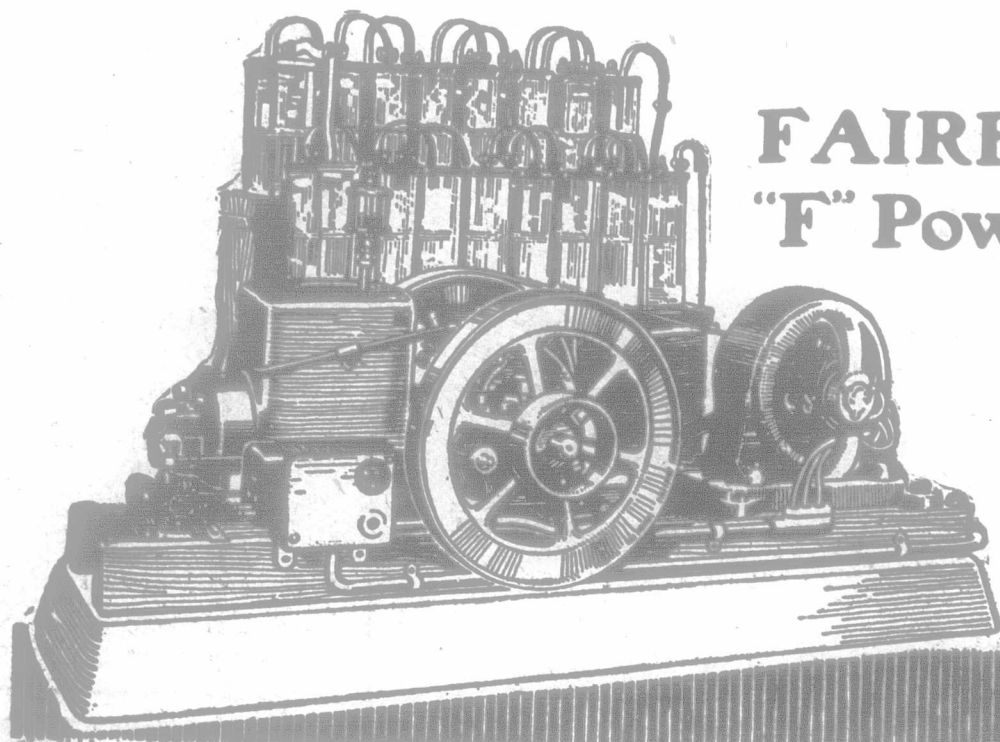
KE METAL WHEEL COMPANY,
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That Will Grow

Median-Grown Seed Corn
money back if not satisfied

uke - Ruthven, Ont.

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FAIRBANKS-MORSE "F" Power & Light Plant

40-Light Plant

\$495

F. O. B. TORONTO

Also made in 65-, 100-
and 200-light sizes

The Ideal Power and Light Plant for the farm, workshop, garage and suburban mechanic

EVERY workshop and garage depends on good light to turn out first class work. Delays, and makeshift repairs invariably occur in dingy shops where feeble light results in careless use of tools. Save time, eyesight, and expense by installing a Light Plant which supplies an abundance of light, when and where you require it.

The "F" Power and Light Plant in addition to light, provides ample power for the grindstone, emery wheel, bench drill, bandsaw, small lathe, pump, or any other light machines.

Direct belted to such machinery the "F" plant engine does the work of a power plant twice its horsepower, supplying current to drive the same machines by individual electric motors. It is sturdy and simple in construction, is self-starting, and can be operated by a boy. Its utility enables every rural family to enjoy the comforts and conveniences of brilliant light, electric current, power, and running water in the house, the barns and other buildings. Considering its low price and its economy in operation it is particularly suitable for the requirements of the farmer and small machine shop and garage owner.

Send coupon to our nearest office and we will be glad to send you full particulars about the "F" Power and Light Plant.



Agents Wanted

in every district to handle this biggest and easiest selling proposition and give owners the kind of service which has built the reputation of this Company.

Made in Toronto, Canada, and guaranteed by

The Canadian Fairbanks-Morse Co. Limited

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CALGARY VANCOUVER
VICTORIA



Mail this coupon with your letterhead to our nearest branch for full particulars of Fairbanks-Morse "F" Power and Light Plant Agency.

DEALER'S COUPON

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The Canadian Fairbanks-Morse Co. Limited
Please send me Catalogue of Fairbanks-Morse "F" Power and Light Plant.

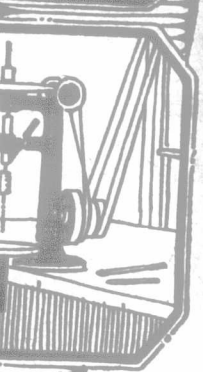
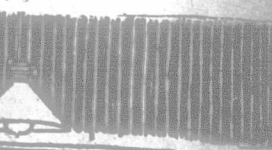
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HORSE
Plant

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of Fairbanks - Morse
and Light Plant.

Address
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Cletrac

TANK-TYPE TRACTOR

Added Power - No Increase in Weight
Wider Tracks - Lighter Tread - Stronger Ground Grip

*More kinds
of Work
More days in
the year*

The Cletrac's Day is Here

THE tide has turned. The big demand to-day is for the small tank-type tractor—for the Cletrac—that goes further than the simple job of plowing and takes the place of horses over plowed ground and seedbed, working faster and at lower cost.

The popularity of the Cletrac is not an accident. Engineers and army experts long ago saw the great advantage of the endless track as a device for turning motor power into draw-bar pull. The farming public waited only to see the same principle built into a serviceable small tractor and the Cletrac proved to be that tractor.

Farmers everywhere have now put their O.K. on the small tank-type and now the Cletrac is the fashion. 1920 will prove to any farmer anywhere that Cletrac farming is profitable farming.

The Cletrac, used alone or in "fleets," is the right size and type for almost any farm—the one tractor adapted to all conditions. It has proved its ability to stand up to its work. And now that the public has recognized its worth, it

is out in front to stay.

The Cletrac now has more power, yet no added weight or increased friction to eat up power. Its track is one-third wider, which gives it a lighter tread and a stronger grip on the ground.

The Cletrac steering device, an exclusive feature, insures positive power to both tracks all the time. That means full power on the turns, as well as straightaway. A new water clarifier takes out all the dust that would grind your pistons and overheat your motor.

These and other features mean even better performance than before. Back of the Cletrac is the service of our distributors and dealers, with repair stocks near you and constantly increasing. Back of that is our purpose to make every Cletrac owner a booster.

You will be lining up on the side of progress if you start Cletrac farming now. You can't go wrong on it. A Cletrac means more kinds of work more days in the year, and lower cost on every job. Now is the time to start.

"See the Cletrac dealer at once."

The Cleveland Tractor Company of Canada Limited

Head Office:
WINDSOR, ONT.

Van Slyke Brothers say—

"During the past two seasons our operations have been very successful and satisfactory. Our first Cletrac, purchased in the spring of 1918, put in and took off 280 acres of grain, threshed it and hauled most of it to town. There wasn't a horse on the fields except to draw in the stooks. During the summer we broke 90 acres of brush land with it.

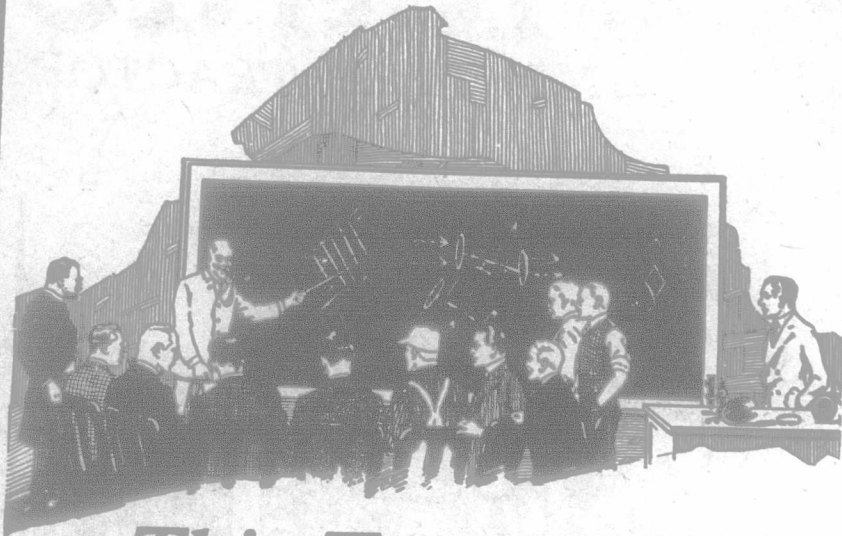
"We have had 9 years' tractor experience in this district and find the Cletrac more adaptable and more efficient for the different jobs around the farm than any tractor we have used or seen at work."

Van Slyke Bros.,
R. A. Van Slyke,
Red Deer, Alta.

Western Sales Branch:
REGINA, SASK.

GOOD YEAR

MADE IN CANADA



This Tread is Not Accidental

THE Goodyear All-Weather Tread was designed by the keenest, most practical men in the tire industry.

It was designed primarily for service—not for its mere advertising value.

For many years Goodyear has been searching for flaws in it—finding none.

To-day, it remains the world's most popular automobile tire tread.

Such a tread could not be accidental. It is primarily the result of a policy—the same policy which has guided Goodyear through a host of tire improvements to the crowning achievement—the Goodyear Cord Tire with the All-Weather Tread.

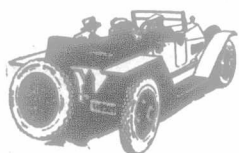
The sharp-edged blocks, scientifically arranged, roll easily straight ahead—but resist every tendency to skid, take you out of ruts, around corners, across icy car-tracks. They pull ahead through mud and snow and slush. They keep front wheels under control.

With Goodyear All-Weather Tread Tires on all four wheels and spare, no matter what tire change you make, the appearance of your car is always balanced.

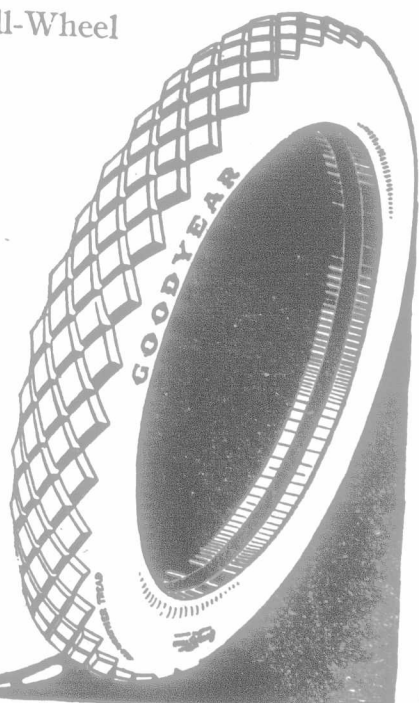
All-Weather Tires are All-Wheel Tires.

Go to a Goodyear Service Station Dealer for tires and mileage-making service.

The Goodyear Tire & Rubber Co. of Canada Limited



All-Weather Tires are All-Wheel Tires



"I Cleared \$3700 Last Year With Your Ditcher"

Joseph Rivard

JOSEPH RIVARD is but one of hundreds of men who have taken up this big-money business of ditching. And many others are making even more with a *Buckeye Traction Ditcher*.

"We made \$4500 last year with our Buckeye," writes Herr Bros., Piper City, Ill. "We have just ordered two more machines, making five in all, which we own."

\$6500 for J. E. Griffith

"My Buckeye made me \$6500 during the 1918 season," writes J. E. Griffith, London, Ontario. "I averaged 175 rods a day while working."

Made \$71 in One Day

R. W. Sherrard, Rochester, Ind. writes, "In one day's work with my Buckeye, I cut 117 rods of ditch 42 inches deep, for which I received \$71. I have had my machine for three years, but run it only half the time as I have other work to attend to. It is still in A-1 condition."

We Will Show YOU How To Make Big Money

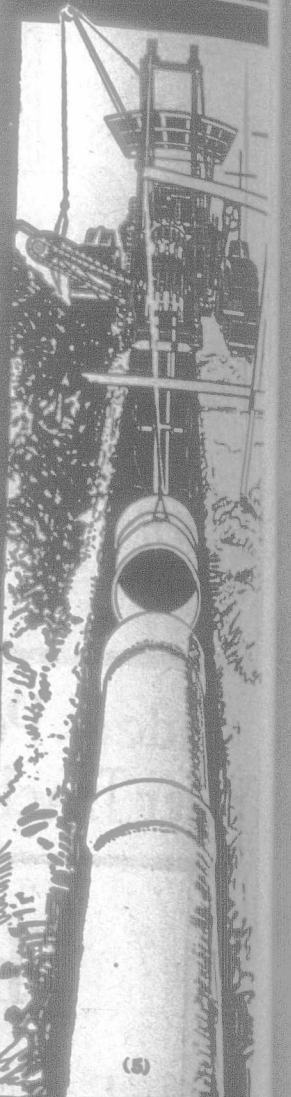
These are average letters from a few Buckeye owners. We have started hundreds of others—farmers, farmers' sons, contractors—in this high-profit business of ditching. Right in your own locality, spare time or full time, you too, can easily make thousands of dollars a year in this big-money work. No experience necessary! Our service engineers start you right and stand behind you.

For the ability to dig through the toughest jobs, through hardpan or frost; for built-in ruggedness and durability; for the utmost service through season-after-season continuous work, the *Buckeye Ditcher* is without an equal!

Drop us a line today. Let us talk over with you the ditching possibilities in your section. We will give you our unbiased advice about starting in this large-paying business in your locality. Write today.

The Buckeye Traction Ditcher Co.
205 Crystal Ave., Findlay, Ohio

I cleared \$3700 above all expenses last year with a Buckeye. I dug 2341 rods of trench during the 1918 season—no high as 30 rods in one day. Will be glad to write anyone who is thinking of going into the ditching business.
—JOSEPH RIVARD, Tibury, Ont.



"A Perfect Trench at One Cut" BUCKEYE Traction Ditcher



Burlington Steel Fence Post

Cheaper—stronger, more indestructible than any other fence post.

Its U shape makes for rigidity, no fastening holes to decrease its strength.

See your fence, implement, or hardware dealer—or write us direct.

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BURLINGTON STEEL COMPANY, LIMITED
HAMILTON CANADA

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The Farmer's Advocate and Home Magazine

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AND
SUCCEED

ESTABLISHED
1866

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LV.

LONDON ONTARIO MARCH 11, 1920.

1433

EDITORIAL.

- * The best seed is none too good.
- Good seed is as important as good live stock.
- Arrange your crop rotation on paper and then carry it out on the farm.
- If snow is the poor man's fertilizer, many farmers have been made wealthy this winter.
- Have you ordered the necessary parts for the seeding implements? Spring is just around the corner.
- After you think you have the grain cleaned for seeding, put it through the mill once more and be sure.
- Crop yields determine, to a large extent, the labor income of any farmer. Don't neglect any feature of the preparations for a good crop.
- Our Governments might give more consideration to those already on the land, and make the settlement of new districts a secondary consideration.
- It would be an opportune time now to add one or more producers to the Board of Commerce and bring it more into sympathy with the public generally.
- The present session of the Ontario Legislature is likely to be carried through with dispatch; a large percentage of the members are already thinking about the spring seeding.

Even a free house, free milk, free garden, free everything, and a good wage fail to attract labor from city occupations to the farm. Can anyone suggest what will restore the balance?

If the hens have not been laying up to the present it is largely your fault. Some special attention combined with the March sun will give results, now that the natural egg-laying season is here.

No business is run on the co-operative basis unless the profits are divided among the patrons. Beware of concerns which parade under the banner of co-operation for the sake of doing business with farmers.

If you are fortunate enough to have a supply of wood, get it worked up before the season opens. The man who cuts his wood in the summer-time lacks system and will probably be quite as ill-prepared in other lines.

A farm survey in Middlesex County, Ontario, showed that farmers with live stock 20 per cent. above the average made five times the labor income of those who kept live stock 20 per cent. below the average. There is a lesson in that for many.

It is held that it is unsafe for a State to raise ignorant men. Ignorant men are like bombs, which are a great deal better to be shot into an enemy's camp than to be kept at home, for where an ignorant man goes off he scatters desolation; and it is not safe to have ignorant men, for an ignorant man is an animal, and the stronger his passions and the feebler his conscience and intellect, the more dangerous he is. Therefore, for the sake of the commonwealth, our legislators wisely, whether they be republican institutions or monarchical institutions or aristocratical institutions, have at last joined hands on one thing—that it is best to educate the people's children, from the highest to the lowest everywhere.—Henry Ward Beecher.

Must Farmers Rod Their Buildings?

The Deputy Fire Marshal for Ontario has been reported as stating that a Lightning Rod Act would be introduced in the Legislature this session, which, if enacted, would compel farmers and others to rod all buildings valued at \$2,000 or over. The Act, it is said, will give fire marshals the authority to require that any farm building valued at \$2,000, or containing that value in food, must have lightning rods on it. The Act will also apply to grain elevators, flour storage warehouses and mills. Sellers of lightning rods will have to obtain licenses under this Act.

This appears like a raked ember from the dead ashes of the past. There has been a lightning-rod bill pigeon-holed at Toronto for many years, but we were not aware that it contained any such autocratic clauses as that which would compel a man to rod his own buildings. All farm buildings should be rodded in order to reduce fire risks, but it is primarily the man's own business who owns those buildings to decide whether he shall install lightning rods on them or not. Our own farm buildings are rodded. We believe that lightning rods, when properly installed, are a protection from damages due to lightning, but the decision to rod or not to rod buildings must be left with the owner himself, just as he would decide whether a new roof or new barn doors are needed. It is only reasonable to expect that insurance companies would make some difference in the premiums on rodded and unrodded buildings. Let them make sufficient difference to insure the stability and solvency of their business, but in the last analysis the owners of buildings must decide whether they will install lightning rods or pay for the greater risk carried.

The Fire Marshal's Department is, without a doubt, sincere and conscientious in the effort to reduce fire losses in the Province of Ontario, which last year totalled \$9,490,478, and even that figure shows a reduction of forty per cent. over losses incurred in 1918. Nevertheless, the farmers of this Province are quite capable of carrying some responsibility in regard to fire losses, and, while we admit that all farm buildings should be thoroughly and effectually rodded, there is no justification for a compulsory Act of this kind.

One feature of the proposed legislation is good, namely, that providing for the licensing of those selling and installing lightning rods. Farmers should have some guarantee that lightning rods installed on their buildings are properly grounded and otherwise put on as they should be. In this regard the Act will meet with popular approval.

Agriculture in the Maritime Provinces.

The progress of agriculture in the Maritime Provinces has always been retarded by the many pursuits in which one might engage there. Lumbering, mining, fishing, and other industries have competed with agriculture, and up to ten years ago seemed to lead in the race. During the last decade there has been a revival in agriculture; splendid progress has been made, and farmers in the Maritime Provinces have now arrived at a milestone where they hardly know which way to turn. Through co-operation, dairy products and eggs find a fairly satisfactory and remunerative market, but beef cattle, hogs and sheep do not give the returns they should simply because there is no fair market for them in the Maritime Provinces. Montreal is the nearest slaughtering centre of any size, and we find that cattle and sheep are transported to Montreal, slaughtered there, and then again transported to the most easterly points in Nova Scotia or to Newfoundland for consumption. There is a very considerable market in the Maritime Provinces for dressed meats and animal products, and farmers are demanding abattoir and cold-storage facilities in order that they may be allowed to

get a fair price for the live-stock produced on the farms in these three Provinces down by the sea. There is a certain feeling in some quarters that an abattoir and cold storage would not be profitable at first, but the Government should not view the matter from this direction. The reason why they would not be profitable at first, if such be true, is that live-stock producers have always received from two to four cents per pound less for their live stock than did those in a position to market at Toronto or Montreal, and on that account there has never been any enthusiasm about the live-stock industry in the Maritime Provinces.

When it was decided to spend a million dollars in constructing a cold-storage plant at Montreal, the Maritime Provinces were promised something of a similar nature the next year. Of late, however, it seems that the Government does not view the Eastern proposition very favorably, and farmers in the East, who are anxious to see agriculture flourish and continue to develop in those three Provinces, are very much disappointed. Production in New Brunswick, Nova Scotia and Prince Edward Island is only about half what it should be, largely on account of marketing facilities, and there is no good reason why an abattoir and cold-storage facilities could not be provided at the seaboard which is really at the back door of the British market.

Consider the Rural School.

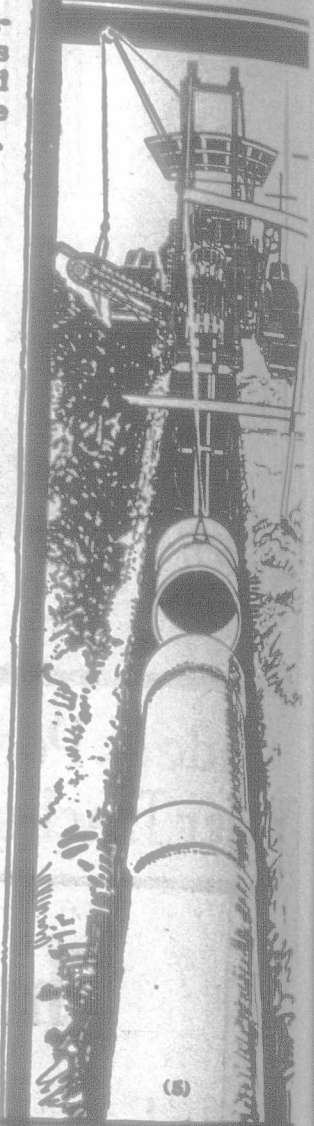
The outflowing of criticisms and suggestions regarding the rural school system in Ontario will do no harm, and may do a great deal of good. Even if our schools are not perfect, that does not necessitate a sudden upheaval of the whole system and throwing seventy-five per cent. of it into the scrap heap. We should move cautiously—but we should move—and the aim ought to be to withhold nothing from that overwhelming majority who go out into the world after a rudimentary training in the public schools.

Education in the past has been more or less concealed from the masses, and the further one gropes back into antiquity via the highway of history, the more does he find the advantages of education limited to those with means and power. The Egyptian schools were open only to the Royal Family and the Priesthood; Grecian schools, at a late date, were open to those who could pay, and from then on down to the present there has been a tendency toward universal education. The primitive conception of education has been perpetuated in the habit of encouraging the brighter pupils and neglecting those of duller intellects. Even the entrance pupils frequently get more than their share of attention, while the little tots are left to amuse themselves as best they can. Our teachers should pay more attention to the ninety per cent. who will go out into the world equipped only with the rudiments of an education, and devote less of their time to those destined for the high school and the university. Every teacher's reputation is based more or less on his or her success in passing pupils at the entrance examination. This is not the teacher's fault—the system is wrong.

Some claim that consolidation is the only solution of the rural school problem. Perhaps it is in some communities; in other localities two or three weak schools might be combined to serve the children and the community better. While we are confident that consolidation has many advantages to offer, and that it will ultimately be adopted in a large part of Ontario, we feel that the success of consolidation depends on our moving cautiously and resorting to it only in districts where it is sure to succeed from the first.

Some people object to the idea of township or county trustee boards, on the grounds that these governing bodies might become autocratic. It is unreasonable to expect that township or county boards would become more despotic than boards of education in the towns and

I cleared \$3700 above all expenses last year with a trench during the 1918 season as high as 300 miles in one day. Will be glad to write anyone who thinking of going into the ditching business.
—JOSEPH RIVARD, Tibury, Ont.



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The Farmer's Advocate AND HOME MAGAZINE.

THE LEADING AGRICULTURAL JOURNAL IN THE
DOMINION.

Published weekly by
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cities, which are apparently working satisfactorily; at any rate all these questions deserve unbiased consideration, for in the end the conduct of our rural schools will depend on the attitude of the taxpayer and the support he will give to any alterations looking to the improvement of the system.

Method in Farming.

"Method is of more importance than is size of farm. A man may have a large farm, but conduct his business at a loss by employing poor methods of farming, but the man who employs good methods will always have some profit, even though his acreage is small."

The above statement is included in the report of the Department of Farm Management of the Ontario Agricultural College, when commenting on a business survey made of 385 farms in Middlesex County, Ontario. It is furthermore brought out that large crop yields are necessary in order to close the year with a respectable labor income, and that the quality of the live stock maintained is another important determining factor. These points have been emphasized many times, but never yet have we had in this country such conclusive proof of the soundness of this doctrine as is presented in the report of this farm survey, which appears elsewhere in this issue.

The Proper View of Farm Life.

BY ALI AN MCDIARMID.

I was looking through an American farm paper recently and came across this item: "A man has a farm and equipment valued at \$18,000. His expenses for the year are \$2,900. His receipts are \$4,000. He figures that he made \$1,100 during the year and thinks it isn't so bad. But he hasn't taken into account the capital invested. If he invested that \$18,000 elsewhere he would get at least four per cent. interest. If he had to borrow it he would very likely have to pay six per cent. So we take the average and say that his capital invested earns five per cent. Five per cent. of \$18,000 is \$900. So his capital earned \$900 of that \$1,100, and the grower himself, working hard all year, earned only \$200. In other words, \$200 was his 'labor income.' He would have made more money if his money had been invested in Liberty Bonds and he had worked out by the day. All the planning and thought he put into his

farming operations didn't bring him in a cent. Remember too, that he should receive something also for the work his family has done."

There are two or three things that I would like to say about this article, and similar ones, that are continually appearing in some of the agricultural journals.

In the first place they misrepresent the case. Take the three greatest items of expense that the average man, living in the city, is subject to. They are food, fuel and rent. At present-day prices many men in town find their salary pretty well "shot to pieces," as they say, when the bills for these things are paid. A great many farmers have their own fuel, very few have to buy all the food they use and no man, who is a farm owner, has rent to pay. In all fairness these things might be balanced against that "interest on investment" item, I think.

Ask any man, who sold his farm and went into town to live, how the cost of living compares in the two places. We all know what he will say, for we've all heard it often enough. Retired farmers have always had a reputation for closeness, not to say meanness, and the reason simply is that they are trying to bring their living expenses down to what they were in the country.

Apart from the "cost of living" bugbear, altogether, it is safe to say that eight out of ten men, that have left their farms for a home in the city, are discontented. Which raises the question: what is a contented mind worth? Pretty hard to put it in dollars and cents, but it should be a further help towards balancing that "interest on investment."

The opportunities and privileges of country life are worth good money if anything is, and these things should be taken into account whenever city and country life are compared. Farmers are considered one of the best possible risks by all life insurance companies, which is pretty good proof that, so far as doctor bills are concerned, the country has the best of it. Working with old Mother Nature as a partner has a good deal to recommend it from any standpoint we like to view it. Even the poets will back us up in this, for very few of them ever claimed to get much of their inspiration from the brick walls and stone pavements of the city.

Money is of value only as we exchange it for something else, and no one gets more things of real value from what might be called the "by-products" of his profession than does the farmer. And yet we have those that tell us that we should not forget to include interest on our investment when figuring up our profits, while, at the same time, they themselves forget to include a dozen things, every one of which has a real value in dollars and cents.

And now there is one thing more in connection with the article that I quoted above. Can anyone say why some farm papers print stuff like that? What can be gained by it? The whole tendency of the ideas expressed is to make the reader discontented if he happens to be a farmer. The figures appear reasonable at first sight and unless the question is fairly thought out and both sides considered, a man might easily be induced to come to the conclusion that the wisest course for him was to sell out and follow the crowd to town.

The true mission of the agricultural journal is to give the optimistic view of farm life, as long as this can be truthfully done, and not go to conjuring up pictures of loss and ruin where these things do not, necessarily, exist.

Rural conditions are fairly good. The right kind of men are making a comfortable living, and a little money, on the farm. And all the other things we have mentioned are theirs. Why is it necessary that the farm paper should act the part of the labor agitator and help to aggravate a state of affairs that is none too good as it is? Too many of our country people have been induced, by some means or other, to change their home and occupation.

There is such a thing as a healthy discontent, but when the advantages of country over city life is so apparent, as it is just at present, I think we are justified in suppressing anything that may arouse discontent and, at the same time, doing what we can to impress every farmer in the land with the duties, privileges and opportunities by which he is surrounded.

Canadian agriculture needs a few "home missionaries." There isn't much use going to the city and urging the people there to return to the land. A farmer lost to the city generally stays lost. He can hardly get back if he wants to. But by bringing those who remain on the farm to a realization of the truth of the whole matter we can, perhaps, check the flow of the stream that is carrying away with it so much of the best of Canadian farm life.

When a horse-buyer visits a district for the purpose of buying horses, he likes to get enough to fill a car. Moreover, he likes to get horses that are uniform in type and size. If he finds a district where he can pick up a carload of uniform horses, he usually visits that district again. This is a fact that should be seriously considered by stallion clubs. When a club secures a stallion that leaves colts of the right kind, they should keep that stallion in their district for a number of years. His colts will be uniform, and in a very short time the district will have a large number of horses in it that are uniform in type. Horses that are uniform in type are: asily paired off into well-matched teams, and every horse-buyer will pay a premium for horses that are easily matched, for the horse-dealer never has much trouble in selling a well-matched pair of drafty, clean-cut horses. A district which imports a new stallion every spring for breeding purposes seldom becomes famous.

Nature's Diary.

BY A. BROOKER KLUGH, M.A.
BIRD-LIFE ON THE FARM—1.

The benefit to be derived from having many birds on the farm, and particularly about the house and garden, is becoming more and more appreciated. Both from the economic and aesthetic standpoints it is now recognized as a sound policy, since the birds are not only very efficient in controlling many insect pests, but because of their melodious songs and interesting ways they constitute a very charming factor of rural life. Because of the realization of this many people are anxious to learn how to attract birds about their homes, and how to preserve and care for them.

In order to be in a position to help the birds we must first have a true appreciation of the dangers by which they are beset, and then see which of these dangers we can eliminate, or at least lessen.

The elements constitute one of the chief dangers to which birds are exposed. Storms often kill thousands of birds in a few hours, while the small migratory birds, which cross large bodies of water on their migrations are frequently killed in immense numbers when overtaken during their passage by a storm. Sometimes after a severe storm the shores of large lakes are lined for miles with wind-rows of dead birds which have perished in this way. Such was the case a few years ago on parts of the shore of Lake Huron. Late snowstorms coming after many of the insectivorous birds have arrived, often play sad havoc, as with their source of food cut off the birds soon perish. At such times I have seen even those species which depend to a large extent upon seeds for their subsistence, such as the Song Sparrows, Juncos, White-throated Sparrows, etc. very hard put to it to find a living. In this case we can help the seed-eating birds by feeding them, but unfortunately there is very little we can do for the insectivorous species. Heavy storms during the nesting season are sometimes very disastrous, the wind breaking down branches or dislodging the nests and the cold rain soaking and killing the nestlings in spite of every effort of the parents to shelter them. In the case of species which nest on the ground, floods sometimes drown the nestlings over a considerable area. Deep snow, accompanied by severe weather, often results in the death of many birds, for with their supply of food cut off they soon perish from the cold. With the hardy northern birds even the severest weather is not a menace as long as they have a good food-supply, and can aid these birds by feeding them in times of deep snow-fall.

The next source of danger to birds is from natural enemies, of which every species has a large number. Among the chief natural enemies of our smaller birds are foxes, raccoons, weasels, mink, skunks, cross, bronzed grackles, jays, certain hawks and owls, and some snakes. These natural enemies are not by any means equally destructive, partly by reason of their relative abundance or scarcity in a given locality, partly because some subsist mainly on small birds while with others these birds make up only a small part of their food. With the exception of the Cooper's Hawk, Sharp-shinned Hawk and the weasel no general war of extermination should we waged against them, for they are, many of them, very efficient destroyers of noxious rodents and hence useful, but all should be eliminated from a place we wish to render particularly attractive to birds.

Bad as are some of these natural enemies, man is responsible for the introduction of two species which do more to decrease the bird population about our homes than all the natural enemies put together—the cat and the House Sparrow.

The cat is a huge fraud, it does nothing in the way of destroying mice and rats which cannot be accomplished more expeditiously and just as cheaply by means of traps and poison, while on the other hand it is the cruellest and most destructive of all the enemies of our small birds. Defenders of the cat will tell you that properly trained cats will not kill birds, and even granting that certain well-bred, well-fed, and very carefully-trained cats will not do so—how many such cats are there in any community? To say that a well-fed cat will not catch birds is an absolute falsehood, as anyone who has taken any interest in bird-life can testify. It seems so easy to feed a cat well enough to prevent it from catching mice, but not to put a stop to its bird-hunting.

A very conservative estimate, based on the testimony of hundred of witnesses, is that the average cat kills about twenty birds per year. Allowing that there are 1,200,000 cats in Canada, which again is a conservative estimate, seeing that on many farms there are two or three cats, this means that 24,000,000 birds are killed in the Dominion by cats every year. In view of the dire menace to bird-life which they constitute it is high time that we had a tax on cats. Such a tax would permit those who love cats to keep their pets, and would result in a tremendous reduction in our cat population, since all untagged cats could be shot at sight. The money derived from this tax should be paid into a fund for bird protection, which work would include the destruction of untagged cats. Such a tax would not only make for the welfare of our birds but also of the cats, as those cats which were left would be well cared for, and the unfortunate, half-starved, prowling felines eliminated.

For the present the best we can do in the cat question is to keep none ourselves and to see that none are allowed to poach on our bird-reserve.

(To be continued.)

derived from having many birds particularly about the house and more and more appreciated. Both from aesthetic standpoints it is now policy, since the birds are not only killing many insect pests, but beautiful songs and interesting ways of charming factor of rural life. The fact that many people are attracted to birds about their homes and care for them.

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Some of the shores of large lakes are lined with rows of dead birds which have been blown ashore by a storm.

Such was the case a few years ago on the shores of Lake Huron. Late snows and many of the insectivorous birds were killed, as with their source of food cut off they soon perish.

At such times species which depend to a large extent on their subsistence, such as the White-throated Sparrows, etc., are killed.

In this case we can do little by feeding them, but in some cases we can do so during the nesting season.

During the nesting season, the wind breaking down the nests and the cold rain chilling the nestlings in spite of every effort to protect them.

In the case of species which are killed by floods, sometimes down the river, often results in the death of their supply of food cut off by the flood.

With the hardy northern species weather is not a menace as it is with the southern, and can aid in the survival of deep snow-fall.

One danger to birds is from natural enemies, which has a large number of enemies of our smaller birds, such as weasels, mink, skunks, crows, certain hawks and owls, and other natural enemies are not by any means, partly by reason of their voracity in a given locality, partly by reason of their voracity on small birds while with them only a small part of their food is taken.

The case of the Cooper's Hawk, and the weasel no general war is waged against them, for they are very efficient destroyers of mice, but all should be taken care of, and we wish to render particularly

these natural enemies, man is the greatest enemy of two species which are the most numerous about our homes.

When these enemies put together—the cat and the dog, it does nothing in the way of protection which cannot be accomplished just as cheaply by means of a well-bred dog.

On the other hand it is the cruellest of all the enemies of our small birds, and very carefully-trained cats will tell you that properly bred cats, and even granting that they are very carefully-trained, many such cats are there in the world that a well-fed cat will not be a false friend, as anyone who has a cat can testify.

It seems so easy to prevent it from catching up to its bird-hunting.

My estimate, based on the testimony of the average cat kills a mouse a day.

Allowing that there are 100 million mice a day, which again is a conservative estimate, many farms there are two or three that 24,000,000 birds are killed every year.

In view of the fact that they constitute it is not surprising that they are so numerous on cats.

Such a tax would be levied on cats, and would be used to keep their pets, and would be a great help to our cat population.

They should be shot at sight. The tax should be paid into a fund which would include the cost of the cats.

Such a tax would not only protect our birds but also of the cats, and would be well-cared for half-starved, prowling felines.

we can do in the cat question, and to see that none are allowed to breed.

(Continued.)

MARCH 11, 1920

THE FARMER'S ADVOCATE.

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THE HORSE.

Diseases of the Respiratory Organs.—IX.

STRANGLES OR DISTEMPER.

While strangles (commonly called colt distemper) cannot properly be called a disease of the respiratory organs, it so frequently involves these organs, and is such a common ailment, we may be justified in discussing it in this series. It is an infectious, eruptive, febrile disease, generally attacking young horses, hence the name "colt distemper", but may attack horses of any age.

The origin of the term "strangles" arises from the fact that in some cases it is associated with symptoms of choking or strangulation, and it is divided by old writers on veterinary subjects, into simple and bastard strangles; the first form being that which ran a regular course, and the second consisting in the formation of multiple or successive abscesses which may attack any organ. The different forms are now generally known as regular and irregular strangles. Regular strangles may be defined as an infectious or contagious disease. Generally attacking young horses, and causing the formation of an abscess or abscesses in the sub-maxillary space or in some part of the region of the throat. Irregular strangles is a much more serious condition, in which the connective tissue of the lymphatics of the sub-maxillary region, and sometimes the salivary glands, are usually the seat of suppurative inflammation, associated with a low, febrile state of the system, with a tendency to the formation of abscesses in various parts of the body, either on or connected with the internal organs or the superficial structures. Although it generally attacks young horses, it is not uncommon to find aged horses affected. In some localities, and during some years, it assumes the form of an epizootic disease, attacking animals of all ages. Many claim that one attack renders the animal immune from a second. This is not quite correct, as while a second attack is not common, it is by no means unknown.

The cause is infection, but in many cases it is very hard, in fact practically impossible, to determine where the animal came in contact with the infection. For many years the point as to whether or not the disease was contagious was a debatable one, but it is now generally conceded that it is.

Symptoms.—In some mild cases of regular strangles no well-marked constitutional disturbance is noticed; an abscess or abscesses form in the sub-maxillary space, break and discharge pus for a few days and then heal, without causing any apparent distress, and often without receiving treatment. The usual symptoms are dullness, a slight cough, discharge from the nostrils, at first watery but soon becoming purulent, a soreness of the throat, more or less well-marked loss of appetite, and more or less marked inability to swallow. There is usually an increase in temperature. Swellings appear in the sub-maxillary space (the space between the branches of the lower jaw) or in the region of the throat. These are at first hard and somewhat sore; they gradually, or in some cases quickly, increase in size, become soft in the centre, and, if not lanced, will in most cases break and discharge pus. In some cases the walls of the abscess or abscesses are quite thick and hard, pus forms in large quantities, and not being able to burst through the walls, causes pressure inwardly, and, if in the region of the larynx, causes difficult breathing and possibly strangulation. In some cases for a variable time before the local manifestations of the disease are noticeable, the animal is unthrifty, loses flesh, becomes hide-bound, drawn up in the flank, coughs some, shivers if exposed to cold, etc. The horseman concludes that he "is breeding strangles," and time usually confirms his diagnosis, the local symptoms of the disease becoming developed, and very often of a severe type.

In cases of irregular strangles the early symptoms are generally the same as in the regular form. Abscesses may or may not form in the region of the throat or sub-maxillary space. If they do they may be heated, or break without lancing, run the normal course of an abscess and heal, but the unthriftiness continues despite the most skilful treatment and general care, hence the formation of abscesses in other parts is suspected. If superficial they can be observed, but if on an internal organ their presence can be only suspected.

Treatment.—For regular strangles, as stated, some cases do not cause apparent inconvenience and will make a reasonably quick and perfect recovery without treatment. At the same time it is wise to treat all cases, as it tends to hasten recovery and prevent complications.

The patient should be made as comfortable as possible in a perfectly dry, well-ventilated stable and fed on laxative and easily-digested feed. If there be difficulty in swallowing, all feed and drink should be in an elevated position to prevent the necessity of the patient lowering his head to reach it, as he can swallow more easily with his head elevated. The formation of pus should be hastened, and the soreness of the throat lessened by the application of hot poultices or the application of a stimulant, as a liniment made of one part liquor ammonia fortior and four parts each of raw linseed oil and oil of turpentine, twice daily for 2 or 3 days, and the throat kept wrapped with flannel bandages between dressings. As soon as symptoms of blistering appear the application of the liniment should be discontinued. The application of poultices of anti-phlogistine gives good results. As soon as the abscesses

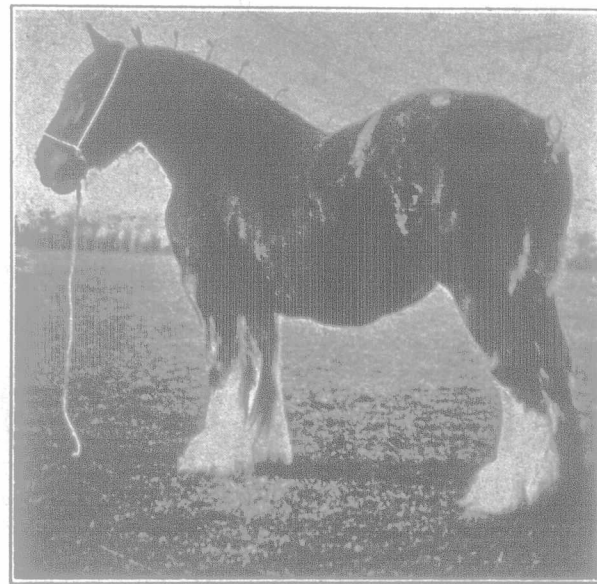
point (become soft in the centre) they should be lanced and the cavities then flushed out twice or three times daily until healed, with an antiseptic as a 5 per cent. solution of one of the coal-tar antiseptics, or carbolic acid in water. The patient should also be given internal antiseptics, as 2 to 6 drams (according to size) of hyposulphite of soda three times daily.

If the abscesses refuse to point and cause difficult respiration, the services of a veterinarian should be secured at once, as there are so many important blood-vessels in the region of the throat it is dangerous for an amateur to cut to any considerable depth, and if the pus be not liberated there is a danger of the patient suffocating.

When there is marked danger of suffocation, the veterinarian will perform tracheotomy, which consists in placing a tube in the wind-pipe, through which the patient breathes. This gives the throat rest and hastens the completion of abscess formation, the tube being left in until respiration can take place in the normal manner. It should be remembered that no attempt must be made to drench the patient until soreness of the throat disappears. If constipation be present it should be combated by the administration of a little raw linseed oil by the use of a two ounce dose syringe, rectal injections and laxative feed.

Constitutional treatment for the irregular form is the same as above. Any abscesses that can should be seen or felt treated as above. If abscesses are forming on internal organs it can be only suspected, and developments must be awaited. All that can be done is to treat those that can be treated and nurse the patient well.

WHIP.



Snelston Lady.

A Shire mare sold recently at public auction in England for 2,200 guineas, a record for a Shire female.

Horses and Horsemen.

BY DR. G. H. CONN.

The behavior of the attendant of the horse, both in the stable and when hitched, is largely the determining factor that produces a gentle servant of man, or a dangerous horse that must be watched at all times, and, is never to be trusted. In working with horses in the stable, especially when they are feeding, they should always be warned of your approach. It is always best to speak to the horses even though they are gentle, for you have no way of knowing just whether they notice your approach. There is much difference in horses; some being very nervous and high strung, while others are just the opposite. This is not so noticeable in draft horses, but is noticed much too frequently to be overlooked. Horses that have such a temperament are often spoiled by some careless owner or attendant.

In approaching horses that are hitched or in harness, it is always the right thing to do to warn them of your approach, especially if you intend to adjust any of the harness or handle them in any way. This will often save a possible injury to the attendant or driver, and many times prevent frightening the animal, which often results in a runaway. Such mistakes are all too common and happen too often to be overlooked.

In working with the horse in the stable there are many things that may happen, that the average man does not interpret in just the proper manner. In the first place, the most of us expect too much from the average horse, especially when we are not just in the sunniest mood. It is often the practice to strike a horse, or yell out at him in a loud voice if he does not obey our commands at once. A good horseman never speaks loud to his horses. A good, clear, firm command is all that should ever be used.

In cleaning the stable or grooming or feeding the animal, when the animal is commanded to move from one side of the stall to the other, and is a little slow to do so, it should never be struck or yelled at in a loud voice. Either of these only tends to confuse the horse, and, it is hard to get him to understand just what you want him to do. It is a disgusting sight to a man who admires good horses to go into a stable and see horses jump from side to side in the stall when the owner speaks to them, not knowing just which side they are wanted on, and expecting to be struck or cursed for making a mistake. If you speak to an animal and it

does not move over promptly, place the palm of the hand against the rump on the side from which you want it to move, and while gently pushing give the command; in a short time the animal will respond very promptly.

THE MEMORY OF THE HORSE.

The owner and caretaker of horses must early realize that the horse is the most valuable servant of mankind, since he performs his duties from memory. There is no question but what the horse has an excellent memory, as is often proven by the length of time that they will remember events that have taken place in their lives. If it were not for this fact, we would not find it difficult to get a horse over being afraid of certain objects, that have once frightened him. Many a valuable horse has been badly spoiled by some thoughtless individual who did not take this fact into consideration. Some horses that have at some time been treated unkindly, never forget it under the same set of circumstances during the rest of their lives. Any one that has had a wide general experience with horses can recall instances of this kind. It is necessary then in the stable that great care be taken that something is not thoughtlessly done that will greatly lessen the animal's value by resulting in a dangerous vice in the stable.

In no animal is this more plainly brought to our attention than with the horse. It is an interesting study to watch the development of the colt in the matter of stable handling. If a regular routine is always carried out in the stable, and this does not vary it is remarkable how soon the horse learns just what is expected of it. If it were not for this fact we would never be able to teach the horse the many things that we do. This one fact also makes it doubly necessary that we do not do anything that may result in the horse learning a dangerous habit, that would make it unsafe to work near him in the stable. In almost every horse that is mean in the stable, the cause can be traced to thoughtlessness upon the part of some caretaker or owner.

INDIVIDUAL CHARACTERISTICS.

If it were not for these individual characteristics that belong to some horses, we could formulate set rules and regulations for their care and management. It is the ability that the owner or caretaker has of detecting animals that have these peculiarities early enough in their association with them, to devise ways and means of handling them without spoiling them or allowing them to form vicious habits. For this reason one cannot be too careful as to help about the horses. An inexperienced or an unsuitable man can do more harm in a few days than can be remedied in many weeks, and sometimes the horses will learn habits that they never overcome.

We have seen and worked with several horses that have had a habit of kicking in the stable. This habit is usually brought about by some form of cruelty to the animal. It may have been started by carelessly touching the animal on the hind legs, or in rough handling while placing the crupper under the tail. At any rate it is one of the worst faults a horse can have in the stable, and likewise one of the most dangerous to the owner. As a rule whipping only aggravates the condition. It is best to arrange the stall so that you can harness and work around the animal without getting kicked.

Another very dangerous habit that some horses acquire is that of crowding in the stall. A man upon entering the stall occupied by a horse of this kind is very liable to be injured unless he is very careful. It is a fact that almost all of these horses have learned this habit as a means of escaping punishment, either administered as such or during grooming. Some horses have a very tender skin, and grooming with a short comb or stiff-bristled brush will irritate the skin and make it sore. In grooming a horse of this kind too much force may be used on the comb, and the animal to escape it will often lean toward the operator, or in case it happens to try to draw away from the operator he may follow up all the while using more force and then the animal crowds toward the operator. Instead of getting suitable grooming tools as they should do, many operators persist in using those that irritate the skin, and when the animals crowd to get away from the pain it is punished usually by slapping with the sharp comb or the stiff brush. In the course of a few days we have a stall-crowding horse. We have seen horses that it was impossible to curry with any degree of safety. A very dangerous habit that could have been prevented very easily.

The danger of being trampled and getting some bones broken, or of having some bones broken from being crowded by a horse of this kind is very great; but the man who uses so little judgment as to be the means of an animal developing such a habit, is not to be sympathized with to a great extent. It is, however, the one who is unfamiliar with the habits of the horse, that has our sympathy in case he may happen to be a victim of a horse with this habit.

Biting is another stable habit that may be started by injury to a tender skin while grooming. It should be guarded against, as it is very dangerous, and severe injuries have resulted from horses biting those who were caring for them. It is most often found in the stallion, but it is not out of place to state here that we frequently find mares and geldings with these habits very well established, and which are very bad animals to handle.

CONDITIONS DEMANDING SPECIAL CARE.

It is a very common thing to find some mares that are quite ugly and must be watched during their heat period. Care should be taken at this time with such mares as they are apt to kick, bite or crowd in the stable. This is one of the best times to start the habit of balking. Too much care cannot be taken with such mare at this

time, and too much care cannot be taken in handling. Improper handling at this time often is the beginning of some of those habits that render an animal unsafe, and one that is not desired in the average farm stable.

Mares that have colts should always be watched carefully during the first few days. They are often quite ugly in disposition, for the first few days after they have dropped their foal. In such a case, observe the greatest care in handling and disturb as little as possible. This usually subsides in a few days, but in some mares may persist during the time the colt is suckling. Some mares will also show this disposition while carrying a foal. Under no consideration should a mare be punished under these circumstances.

We who have handled horses know the effect that idleness and cold weather have upon the average horse. We have often seen the old family horse jump and kick, and possibly pretend that he was going to run away. This same feeling is present in the younger horse, but in much stronger degree. It is always proper to pay particular attention to the horse that is worked only occasionally during the winter months. A little play may result in some little accident or incident that may frighten or injure the horse, causing him to run away or to become entangled in the harness or vehicle. This is simply the result of an over-abundance of spirit and calls for nothing more than a little care and judgment in handling.

Due to improperly-fitted collar, poorly-adjusted harness, or from carrying much weight, the horse's neck often becomes sore. Horses are just like people as far as wounds or injuries are concerned, and it is often necessary to use a lot of skill in caring for some sore-necked horses, to prevent them from injuring you. Horses of this kind should be handled just as carefully as possible and should not be whipped, as this does as a general thing only aggravate the trouble. It is while a horse is suffering from this condition that he is apt to learn crowding in the stall, and like habits.

PUNISHING THE HORSE.

It is not often that punishment is necessary. There are, in most cases, good and sufficient reasons why it should not be done. In the first place, it is not and never should be the proper punishment to kick a horse in the stomach, or to whip him about the head. It is cruel to beat a horse under any condition, and from our own experience, we feel that it never was justified in a single instance. In our experience we have handled a few of the so-called mean ones, in the harness classes, and the less we used the whip the better progress we made. It is not often that a horse refuses to do a thing, if you can succeed in making him understand what you want him to do. There is no real place for a whip about the stable, or any place else for that matter, aside from that of appearance. In a fancy rig or turnout, it has about the same effect there on appearance as a collar and tie for the driver. In training and driving race horses we usually carried a whip, but usually we used the whip at just the wrong time, and later when we decided that we did not often need a whip we got along better than before. The tendency of every driver that carries a whip is to use it too often. We do not feel that a whip should ever be used only as a prompter for the horse. There is too much danger of striking the horse in the eye, and it injures the skin too badly. With drivers who carry team whips it is the common practice to see them demonstrating their ability to strike the animal on the ears, or on other unusual locations just to show themselves off. Such practices are all too common and should never be tolerated.

A horse should never be jerked. This is one of the most cruel punishments that drivers subject their horses to. It is all too common among average drivers.

If it is necessary to punish a horse it can best be done by using a short, thin, wide paddle. This will frighten the animal considerably and will not injure the skin. It is the common practice to see men beat horses or whip them with pitchforks or clubs or the handiest article to be had. This indicates a lack of good sense and a violation of their better judgement. When you feel that one of your horses needs punishing take a lot of time to think it over. If you do this you will usually conclude that you were a little hasty after all.

The Blacksmith and the Farmer.

EDITOR "THE FARMER'S ADVOCATE":

As blacksmiths are getting scarce in the country, I feel the farmer is going to be the loser, as you see there are very few young men learning the trade; first because it is, as everybody knows, hard work and all hardware is very dear. The average blacksmith just makes a living. Has any farmer ever tried to hold a horse's foot, especially a colt's? When he goes to pare his hoof or dress his foot, whatever the case may be, does it not make him puff and sometimes raises his temper before he has the foot finished? Such is the case with the blacksmith every day, so do not blame him if he is cross. Holding colts, and sometimes old horses, is no joke. It is true no owner wants to see his horse whipped or abused; but some horses will not stand until they get a good whipping. There are cases where it does no good; a little kindness is better in some cases. A nervous horse is better taken quietly.

As spring work will soon start you will want your colt shod. Do not ask your blacksmith to wrestle with him for an old pair of shoes; if he is not worth new ones do not shoe him at all. A farmer owes a blacksmith a great deal, for there are cases where an unshod horse would lose a lot of money. Many good horses are found with a leg broken for want of shoes.

A BLACKSMITH.

LIVE STOCK.

The better the live stock the larger the income on most farms.

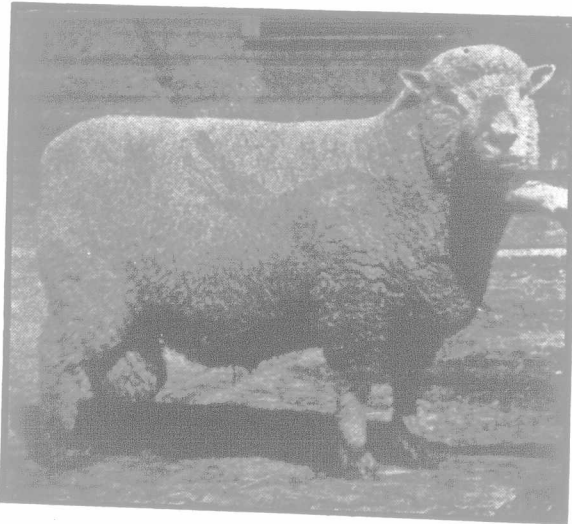
There are fewer crop failures on farms where good live stock is kept and properly cared for.

Silage and clover hay will winter young stock very well, and are the basis of economical rations for all ages of bovines.

Did you ever try feeding silage to those shoats and brood sows? It is surprising how they appear to relish the canned corn.

Stockmen are the salt of the community. They feed the soil instead of mining it by selling everything off in bales or bags.

It is yet many months before the fall exhibitions open, but it is not a day too soon to pick out the stock to be shown and commence fitting it.



Southdown Ram.

A fine type of Southdown, showing substance and character.

A few applications of the curry comb and brush will greatly add to the appearance of the herd, especially as the old hair is beginning to come out.

The appearance of those heifers with up-turned horns can be greatly improved by using weights on the horns to bring them into a more pleasing position.

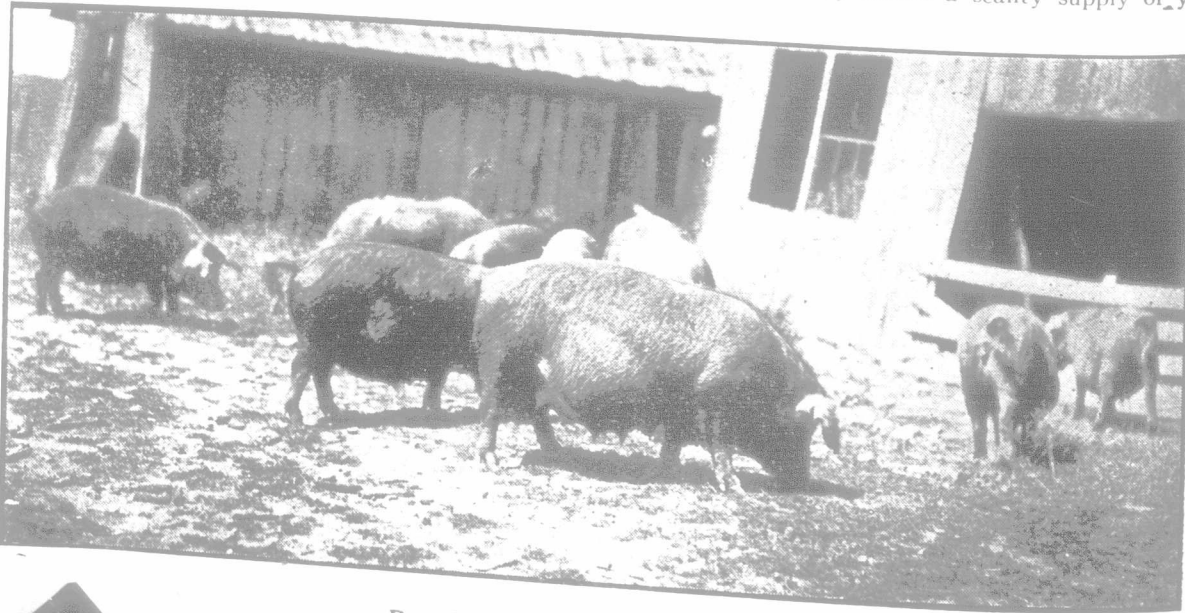
The stability of the Shorthorn trade was again demonstrated at the recent Shorthorn Congress Show and Sale held in Chicago, when 305 head averaged \$958.00.

Plan the cropping system so that you will at least have sufficient roughage to carry the herds and flock. Roughage can be grown more cheaply than it can be purchased.

More silage and clover will enable you to feed more cattle to further enrich the soil to grow bigger crops to feed more cattle. Quality as well as quantity in the stock should be considered.

Those ewes due to lamb this month should be closely watched. Have them in a small enclosure preferable in the sheep pen, if warm enough, before lambing. If the ewe is put in a warm stable she may lose some of the wool.

The spring is the season of year when large increases are made in the herds and flocks. The new-born pigs, lambs, calves and colts should be given every chance to



Brood Sows Feeding in the Open.

Expensive houses are not necessary for brood sows during the gestation period, provided they are dry.

thrive. If you haven't time to care for the weaning, give the boys or girls a chance to raise it, but do not let it be a case of Mary's calf and dad's cow.

The live-stock market continues teetery. It appears difficult for it to become stabilized at a point where the high-priced feeds can profitably be converted into meat. The American market has been even more unstable than ours.

March litters very often require as much attention as those farrowed in early winter. The blustery March winds have the habit of penetrating the piggery walls and chilling the silken-clad new-born pigs. Be as particular about the farrowing pen in March as in December. It will pay.

Growing Wool of High Quality.

The market for wool has been particularly good for most grades during the past few years. A fleece now brings almost as much as a lamb used to. The war influenced to a large extent the price received for the different grades. As the demand increased for goods manufactured from the fine grades of wool, the price for these grades rose, to the detriment of the price for the lower grades. It is largely the result of supply and demand. At present there is a considerable difference in the price of coarse wool and that of fine or medium combing. According to Mr. Ackroyd, the Canadian Co-operative Wool Growers' representative in Boston, there was on January 1 a very large amount of coarse wool in storage. Consequently, the price did not compare favorably with that received for the finer quality. The mills will manufacture what the people demand. However, it is not expected that this difference in price will be maintained for any great length of time, as the price of the fine-quality clothing will reach such a height that the demand will switch to some of the coarser grades. We understand that already some of the mills are contemplating adjusting their machinery so as to handle the coarser wools. Last year some of the breeders of long-wooled sheep were rather disappointed in the price they received. While they secured the advantage of a large clip, the price was scarcely commensurate. Undoubtedly, in the near future the price of the different grades will become more nearly equalized.

The breeder or shepherd can do a good deal towards improving the quality of his clip. It is important that the fleece be kept clean. The feeding and general management of the flock also influences the quality of the wool. The following paragraphs from Bulletin No. 274, written by Professors Wade Toole and J. P. Sackville, Guelph, give valuable information regarding the care of the sheep in order to produce the highest quality of fleece. The table shows the grades into which the wool from the different breeds of sheep was placed at the grading station in Ontario this year.

While it is true that practically all the breeds of sheep kept in Ontario are mutton sheep and the fleece is more or less of a by-product, yet wool selling at over the half-dollar mark per pound the production of a heavy fleece of good quality is a very important feature of sheep husbandry. Quantity and quality are the essential features of a good fleece. Neither of these can be expected unless the flock is maintained throughout the year in a good condition, and at the same time care taken to keep all foreign matter such as chaff, burrs and sand out of the wool. The weight of the fleece depends on the density and length of the wool, and this varies to some extent with the different breeds. A good growth of wool is impossible, no matter what breed, unless the sheep has been well nourished. The growth of wool depends just as much on good feeding and management as does the growth of the animal's body. Quality has reference to strength of fibre, the absence of cotted wool and kemp and a fleece that is free from dirt and chaff. The wool produced during a period of sickness or low condition of the sheep is bound to be weak in fibre. Freedom from cotted wool is dependent upon a regular supply of yoke or grease secreted from the pores of the skin. Here again sickness or low vitality means a scanty supply of yoke,

with the result that the wool fibres become interlocked, which is known as a cotted condition. The amount of dirt that collects in the fleece will depend largely on the care exercised in handling the flock.

different breeds are classed. In connection with this table it should be mentioned that many fleeces might be on the border line and could easily have been admitted to a grade higher or one lower.

Breed	Fine Medium Combing per cent.	Medium Combing per cent.	Low Medium Combing per cent.	Low Combing per cent.	Fine Medium Combing per cent.	Medium Clothing Per cent.	Coarse Per cent.
Leicester	—	—	15.	39.4	—	—	—
Lincoln	—	—	4	1.6	—	—	45.6
Cotswold	—	—	—	5.	—	—	98.
Southdown	8.9	20.9	1.8	—	42.8	25.6	95.
Shropshire	.9	71.6	12.9	—	—	—	—
Oxford	.4	46.2	49.5	3.1	1.4	13.2	—
Suffolk	34.4	60.4	—	—	.6	.2	—
Hampshire	5.4	67.5	8.7	—	3.1	2.1	—
Dorset	—	74.8	20.	—	4.8	13.6	—
						5.2	

"During the winter more or less chaff and straw is bound to collect in the wool, but by feeding from properly-constructed feed racks and avoiding as far as possible having the feed lodge on the necks and backs of the sheep, it is possible to produce wool that will be reasonably clean. As has already been suggested, the amount and quality of the wool produced in any flock will depend very much on the feeding and general management of the flock throughout the entire twelve months of the year, and from this standpoint alone it is well worth while to give the proper care and attention at the right time. It may mean the difference of several cents per pound in the selling value, as well as an increase in the weight of the wool.

"Within the past three years considerable attention has been given to the grading of the Ontario wool clip. In common with any commodity, wool that is marketed after being properly graded will usually command a higher price than that offered without any respect as to quality and values. When wool is sold according to the different grades the farmer that produces a good quality of wool usually gets a premium for it. All cotted and black or gray wool, as well as the dung locks, are sold separate from the good fleeces. The basis for grading is determined by the length, firmness or coarseness, strength and purity of the wool. It is difficult to say definitely the grade into which the different breeds would be classed. The table given herewith is the result of the grading of approximately three-quarters of a million pounds of wool in Ontario this year, and will give a general idea of the grades into which the

"The illustration showing the different grades of wool is fairly representative, and may be an aid to the farmer as indicating into what class his wool would go."

Make the Stable Convenient and Comfortable.

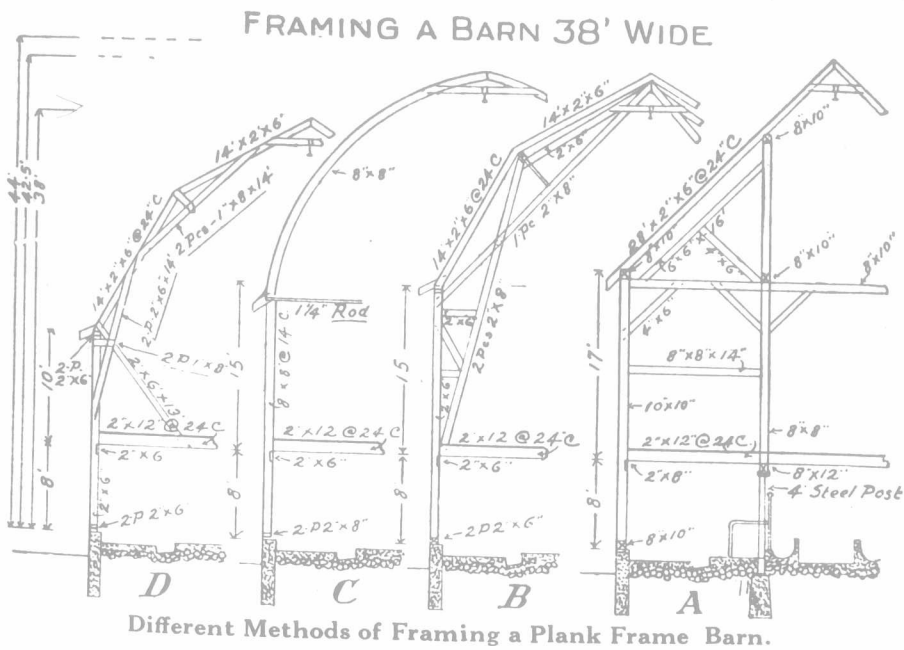
There are many different designs of stables in use throughout the country. Some are convenient, well built, and have a good system of ventilation; others, however, are the reverse, and hundreds of steps are wasted every day when doing the chores. The aim should be to have things arranged as handily as possible, as time is an important factor in this day of labor scarcity. When planning on building it is advisable to consider the stable before getting out the timber for the barn. There are some who build a barn of certain dimensions and then arrange the stabling afterwards. If often happens that under this system there is a great deal of waste space. If a person wishes to build a wide barn, then it is well to plan on a width which will permit of a certain number of rows of stalls, with ample room for litter and feed alleys. A barn thirty-six feet wide will provide for two rows of stalls the entire length, and also give a wide feed alley. A somewhat narrower stable will do. A person should allow about seven feet for rear passage and gutter, and five feet for stalls. The manger should be from twenty to twenty-four inches wide, and six feet will give room enough for

feeding, although many prefer seven or eight feet. If desirous of making a wider stable, a row of box-stalls may be placed along one side, off one rear passage. Ten feet should be provided for the width of the box stalls. In all stables there should be a number of box stalls which may be used for young calves or for cows. It is important that the stable be arranged so that feeding and cleaning may be done with the least expenditure of energy. With a feed alley down the centre, a feed carrier or truck may be used to advantage. It is very handy to have the silo at one end, and also a feed room so that straw and silage may be mixed previous to being loaded into the feed truck. If possible, it is well to have the root house near the silo, although in many cases it is more convenient to have it located under the barn approach. It is seldom that roots are mixed with the silage and straw, although if silage is not available cut straw can be rendered more palatable by mixing pulped roots with it twelve hours previous to feeding. While many prefer to have the horse barn separate from the cattle stable, it is quite customary for all classes of stock to be housed under the one roof.

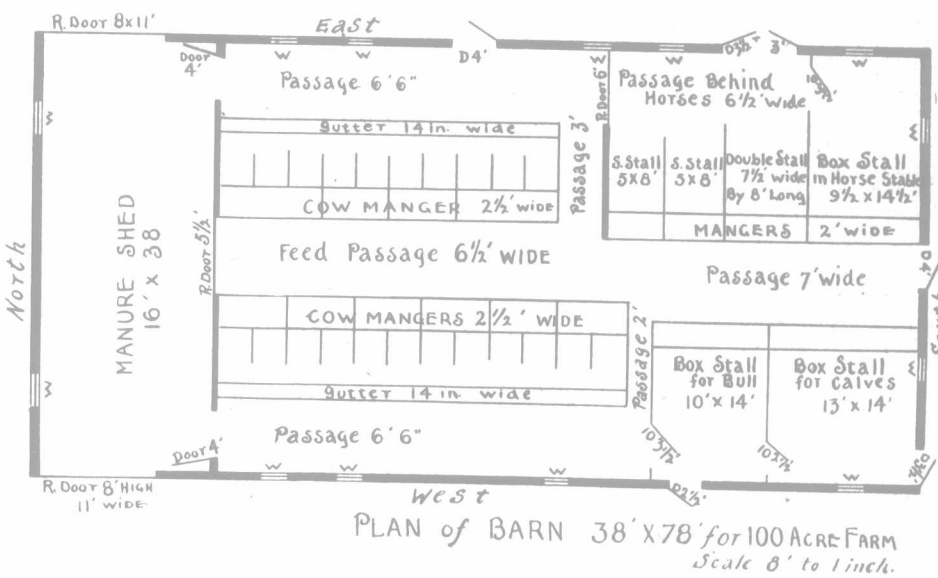
In some sections a good many cattle are winter fed, and feeders have found it advantageous to run the cattle loose rather than tie them. It is generally considered that this system economizes on labor. A row of box stalls may be arranged the full length of the stable, while a row of stalls may be placed along the opposite side.

When putting in the cow stalls, many advise varying the length, owing to the fact that the older animals are longer than the young things. If the stall is the same length as the animal it is much easier to keep it clean than if tied in a stall which is too long. The accompanying illustrations show different types of stables in use. These may not suit your conditions, but they may offer suggestions which will help in making plans for a new stable or for renovating the old one. Sometimes use must be made of old timber, or old buildings, in constructing the barn. This makes it a little more difficult when laying out a stable to a person's liking. However, by consulting different plans the stabling may be arranged to advantage.

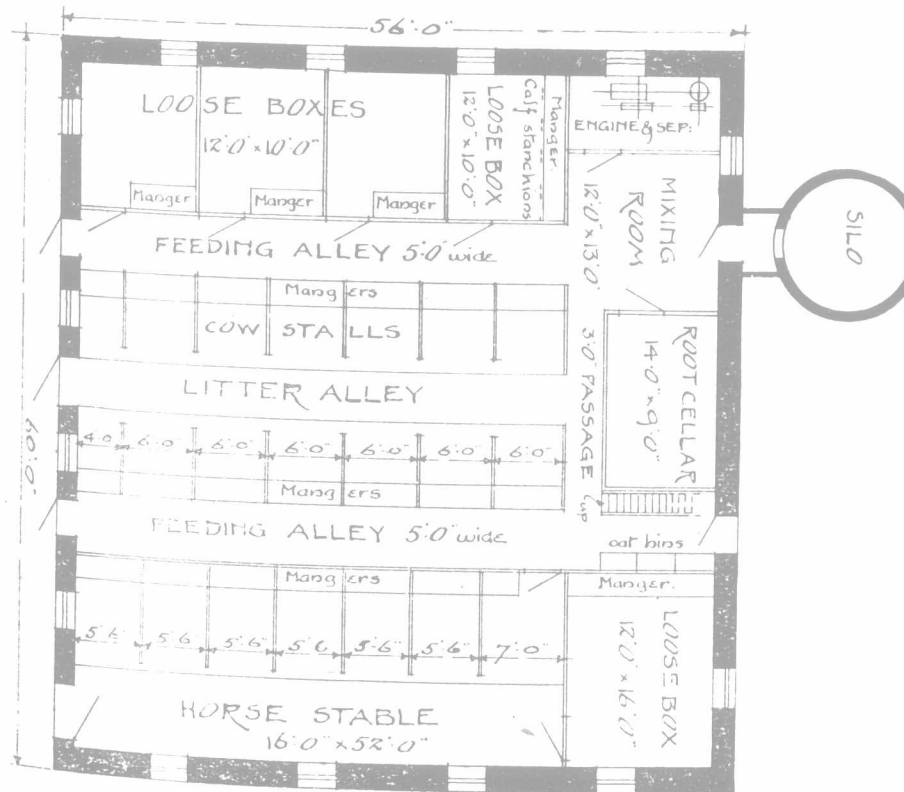
It is of great importance that there be sufficient light in the stable. Not only is it good for the stock, but it economizes time when doing the chores. The windows should be so arranged that the sunlight can penetrate to the floors and passages. As a rule the light stable will be kept cleaner than one in which the light is barred to a large extent. It costs very little more to



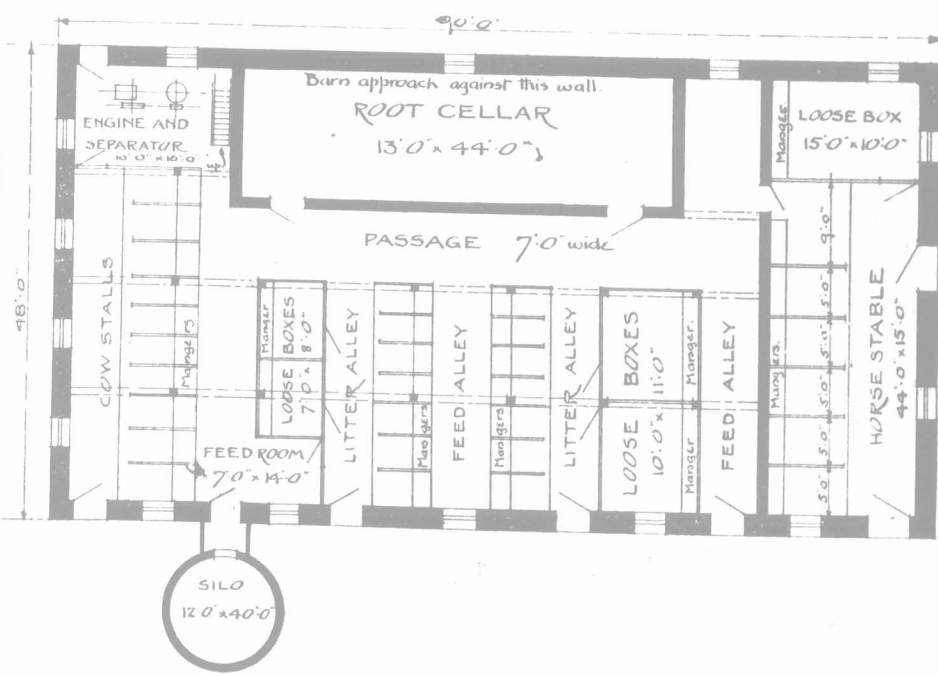
Different Methods of Framing a Plank Frame Barn.



A Fairly Convenient Stable.



A Convenient Plan for a Nearly Square Stable.



A Common Arrangement of Stalls.

There is more waste room and less light throughout than where the stalls go lengthwise of stable.

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dry.

put in windows than it does to build up the wall of concrete or lumber. A window frame containing two equal-sized sashes has commendable features. The upper one can be hinged to the top of the lower one, and may be opened inward to permit of ventilation, without causing a direct draft on the cattle. These sashes may contain six lights apiece, each one ten by ten, or ten by twelve. By having a deep window more light is admitted to the stable than through a long, narrow one placed near the ceiling. There is, of course, greater danger of it becoming broken unless protected. Iron bars may be fastened across the frame, or a heavy wire of about one inch mesh gives good protection without interfering with the light. When estimating the number of windows to put in a stable, a very good rule is to provide six or eight square feet of glass per cow. These windows should be distributed so far as possible on all four sides of the stable, with the greater number on the south side, not only because they will admit more sunlight but they will not admit as much cold as will the north windows.

It is important that the stock be housed in a dry, reasonably warm building. In many sections stone or concrete walls are in vogue, these being built eight and a half or nine feet high with the barn over top. It is well known that these two materials very soon frost up on the inside when it comes a cold snap. This shows that there is dampness in the stable, or lack of proper ventilation. We have found that a three-foot stone or concrete foundation with framework above makes a drier stable than the all-concrete wall. Two thicknesses of inch lumber with heavy building paper between makes a wall that is plenty warm enough. Then, it is important that there be some form of ventilation. There must be some means of permitting the fresh air to enter the stable and the foul air to escape. A ventilating shaft leading from the stable to the peak of the barn will carry off a good deal of the foul air. Too often the openings are at the ceiling. This carries away the heat, rather than the stagnant air which lies near the floor. One of the barns at Weldwood has an 18-inch galvanized pipe at each end leading from the floor to the roof. There is an opening right at the ceiling which may be opened or closed at will, but during the winter we keep it closed. There is quite a suction of air up the pipe. This stable is dry and there is absence of stable odor, so pronounced in the stable filled with cattle which has not a proper ventilating system. The fresh-air intakes should not permit of the cold winter air coming directly on the cattle. Where possible, the air may be brought through an opening in the wall and deflected upward towards the ceiling. A temperature of from forty to fifty-five degrees is quite satisfactory; in it all classes of stock will be reasonably healthy and comfortable. A warm, tight stable permits of no circulation of air, and it is well known that animals will not thrive unless the foul air is removed and a fresh supply of oxygen brought in. The aim of the ventilating system is to draw off the carbon-dioxide gas which is exhaled from the body, and which if left in the stable has a poisonous effect upon the animals. Unless there is circulation of air the animals will soon use up the oxygen. Then, too, there is a good deal of moisture from the animals' breath, which, if not carried away, leaves the stable damp, and damp quarters together with bad air induce rheumatism, digestive disorders, pneumonia and other complaints. An animal that is housed in a damp stable will not withstand cold anything like as well as one kept in dry, cool quarters. Then, too, dampness is the breeding ground of many of the most contagious diseases. Some authorities claim that the fresh-air intakes should be sufficient in size to allow fifteen square inches per cow. These intakes should be distributed on the four sides of the building. The foul air outlets should be on both ends of the barn, and it is considered that thirty-two square inches per cow is satisfactory. It must be remembered that with the foul-air outlet, dampers should be installed at both the floor and ceiling to control the temperature and humidity.

One should be careful when planning the stable to arrange that the doors be in the most convenient place. A little attention to this matter may save many steps in going from one building to another, or in going from house to barn. The placing of the feed bins is also important. Where possible, there should be a large feed bin in the barn with a chute running to the stable. This permits of a load or two of chop being dumped at once, and saves a man carrying a bag of chop and dumping it in a barrel or box at feeding time. The chute may lead into a feed box in the stable. Some have a grain box on their feed carrier. This is filled from the chute and saves a good many steps when feeding concentrates.

When building, one should plan for sufficient room to house the maximum number of stock which the farm will carry. There needs to be a number of box stalls, as young calves always do better when running loose than when tied. Then, too, it is necessary to have box stalls for cows calving. In many stables there are altogether too few box stalls.

Live-Stock Notes.

During the year ended December 31st, 1919, Canada's export trade in live cattle exceeded 500,000 head and was valued at \$50,000,000, or at a sum almost equal to the combined values of live cattle exports during the five previous fiscal years. Over 90% of the exported cattle went into the United States either as butcher cattle or as stockers and feeders. During the same period the Dominion exported 112,709,517 pounds of fresh and pickled beef valued at \$20,937,848. The

total export value therefore of the cattle industry during the calendar year 1919, exclusive of canned meats exceeded \$70,000,000.

In connection with the exports of live cattle it is undoubtedly true that the outstanding stabilizing influence in the public live-stock market situation during 1919 and the main effective in establishing high prices the wide Southern outlet for stockers and butcher cattle. The fact that this outlet is diversified adds greatly to its value in that it acts as a regulator in connection with the supplies of pasture and winter feed.

Our young stock have gained a reputation in United States feed-lots and stables as thrifty vigorous feeders and it will be to Canada's advantage if this can be made permanent.

With reference to our exports of beef it is encouraging to note that the revenue from the exports during 1919 shows an increase of 100% when compared with the exports during the previous year. The dead meat export trade offers great opportunities and may eventually grow to great proportions. Nevertheless the safety-valve of the cattle industry of Canada is the outlet for unfinished and even for finished cattle to the foreign market. Had this outlet not been available during the past year, the heavy liquidation brought about by short crop conditions would have forced prices down to an unprecedentedly low level. The influence of the alternative market for Canadian live cattle either in the United States or elsewhere has been most forcibly demonstrated by the history of the past year's trade.

Live-Stock Commissioner. H. S. ARKELL.



A Pair of Thick, Blocky Heifers.

This pair of grade heifers are 17 and 14 months old respectively. They are owned by J. McPherson & Sons, Dundalk, Ont.

Feeding Pigs When Feeds are High.

The problem of feeding the pigs when feeds are as high in price and difficult to purchase as they are at present is no mean one for the farmer to face. Not only is the problem of winter feeding extremely difficult of solution, but the question of summer feeding is also deserving of very careful planning because of the present labor situation and the uncertainty as to grain feeds until the threshing season. The information and suggestions contained in this article are the result of an interview which a representative of "The Farmer's Advocate" had with Professor J. P. Sackville of the Ontario Agricultural College, Guelph, a few days ago.

With regard to winter and early spring feeding under present conditions, Professor Sackville does not see much opportunity of economizing in pig feeding. He says that by reason of the fact that pigs require concentrated feeds very largely, and are in this respect radically different from cattle and sheep, the feeder has not a great deal of choice aside from barley, oats, middlings, skim-milk and tankage. Middlings in many localities are off the market, and on many farms skim-milk is not available for the older pigs so that the feeder in hundreds of instances has very little choice. Some roots and good clover hay may be fed, but these do not provide substitutes for high-priced grains for reasons already stated. The net result of the present situation as regards pig feeding in winter is that the greatest saving can be affected by keeping the pigs in the best possible physical condition and preventing loss from death or stunted growth due to overfeeding, lack of exercise, unclean pens, etc. Overfeeding is a prolific source of loss that should be carefully avoided. It is a good plan, said Professor Sackville, to give the pigs some charcoal, sulphur and lime with a little salt also, as this mixture tends to keep the digestive system in good condition. The pigs at the O. A. C. have been getting some of this mixture all winter.

For spring and summer feeding we were told that farmers would do well to make the utmost use of pasture and soiling crops. In fact any relief to be secured from present conditions is largely a question of providing pasture crops to the fullest possible extent. They have found at Guelph that hog paddocks as close to the pens as can be secured have proven very valuable helps in economical summer feeding. At the present time it is a regular practice there to sow some winter rye about the last week in August or the first week in September. This sowing makes first-class fall pasture by the middle of October and a month's feeding can thereby be secured before winter over a large part of Ontario. This crop also comes in very early in the spring as a pasture, requiring as it does only a few days of growth before it is ready to use. It will be done by the middle of May, but in the meantime it will have provided a few weeks partial relief from the

feed situation. In May, then, the rye can be plowed up and rape sown, which will be ready for pasturing about six weeks after sowing. Between the time one can begin pasturing the rye in early spring and the time rape is sown on the same ground, a mixture of peas and oats can be sown to act as an intermediate or alternative pasture crop later in the season or as a source of green feed for lighter hogs. A mixture of one bushel of peas and two bushels of oats sown early in the spring will, according to Professor Sackville, be a great help to the farmer since it can be used not only for pasture, but as a soiling crop that can be cut and fed green in the pens. After this crop is eaten or cut off the land can be sown to rape.

As regards rape, 10 hogs per acre can get a month's feed or more from rape. In fact they can probably feed two or three weeks on the rape and, if turned into another field or paddock so as to give the rape a chance to grow up again, the same rape paddock should be good for from two to four weeks more. "Undoubtedly," said Professor Sackville "the best pasture of all is alfalfa, where it can be grown successfully. This crop under average conditions should pasture about 15 to 20 good sized shoats per acre. If one cannot grow alfalfa, common red clover makes a good substitute. There is this that I think should be mentioned regarding pasture for pigs, however. Experiments conducted at this institution by Professor G. E. Day indicate that it is not profitable to turn pigs on pasture that weigh less than 100 pounds each. Up to this age it appears more profitable, at least under ordinary conditions, to keep the pigs penned and supply the necessary green feed by the use of soiling crops such as oats and peas cut green and fed in the pen. Of course one cannot lay down any definite rules as to the age or weight at which pigs should be turned on pasture, especially under the very unusual and unfavorable conditions that the pig feeder is facing at the present time. Pasture will play such an important part in the economical feeding of pigs this summer that on a great many farms it may be more profitable to turn the pigs out at a lower weight." Asked regarding the use of sweet clover as a pasture for hogs we were told that this crop has not yet been tried out with pigs on the college farm, but that it is being tried out this summer. Professor Sackville emphasized the fact that while it is not usually profitable to turn pigs on pasture too young, the dry sows should be turned out as early as possible and kept on grass as long as possible in order to cheapen the cost of maintenance. He thought, however, that sows on pasture should have a little grain in order to keep them in good physical condition.

Asked regarding the feeding of the young pigs, our informant thought it an excellent plan to teach the unweaned pigs to eat a little meal so that when weaned they would have formed the habit of eating meal and would not miss the sow nearly so much from the first. He suggested that, beginning when the pigs are about four weeks old, a small flat bottomed trough should be put in one corner of the pen and partitioned off so that the pigs could get at it, but so that the sow could be kept away from it. If skim-milk is put in this trough and a little middlings stirred in it the little pigs will gradually get to know the taste of meal. For the first two weeks after weaning there is no better meal mixture than a mixture of two parts middlings and one part of sifted ground oats, the sifting being done in order to get rid of the oat hulls. For the successful feeding of pigs the feeds used must be high in protein and mineral matter that is easily digested. Middlings are rich in protein that is easily digested and oats are fairly high in both mineral matter and protein. When fed along with skim-milk, which fully meets the requirements for pig feeding, especially for young pigs, nothing more is needed for their best development.

We inquired as to what was thought to be the value of 100 pounds of skim-milk for pig feeding, but were told that this depended so much upon conditions that it was next to impossible to place a money value on this product. One experiment conducted at the college indicated that when barley is worth 80 cents per bushel, skim-milk is worth 45 cents per 100 pounds. This experiment was conducted with two lots of pigs and the skim-milk was fed in the proportion of 2 1/2 pounds of skim-milk to one pound of meal. It was emphasized that the money value of skim-milk depends very largely upon the proportion fed and upon the age of the pigs. Illustrating the point as regards proportion, we were told that the pigs being fed now at the college are not proving skim-milk to be worth anything like 80 cents per 100 pounds, for the reason that they are being fed entirely too much. Due to a temporary heavy supply of skim-milk from the dairy, where a short course is being carried on, the pigs on the farm are getting practically all the skim-milk they will take, which is a great deal more than 2 1/2 pounds for every pound of grain—the most desirable proportion.

About a month after weaning, that is when the pigs are from 10 to 12 weeks old, it is desirable to change the proportion of the meal mixture given above to one part each of oats and middlings. By the time they are 3 1/2 to 4 months old they can be fed a little barley if this feed is available. It must be remembered by those who try to follow these suggestions that one must adapt himself to circumstances, so that it might be that it would be necessary to feed one part each of middlings, oats and barley four weeks after weaning. By the time the pigs are five months old the middlings may be cut out altogether so that the meal would consist of only barley and oats. When to stop feeding skim-milk will depend altogether upon conditions, but in any case it is a good feed and it will pay to feed it as long as it is available and not more necessary for younger pigs or calves. Tankage is valuable where skim-milk is not available as it has the same properties as skim-milk in that it is

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high in protein and easily digestible although not particularly palatable. Tankage can be used immediately after weaning, beginning with about one part of tankage to fifteen or twenty parts of grain. This amount should be gradually increased to one part of tankage to ten parts of grain, but at present prices it will probably not pay to feed it longer than from four to six weeks after weaning.

Pigs will, or rather, should weigh 100 pounds by the time they are 4 months old so that at this age they can be turned out on pasture. When this is done the grain ration should be reduced to two-thirds. The finishing period with hogs comes during the last six to eight weeks of the feeding period and at this time a meal mixture of one part of oats to two parts of barley is as good as any. The self-feeder is particularly valuable at this time and is besides a great labor saver. Just to digress a little we remember that at the Dominion Experimental Farm, Ottawa it has been found that pigs on pasture do not seem to make the best use of the self feeder until they are about four and a half months old, but that after that age they can be fairly seen to grow under good conditions. We are reminded also of a farmer in whose barn we recently saw some pigs running in a large covered shed in which were one or two hog cabins. Just off the shed was a pen with a self feeder in it, fed from the granary above by means of a shoot and the owner said that he wished someone had discovered the self feeder years before, because it would have saved him carrying tons and tons of meal to the pigs. In this particular instance the common difficulty with self feeders not feeding regularly owing to the small opening above the trough becoming bridged over with meal, was overcome very successfully by means of two or three slender iron bars hanging down loosely from the inside of the upright wall of the feeder, to which they were fastened about eight or ten inches up from the lower edge. The bars were placed one and a half to two feet apart along the length of the feeder and were long enough to hang down so that the pigs would move them as they fed and thus prevent the meal from clogging up the opening.

But to come back to our story. We said that when the pigs are put on pasture the grain ration should be reduced to two-thirds. Professor Sackville said that in his opinion the cost of production in summer could be reduced by 25 per cent by utilizing pasture to good advantage. He illustrated his remarks by quoting an experiment which showed that pigs on pasture required 421 pounds of grain for 100 pounds of gain on a full feed as compared with only 353 pounds of grain to make 100 pounds of gain when the feed was reduced to two-thirds with the use of pasture. He quoted another experiment conducted at the Kansas Experiment Station wherein it was shown that 10 pounds of green alfalfa is required to make a pound of pork and one acre of alfalfa produced 596 pounds of pork, as compared with 202 pounds of pork from an acre of rape. In this case these pasture crops were fed in conjunction with corn. In another experiment, also from the Kansas station, three lots of pigs were fed grain, but one lot was kept confined in a pen, another was pastured on alfalfa and the third lot was pastured on rape. The pigs confined required 371 pounds of grain to make 100 pounds of pork and gained 1.04 pounds daily, as compared with a daily gain of 1.09 pounds and 301 pounds of grain for the pigs on rape and 1.10 pounds daily and only 200 pounds grain for 100 pounds gain for the pigs pastured on alfalfa.

Guelph Fat-Stock Club Sale.

The annual sale, under the auspices of the Ontario Department of Agriculture and the management of the Guelph Fat-stock Club, was held in the Winter Fair building, Guelph, on Wednesday, March 3. About sixty head of Shorthorns were consigned by breeders from various parts of the Province, and it is to their credit that practically every animal entered was brought out in splendid condition and that the breeding on the whole excelled that of previous sales. A glance through the catalogue shows many animals with fashionable pedigrees. Rosebud Thalia, a dark red heifer coming three years old, consigned by W. P. Fraser, of Meadowvale, topped the sale at \$785. She had a heifer calf at foot, sired by Escana Right Forward. She is a deep, thick, sappy cow, and will look good in Pritchard Bros. herd at Elora. Nonpareil of Hillside 26, a straight Nonpareil, sired by Count Avere 4th, was purchased by Gordon Auld, of Guelph, at \$750. She was consigned by A. F. Auld. George Amos and Sons had a beautiful roan heifer just past a year old, which went to Goodfellow Bros., of Bolton, for \$510. She is sired by Newton Grand Champion Imp. Fancy Miss, a particularly sweet heifer sired by Sittyton Favorite, went under the hammer at \$285. She is a show heifer and went away below her value. Duncan Reid, of Hillside, was the fortunate purchaser. Gordon Smith, of Woodslee, contributed several exceptionally well-bred, high quality bulls. Broadhooks Star, a seven-year-old sired by Newton Ringleader Imp., was sold for \$260. He weighed well over a ton and showed exceptionally good Shorthorn character and conformation. That he is a breeder of high merit was shown by three of his sons in the sale, which sold for \$400 and over apiece. Golden Drop 9th, a thick, sappy, mossy-coated, white calf, consigned by Mr. Smith, was purchased by W. R. Elliott & Sons, of Guelph, for \$540. Wedding Gift Prince, also sired by Broadhooks Star, is a thick, low-set, straight-lined roan, which went to the \$400 bid of J. Barr, of Blyth. J. Gilbert, of St. Thomas, got another son of Broadhooks Star for \$400. Palmer Bros., of Michigan, picked up a number of bulls at from \$140 to \$200. Nineteen females brought a total of \$6,355, and forty-three males brought \$8,700.

This sale gives farmers of the Province an opportunity of picking up some right good herd sires or foundation stock. There was a good crowd, but bidding was very slow on the bulls. The auctioneers worked hard to get the best they could for the consignors. There wasn't what would be called a "cull" bull in the sale, and as a result high-quality bulls bred in the purple will go into many districts. Some of the purchasers secured real bargains. The sale was handled by auctioneers James McDonald and Capt. T. E. Robson, with Robt. Elliot as superintendent. The President of the Club is C. N. Nelles, of Guelph, and J. M. Duff is the Secretary. Following is a list of the animals sold, together with the names and addresses of the purchasers:

MALES.

Wedding Gift Prince, J. Barr, Blyth	\$400
Butterfly Chief, J. Gilbert, St. Thomas	400
Broadhooks Star, C. Scott, Branchton	260
Victory, W. J. Alexander, Belwood	180
Triumphant, Goodfellow Bros., Bolton	235
Reconstruction, G. M. Anderson, Guelph	105
Rosy Morn, S. A. Pelton, Paris	250
Marne, Geo. Ferguson, Elora	355
Ramsden Kinellar, W. Scarrow, Rockwood	105
Loyal Mate, Palmer Bros., Michigan	160
Emperor, Macdonald & Son, Alma	205
Remus Augusta, Palmer Bros.	145
Kinellar Sort, C. Hemming, Guelph	110
Cluny Pilot, H. J. Manse, Shakespear	205
Red Premier, S. Carson, Guelph	165
Derby Favorite, Palmer Bros.	160
Scarboro Prince, D. Beaver, Hespeler	115
Calcolaria Chief, J. Miller, Ashburn	175
Major Gloster, A. Barber, Guelph	205
Ran Dale Model, J. B. Ketchen, Fergus	200
Roan Hampton, Palmer Bros.	145
Newton Matchless, R. W. Mitchell, Mono Road	150
Crimson Triumph, T. Connelly, Belwood	215
Crimson Supreme, A. C. Render, Kitchener	405
Risby Rosdale, E. A. Hales, Guelph	165
Chester, J. R. Simpson, Gowansdown	225
Minuet Lad, W. Newstead, Guelph	150
Cypress Prince, H. H. Harding, Guelph	195
Vimy Ridge, W. D. Kirk, Inglewood	240
Scottish Colonel, A. Shirely, Orangeville	150
Victory, Palmer Bros.	205
Red Winner, Palmer Bros.	155
Braemar Duke, M. Downey, Inglewood	200
Charlie Chaplin, R. Reid, Hillsdale	400
Statesman Junior, P. Stewart & Son, Guelph	250
Royal Marquis, Fife Bros., Guelph	155
Tom, Palmer Bros.	200
Wimple's Victor, C. Davidson, Acton	100
Everlasting Pride, Palmer Bros.	205
Bloomfield Hope, T. Henderson, Arthur	175
Crombie Jilt, R. Rudd & Son, Guelph	180
Bull Calf, D. Reid	200
Rochiel, E. A. Hales	100

FEMALES.

Golden Drop 9th, W. R. Elliott & Sons, Guelph	540
Mysie Triumph, D. Reid	400
Nonpareil of Hillside 26th, Gordon, Auld, Guelph	750
Rosebud Thalia, Pritchard Bros., Elora	785
Rosebud Enchantress, D. Wright, Ariss	555
Lady Dorothy 2nd, F. Currie, Markdale	310
Snowdrop, J. B. Ketchen	125
Dalmeny Beauty 5th, O. B. Ellis, Hespeler	170
Fancy Beauty, A. C. Bender	180
Lucy 5th, J. F. McDonald, Moorefield	235
Mina's Rose, Goodfellow Bros.	185
Marguerite, Goodfellow Bros.	235
Kilwinning Lady, Goodfellow Bros.	305
Viewfield Mabel 7th, O. B. Ellis	175
Viewfield Mabel 8th, Robt. McNab, Rockwood	150
Lancaster Fairy, D. Reid	145
Merry Tulip, Goodfellow Bros.	510
Fancy Miss, D. Reid	285
Springbar k Marigold, E. S. Stevenson, Kenilworth	315

\$33,000 for a Shorthorn Bull.

What is claimed to be a world's record price for a yearling bull was paid at the Perth sale, when J. J. Elliot, of Guelph, Ontario, secured the yearling Shorthorn bull, Millhills Comet at 6,600 guineas. This bull was champion at the Perth Show, and is a Clipper calf by Cupbearer of Collynie. Mr. Elliot, we understand, had a stiff bidding contest for this calf with J. Shepherd, an Argentine importer. The champion at the Aberdeen sale was secured by Mr. Shepherd for 5,000 guineas. These two sales are looked upon as auctions of great importance. At Perth, 755 animals were disposed of, and at Aberdeen 446. Previous averages were exceeded by a large margin. It is very gratifying to Canadian breeders to know that this outstanding bull is to come to Canada, and Mr. Elliot is to be congratulated on securing a herd header of such outstanding breeding and individual merit.

The Western Ontario consignment sale, held semi-annually in London, is a popular event, and the sale this spring promises to excel previous ones. Not only is the consignment larger, but a show is to be held in connection with the sale. Prospective purchasers will see the animals passed upon by a competent judge on the morning of the sale. Combining the sale and show has proven quite popular in United States, and should be equally interesting in Ontario. The sale and show is on March 23 and 24.

THE FARM.

Growing Corn in Lanark County.

EDITOR "THE FARMER'S ADVOCATE":

Since you have asked for ideas regarding different experiences in cropping and other things we work at on the farm, I should like to relate my experience in growing corn for silage. Our land is broken and in spring is subject to creeks running over it in places when the snow is going away, so that we do no fall manuring; but we often haul out the manure and leave it in large piles of twenty loads or more, taking care to have flat-topped piles so as to prevent heating. We have all learned from articles in this paper that manure, too much heated, loses a great deal of plant food. If the season permits us we sometimes spread the manure as soon as it is time to plow; then we start, not plowing any more than four or five inches deep, and then we disk up the ground as often afterwards as possible before planting. If the other work in the early spring prevents us from getting our corn ground ready, as I have already stated, we work it in the same way only plant immediately afterwards. Our land is a sand loam, and we always put our corn on sod or where hay had been the year before. The disking of the land, until a thorough seed-bed has been prepared, is one great factor contributing to success; it ensures a quick germination of the seed, and it also has a tendency to make cultivation easier from the start. My idea in planting is this, some men go out with a corn planter and start up, driving the nose of the planter as far into the ground as they can. This is a mistake, and it is often the reason for the all too-frequent complaint that "the grub has taken my corn or I got bad seed." I find one or two inches is deep enough; the heat of the sun gets in its work and germination starts at once. Some years the dent varieties do all right, but taking every year in succession the flint varieties do better, and the silage keeps better when the corn is well matured. We have good success with White Cap Yellow Dent. We have planted both in hills and drills, and if the ground is free from grass, drill planting is our favorite way, as it is easier to cut with the binder; but if we have grass to contend with we plant in hills 3 feet apart each way. Planted in this way it sometimes grows very rank, and if cut with a binder it appears to be hard on the machine when the knives strike a large hill of corn. I find the greatest production from drill planting, providing it is not sown too thick.

Lanark Co., Ont. J. C. M.

Fertilizer Facts and Fallacies.

BY B. LESLIE EMSLIE.

A brief recapitulation with emphasis on the salient features of the preceding article may prove to be not a vain repetition.

SYNOPSIS OF PRECEDING ARTICLE.

There is greater need to urge discrimination in the selection and purchase of fertilizer materials than to encourage their more extensive use. The studious farmer has become more cautious and deliberate in this respect and more careful to conserve the fertility in barnyard manure, the liquid portion of which—most liable to loss—holds more than one-half the nitrogen and three-fourths the potash of the total manure. A ton of average good barnyard manure will contain, roughly, 10 pounds of nitrogen, 5 pounds of phosphoric acid and 10 pounds of potash—the three essential plant food ingredients furnished in commercial fertilizers. Each of the three fulfils its own peculiar function in plant nutrition.

Apart from its fertility, manure is valuable for its humus-forming properties and in providing a suitable medium for the activities of the favorable soil bacteria. Nitrification is a bacterial process whereby humus is broken down and its nitrogen converted gradually into the nitrate form assimilable by the plant. In early spring, before there is sufficient soil warmth to permit active nitrification, grain crops may suffer a lack of the soluble nitrate so essential to their early development. An application of nitrate of soda may help the young crop to tide over this critical stage.

Nitrate of soda, superphosphate (acid phosphate) and muriate of potash are, chiefly because of their ready solubility and quick action, the most popular sources of nitrogen, phosphoric acid and potash, respectively.

Brands of ready-mixed fertilizers are exceedingly numerous and variable in composition. The demand for a low-priced fertilizer is responsible for the presence on the market of many inferior mixtures which are priced usually considerably above their actual value.

NATURE AND SOURCES OF THE PRINCIPAL FERTILIZER MATERIALS.

It is desirable that the farmer should know something of the nature and origin of the chief fertilizer substances. They may be chemical compounds like nitrate of soda, sulphate of ammonia, etc., or of organic origin, such as bone meal, tankage, dried blood, etc. A factory-mixed fertilizer may be compounded from both classes of materials.

SOURCES OF NITROGEN.

Nitrate of Soda (containing 15 1/2 per cent. of nitrogen) is found in extensive natural deposits on the west coast of Chile, South America. These valuable deposits of soluble nitrate owe their preservation to the fact that they are situated in a rainless district. The raw material—caliche—contains other salts as impurities, but, by

processes of solution and crystallization, a practically pure nitrate of soda is prepared for shipment.

Nitrate of soda, as already noted, is the only nitrogenous fertilizer on our markets that contains its nitrogen in immediately available form, and, for this reason, is preferred in all cases where quick results are desired.

Sulphate of Ammonia (containing 20 per cent. of nitrogen) has its origin in bituminous coal and is a by-product from gas and coke ovens. It acts somewhat more slowly than nitrate of soda, since its nitrogen must first be converted into the nitrate form before becoming available for crop use. Sulphate of ammonia, in order to be fully effective, requires the presence of an abundant supply of lime in the soil. It has a marked tendency to deplete the lime content of soils and, thus, to render them acid; therefore, the extensive use of sulphate of ammonia, as a source of nitrogen, should be accompanied by occasional applications of ground lime-stone.

Cyanamide (containing from 14 to 18 per cent. of nitrogen) results from the artificial fixation—through electric energy—of atmospheric nitrogen. A Cyanamide Company operates a plant at Niagara Falls, Ontario, but the product is shipped almost wholly across the border. Cyanamide, when employed, should be sown at least a week prior to seeding time and never on growing vegetation, because of a poisonous gas generated from the cyanamide in the soil.

Nitrate of Lime (containing 12½ per cent. of nitrogen) known also as Norwegian saltpetre, is manufactured in Norway where cheap water power for the development of high electric energy is plentiful. Like cyanamide, it derives its nitrogen from the atmosphere. Both have certain other characteristics in common, one being their deliquescence or tendency to absorb moisture from the air. In this respect nitrate of lime is particularly objectionable and must be stored in air-tight packages.

Most organic sources of nitrogen contain also phosphoric acid, and in some the phosphoric acid predominates.

Dried Blood is an abattoir by-product, prepared usually in two grades—the "red" containing from 12 to 15 per cent. of nitrogen, and the "black," from 6 to 12 per cent. of nitrogen and 3 or 4 per cent. of phosphoric acid. Of the organic sources of nitrogen dried blood is the most valuable, being—particularly on light soils—fairly quick in its action. Its price, however, prohibits its extensive use as a fertilizer.

Tankage—likewise an abattoir by-product—varies in composition according to the proportions of bone, meat scrap, etc., present therein. "Concentrated" tankage may contain 10 or 12 per cent. of nitrogen and 2 or 3 per cent. of phosphoric acid, while bone tankage may have only 5 or 6 per cent. of nitrogen, but perhaps 12 to 15 per cent. of phosphoric acid. Tankage is the dried residue from the vats in which the animal refuse is cooked for the extraction of fat. The nitrogen of tankage is less readily available than that of dried blood.

Other abattoir by-products are hoof and horn meal, wool and hair waste, but the nitrogen in these forms, as well as in that of ground leather, is so very insoluble that such materials, unless subjected to digestion by sulphuric acid, are unworthy of consideration as fertilizers.

SOURCES OF PHOSPHORIC ACID.

Bones represent the earliest and are still an important source of phosphoric acid. They are composed largely of phosphate of lime, a tri-calcic phosphate, having three parts of lime to one of phosphoric acid.

Bone Meal (containing from 20 to 25 per cent. of phosphoric acid and 3 to 4 per cent. of nitrogen) results from the grinding of the raw bone. It decomposes slowly in the soil, though somewhat more readily in light, porous, but sufficiently moist loams.

Steamed Bone Flour (containing 28 to 30 per cent. of phosphoric acid and 1 to 2 per cent. of nitrogen) is formed when bone is steamed under pressure, in order to remove the fat and cartilage therefrom. In the pro-

cess some nitrogen is lost, but this is more than offset by the greater degree of fineness in the ground material, the higher percentage and availability of the phosphoric acid and the absence of fat which retards decomposition in the soil.

Dissolved Bones or Bone Superphosphate (containing 14 to 17 per cent. of available phosphoric acid) is now seldom met with, although the name "Bone Superphosphate" or "Bone Phosphate of Lime" is often wrongly applied to ordinary superphosphate. Dissolved bones, however, possess a special interest in the fact that they represent the product of the first attempt to render the phosphoric acid in ordinary phosphate of lime more available through the action of sulphuric acid thereon. The process, similar to that now employed with rock phosphate, was invented and first applied by the late Sir J. B. Lawes, founder of the world-famed experiment station at Rothamsted, England. The product thereof was a "superphosphate of lime" having part of its phosphoric acid in a water-soluble form and, therefore, readily available to plants.

Rock Phosphate.—In certain districts of Ontario and Quebec there exist natural deposits of "Apatite," a phosphate of lime of considerable richness, but so hard and resistant that the cost of mining and grinding the material prohibits its extensive employment.

The powdery, friable rock-phosphate deposits of the Southern States (Florida, Tennessee, S. Carolina, etc.) are known as "Floats." When very finely ground, floats, though containing no water-soluble phosphoric acid, may exert an appreciable fertilizing influence in soils well furnished with organic matter.

Superphosphate or Acid Phosphate is sold usually in two grades, one containing 14 per cent. and the other, higher and generally preferred grade, 16 per cent. of available phosphoric acid.

In the preparation of superphosphate approximately equal weights of ground rock phosphate and sulphuric acid (oil of vitriol) are mixed together. The action of the sulphuric acid on the phosphate of lime removes two of the three parts of lime from the combination and replaces them with water, the result being a mono-calcic phosphate having two parts of water and one of lime united with the phosphoric acid. This form is soluble in water and, therefore, easily assimilable by plants. The conversion is never wholly complete; a small portion of the phosphoric acid remains in the original insoluble form, while another portion—known as "reverted" or "citric-soluble" phosphoric acid—is only partially converted and remains midway between the insoluble and water-soluble forms. This "reverted" phosphoric acid, though not water-soluble, is nevertheless, soluble in dilute soil acids. The water-soluble and citric-soluble together constitute the "available" phosphoric acid. The high solubility of its phosphoric acid has made superphosphate the most popular and generally useful phosphoric fertilizer. The sulphuric acid used in the preparation of superphosphate forms a sulphate of lime (land plaster) the presence of which gives the super an additional value for clover and turnips, crops which respond particularly to sulphur.

Basic Slag or Thomas' Phosphate Powder, as now found on our markets, is of lower grade than formerly, but there is a growing belief that the special test used in determining the availability of the phosphoric acid in basic slag does not adequately represent its fertilizing usefulness. Undoubtedly basic slag possesses a value not indicated in its analysis. The material is a by-product in the manufacture of steel by the Bessemer process. The "converters" are lined with lime which attracts and absorbs the phosphoric acid from the pig-iron, and the resultant "cinder" or slag is crushed and finely ground. None of the phosphoric acid in basic slag is water-soluble, but is present largely in citric-soluble and, therefore, fairly available forms. The degree of availability is in a great measure dependent on fineness of grinding, and basic slag is sold usually on a guarantee that 80 or 85 per cent. of the

material will pass through a screen having 10,000 meshes to the square inch.

Besides phosphoric acid, basic slag contains also lime, both free and in combination, which may represent in total the equivalent of 40 per cent. of lime. It is this which gives to basic slag its alkaline or basic character to which may be attributed, in a large measure, the very beneficial results attending the application of basic slag on sour soils, heavy clays or clay loams, and particularly in promoting the growth of clover and other legumes. For turnips, where club-root is feared, basic slag should be preferred to superphosphate as a phosphatic fertilizer.

SOURCES OF POTASH.

Soluble potash salts from the extensive deposits of central Germany, as well as from the repatriated French province of Alsace, are being imported again and, although their price may keep them still beyond the reach of the average farmer, for some time to come, their limited use for special potash-loving crops, like potatoes and tobacco, may prove profitable.

Muriate of Potash (containing 50 per cent. of potash) is the concentrated potash salt most generally and extensively employed as a fertilizer. It is prepared from a crude potash salt—"carnallite"—by processes of solution and crystallization similar to those employed in the refinement of nitrate of soda.

Sulphate of Potash (containing 48 per cent. of potash) likewise a concentrated potash salt, is prepared from muriate by a further process and is, therefore, more expensive. Tobacco growers and many potato growers prefer potash in the sulphate form, since the chlorine present in the muriate is believed to impair the quality of these crops.

Kainit (containing 12½ per cent. of potash) is a crude potash salt which has been used to a limited extent in Canada, but high rates of transportation will likely exclude it from our markets.

Wood Ashes, if unleached, may contain about 5 per cent. of potash, 2 per cent. of phosphoric acid, and from 20 to 30 per cent. of lime. Their value as a potassic fertilizer was early recognized and, during the recent war, their use for this purpose and as a substitute for the German potash salts was resumed to a great extent.

American Potash.—The United States used to purchase from Germany nearly twenty million dollars worth of potash annually. When, after the outbreak of war, the importation of potash ceased, the United States became alive to the necessity for exploiting her own limited potash resources. Some of the enterprises have been moderately successful, but few can hope to be permanent economic successes if obliged to compete on equal terms with European potash, especially as the price of the latter descends towards the normal figure.

The chief sources of potash in America are the giant-kelp groves on the Pacific coast, the brines and salts from the partially dried-up Searle's Lake, California, the brine wells in Nebraska, a mineral, Alunite, mined in Utah, cement dust and flue dust from blast furnaces. Beet-sugar waste and tobacco waste represent other sources of some importance also in Canada.

Seaweed.—The giant-kelp of the Pacific coast has been mentioned as yielding potash. Several plants equipped with elaborate harvesting and manufacturing machinery were established, but a majority of these enterprises failed to surmount the difficulties in operation encountered.

In the year 1915 the writer undertook, for the Dominion Government, an investigation to discover the possibility of preparing economically a nitro-potassic fertilizer from seaweed by processes of drying and grinding. About 50 tons of the fertilizer were prepared, chiefly from the rockweeds of the southern shore of Nova Scotia, and some very satisfactory, though varied, results attended its subsequent use in field trials, but the rather low percentage of potash obtained did not seem to warrant a further pursuit of the investigation. (To be continued).

Farming on a Beef Cattle Basis in Western Ontario.

The Farm Management Department of the Ontario Agricultural College has made several valuable surveys of farm operations and conditions in various counties of the Province and the more there are made the better are they understood. The results of the survey made in North Middlesex for the year ending February 28, 1919, have just come to light, and we are reproducing them here, quite in detail, because they are replete with information and present certain standards and data by which every farmer, working along similar lines, may judge his own practices and measure his results.

In March and April, 1919, a survey was made of some 385 farms of that section of Middlesex County where beef production is the main business in hand. The objects in view in conducting such a survey were:

(1) To secure reliable information regarding beef production as a commercial enterprise, and based on conditions as they exist on the average farm.

(2) To determine just what factors have the greatest influence in raising or lowering beef profits by comparing methods employed on successful and unsuccessful farms.

(3) To give suggestions as to the most profitable organization for the beef-producing farm.

A visit was made to each of the 385 farms, and a record taken of all the business transactions on each farm for the twelve-month period ending February 28, 1919. The information taken was sufficiently complete to enable those in charge to calculate the "Labor Income" of each farmer, and then to make comparisons of the methods of farmers having high

labor incomes with the methods of farmers having low labor incomes.

LABOR INCOME.

The method employed in calculating labor income is given below:

(1) All farm receipts for the year are tallied: Crops sold, live stock and stock products (milk, eggs, wool, etc.) sold, increase in value of young stock, miscellaneous. Due allowance is made for increase or decrease in value of mature stock.

(2) All expenses for the year are tallied: Taxes, labor, repairs to buildings and machinery, threshing, silo-filling, binder twine, and all minor expenses. To this is added the depreciation of buildings and machinery, based on the farmer's own estimate of the value and future life of each building and machine.

(3) From the total receipts is deducted the amount of total expenses. The balance is the farmer's "net revenue" for the year—the earnings of both his labor and his capital invested.

(4) Interest at 5 per cent. on the total capital is deducted from the amount of "net revenue." This leaves the amount earned by the farmer's labor and his capital ability—which is termed "Labor Income."

It was found that the records taken from some of the farms were not complete in all details, hence they could not be used for purposes of comparison. 329 records, however, were found to be complete. The tables given in this report were compiled from these 329 records.

INFLUENCE OF SIZE OF FARM ON LABOR INCOME.

The average labor income for the whole area was \$780. As the size of farm increases, so also does the labor income of the farmer increase. This is due to the larger profits which result from a larger sized business. The non-productive capital—capital in buildings and machinery—is 35 per cent. of the total capital on the small farms, but decreases to 21 per cent. of the total capital on the largest farms. This means, necessarily, extra cost of operator on the small farm, in proportion to the amount of business done. Again there can be greater efficiency of man horse labor on the larger farms. The operators of the small farms averaged only 23 acres of crops per man, and 11 acres per work horse while the operators of the large farms averaged 35 acres of crops per man and 14 acres per horse.

But size of farm is not absolutely essential to the making of a high labor income. The ten best farms of 76-90 tillable acres (average 100-acre farms) made an average labor income of \$1,778, which is greater than the average of the 21 farms having over 225 tillable acres each. Likewise, the average labor income of the "best farms" of each group is, in practically every case, more than double the average for the entire group. This proves that there are farmers on all sizes of farms who are making method count in their farming operations. They are capable of seeing the opportunities which are there and they are capable of taking advantage of those opportunities. Method is of more importance than is size of farm. A man may have a large farm but

conduct his business at a loss by employing poor methods of farming but the man who employs good methods will always have some profit even though his acreage is small.

Those men who are not deriving as much profit from their business as they might desire, may do well to study the comparisons of good and poor methods of farming, as shown in the remainder of this report.

feed and on 22 per cent. of these farms steers returned more than \$10 profit each. Where pure-bred bulls had been used the following results were obtained: On 36 per cent. of these farms steers did not pay for their feed and on 42 per cent. of these farms steers returned more than \$10 profit each.

The percentage of farms having profitable cattle was almost twice as great in the group which had used

CANADA'S YOUNG FARMERS AND FUTURE LEADERS.

A Library on Every Farm.

EDITOR "THE FARMER'S ADVOCATE":

In these days of rapid industrial progress, the farmer no more than any other business man, can afford to be inefficient in his particular vocation. To accomplish efficiency, however, requires not only practice, but also a knowledge of the principles underlying the various operations and processes on the farm that he might be able to work to better advantage. In the accomplishment of such knowledge, one of the best means is the library.

True it is at the present time, comparatively few farms, and too few even of villages and smaller towns can boast of such a possession. For this there may be various reasons, but the fact remains that there is great need for such an institution. Many rural dwellers are not always in a position to take advantage of higher education by attending centres of learning in person, but who, however, are capable of greatly improving their education through home study. It is in this respect that the library proves itself a valuable asset in any home or community.

A movement is now on foot for the establishment of community centres in the rural districts; but since the accomplishment of such is not to be expected in the immediate future, the present indications are that for those who wish for direct results, the solution of the question lies in the possession of individual libraries.

Perhaps the next most natural consideration is the choice of material. In this connection it may be said at the outset that no one can hope to read more than a comparatively small proportion of the vast amount of reading material available. So that, while there is

TABLE I.

Group	Percentage of Total Revenue from Sale of Crops	No. of Farms	Crops Sold			Labor Income
			Total	Wheat	Alsike Seed	
1	0-10%	44	\$ 139	\$ 96	\$ 8	\$ 406
2	11-20%	59	477	357	48	671
3	21-30%	78	717	487	100	702
4	31-40%	67	913	542	160	920
5	41-50%	44	1,396	677	372	991
6	Over 50%	27	1,466	582	531	1,084

Perhaps the first question a farmer might ask is, "Is it more profitable to sell crops than to feed them?" Table I was prepared to answer that question. It is quite evident that in 1918, those farmers who sold the most crops made the largest profits. At first glance, therefore, it would seem that the best thing to do would be to sell off the stock and go into the "cash crop" business. But on studying the table more closely, it is seen that the increase in labor incomes between groups 4 and 6 is not nearly in proportion to the increase in crops sold. Group 6 sold \$533 more crops than group 4, but made only \$164 more labor income. Moreover, almost one-third of their crop sales were of alsike clover seed; 1918 was a most favorable year for the alsike grower, high yields and high prices. Had the alsike crop failed, group 6 would have had a much lower labor income than group 4. Hence it would seem that, considering one year with another, the farmer who receives from 30 to 40 per cent. of his gross revenue from cash crops and the remainder from live stock stands the greatest chance of ultimate success, and the maintaining of this live stock insures the keeping up of soil fertility, which is a factor of no small consideration.

It might be said that if a man had an especially good live stock, it might pay him to feed all his crops and sell none. The six groups of farms in Table I were divided into sub-groups—those having poor stock and those having good stock. A study of the question from this angle showed that even those farmers who had "good" live stock—that is, live stock above the average in returns per animal—found it profitable to make at least 30 to 40 per cent. of their revenue from the sale of crops. During 1918, it was profitable to go beyond the 40 per cent., but as pointed out previously, this was because of its being such a favorable year for alsike seed.

EFFECTS OF HIGH CROP YIELDS ON PROFITS.

In Table II, 100 per cent. represents the average of the district in yield per acre of the main crops—wheat, oats, barley, mixed grain, corn, hay and alsike and red clover seed. Groups 1, 2 and 3, were below the average while groups 4, 5 and 6 were above the average. A glance suffices to show the great influence which a high crop yield exerts on the farm profit. Group 6 made more than double the labor income of group 1. The fact that group 4 made slightly less than group 3 is due to too high a labor charge for the amount of work done.

TABLE II. CROP YIELDS AND PROFITS.

Group	Crop Yields	No. of Farms	Labor Hired per Farm	Labor Income
1	Below 81% of average	44	\$394	\$ 437
2	81-90%	66	342	686
3	91-100%	72	380	827
4	101-110%	71	470	788
5	111-120%	49	339	998
6	Over 120% of average	27	402	1,084

EFFECT OF GOOD LIVE STOCK ON FARM PROFITS.

As in Table II, 100 per cent. in Table III represents the average of the district in live stock returns. Hence groups 1, 2 and 3 had live stock which were poorer than the average while groups 4, 5 and 6 had live stock which were better than the average. All groups fed practically the same amounts of feed to each class of stock. It is quite plain therefore, that the cattle in groups 1, 2 and 3 did not make sufficient gain to pay market price for the feed they consumed. The cattle in groups 4, 5 and 6 were more productive on account of better breeding and handling and made more productive gains.

Consequently the labor incomes of these latter groups were much higher than those of the former—the labor income of group 6 is five times that of group 1. In a live stock district such as North Middlesex, it is absolutely essential that the live stock be able to make good returns for the feed consumed.

THE EFFECT OF USING BETTER BULLS.

The use of pure-bred bulls is generally admitted to have the effect of increasing the ability of the offspring to make profitable use of feed. The farms were divided into two groups—those using grade bulls and those having used pure-bred bulls for more than ten years. The first group showed the following results: On 51 per cent. of these farms steers did not pay for their

pure-bred bulls for over 10 years as in the group which had always used grade bulls. Likewise, the percentage having cattle which were fed at an absolute loss was smaller. This proves beyond a doubt that the use of a pure-bred bull does pay in actual dollars. It is interesting to note that out of the 204 farms which were used in this calculation 130 had pure-bred bulls, and only 74 were still using grades. This is an indication that the majority of Middlesex farmers realize the value of pure blood in the herd, and that the general breeding of Middlesex cattle is good.

SHOULD MUCH TILLABLE LAND BE LEFT IN PASTURE?

One of the outstanding features of farm practice in North Middlesex is the large amount of tillable land in pasture. To find out whether or not this practice is profitable, on small, medium or large farms another computation was made



A Fertilized Potato Field in New Brunswick.

This was fertilized with 150 pounds nitrate of soda, 400 pounds basic slag, and 180 pounds sulphate of potash. Yield, 356 bushels—an increase of 125 bushels per acre over adjoining unfertilized area.

Plainly the men on farms of 100 acres or less, who pastured more than 20 per cent. of their cleared land, suffered thereby. A small farm must be nearly all under crop in order that the revenue may be sufficient to pay current expenses and still leave a good profit. On the medium sized farms, the men who pastured about a third (30-40 per cent.) made the highest returns. On farms of 200 acres or more, the labor income did not begin to drop until the groups were reached which had more than half of their tillable land in pasture. Hence it would appear that there is good reason for pasturing from a third to a half of the tillable land, if the farm be large enough. But if more than 50 per cent. of the tillable land be grazed no matter what the size of the farm, a very small profit is the result. And it is interesting to note that the 40 small farms, which had less than 20 per cent. of their arable land in pasture, made larger profits than did the 33 large farms, which went to the extreme of pasturing more than 60 per cent. of their tillable land.

TABLE III. EFFECT OF GOOD LIVE STOCK ON FARM PROFITS.

Group	Quality of Live Stock	No of Farms	Labor Income
1	Below 81% of average	61	\$ 273
2	81-90%	54	437
3	91-100%	55	741
4	101-110%	58	874
5	111-120%	46	1,037
6	Over 120% of average	55	1,388

great latitude of choice, there is also need for good judgment in making the best selection.

In establishing a farm library, much will, of course, depend on the personal taste of those concerned. There are, however, a few general principles which may be worthy of mention. In the first place, the man who is ambitious in better farming methods, will want to include a few good agricultural text books. Some of these might be works on farm management, growing of crops; stock raising, poultry keeping; dairying, fruit growing, drainage, etc. In the second place, works dealing with rural leadership, community development and improvement should be worthy of a place. Thirdly, by way of a liberal education, such subjects as history, geography, travel, adventure, discovery, science and invention would be valuable additions to any home library. In this connection also, no one would wish to be without at least a few publications from the literary world. True it is, they do not bear directly on agriculture, but certainly have their place in developing the finer human instincts. The field of literature is so broad that here again, some discretion is necessary. Besides the novel and other popular productions, no one can read Shakespeare, Milton, Wordsworth or Browning and many other earlier writers without deepening their sense of literary appreciation. For those interested in oratory and the development of good English style, the works of Gladstone, Burke or Pitt provide ample material and will be found worthy of perusal.

No library, however, would be complete, that did not include books for children. Every normal child has a desire to read, and deserves the privilege that the

modern library affords. Needless to say, the list of children's books is almost endless, but so long as they are clean, easily understood, uplifting in character, and at the same time a source of pleasure, the matter of selection should not be so difficult. Providing the children and youth with good, wholesome, educative and pleasurable reading material should, I think, do something even toward solving the question of rural depopulation.

In conclusion, may it be said that the library is no longer a luxury but a necessity. It is one of the best forms of investment and one which might well be a feature on every farm.

Wellington Co., Ont.

W. J. LOWRIE.

A Rural School Stock Judging Contest.

The following unusual scheme of conducting a live-stock judging contest among the rural school children in connection with the school fairs was put into practice by the Agricultural Representative in Wentworth County last year. Mr. Marritt wrote us as follows giving information as to how the many school teams were coached. The accompanying illustration shows the team of boys that won the county competition from all of the schools in the six school fair districts.

"In six of the school fair districts of the county, we conducted last year stock judging contests for the pupils. In the spring, announcements were sent to each school announcing the contest. Each school was required to appoint a coach who would train and choose the team which would represent the school. The coach was required to give his team at least two lessons in judging before the team could enter the contest. The coaches who were appointed were either college men, junior farmers or stockmen. The junior farmers took a great interest in the contest and spent considerable time in training their teams. Two classes were judged,—dairy cows and beef calves. The dairy cows, in three cases, were brought to the school fair by the stockmen. In the other three fairs, we went a short distance to the farmers and judged the cattle at the farms. The classes of beef were secured from the calves which were shown at the fairs. At four of the fairs, I used junior farmers as judges, who marked the cards and totalled the scores. At one of the other fairs an Agricultural Representative from an adjoining county judged the classes and marked the cards. At the last fair, I marked the cards. The work done by the junior farmers was satisfactory to everyone as I used the boys in adjoining counties.

"A cup was given to the team in each district which made the highest score. This cup was donated at five fairs by the junior farmers' association in each district. The cup must be won three years before it can become the property of any one club. Individual prizes were given to the boys who won the highest scores. The following are the number of schools in each school fair district, the number of teams entered and the number of coaches:

	Schools in district	No. of coaches	No. of teams	No. of boys
Binbrook	9	3	1	6
Mount Hope	10	6	6	19
Ancaster	14	12	12	36
Beverly	12	3	2	7
Freelton	7	6	6	18
Greensville	8	5	5	17
	60	35	32	103

"We consider this work most important and expect to develop it to a greater extent next year. The coaches were the backbone of the work. The Junior Farmers took a great interest in their teams and took them around to the different fairs.

AUTOMOBILES, FARM MACHINERY AND FARM MOTORS.

Concrete That is Waterproof.

The use of concrete on the farm is so general and so widely adapted for different purposes that it is well for the average farmer to have a good understanding of how to prepare it for use. This is especially true in connection with the waterproofing of concrete, because it is used so frequently for foundation walls, cisterns, tanks, water troughs, etc. The following paragraphs should therefore be instructive, and are reproduced from the book entitled, "Practical Talks on Farm Engineering," by R. P. Clarkson.

Concrete needs no waterproofing if it is properly mixed and laid. Water leaks through because the mass is porous. If we consider the materials entering into concrete construction and the theory upon which the structure is based, this fact will become clear to us. Concrete contains cement, sand, and stone. The stone, if used alone, is extremely porous, for the spaces between the individual stones are quite marked. The theory is that the sand used goes to fill these spaces. Yet even then there are spaces between the sand grains and water will pass quite readily. These spaces, however, are filled with the cement, the particles of which are so very much smaller than the grains of sand. The cement

particles do more than merely fill the spaces between the sand grains. They cover the individual grains and cement them together, embedding the stones within the whole mass.

It is apparent that if all the spaces are filled; water cannot leak through, while if the mass is filled with tiny pores not only will water pass through, but these pores or tubes will suck up or absorb water from the ground and from the moisture which condenses from the atmosphere. Such will be the case if the concrete is "poor" or "lean"—that is, if it does not contain the proper proportions of materials or the proper sizes of particles to enable the cement to thoroughly unite the ingredients. Cement is the costly part of the concrete and the temptation is to use as little of it as possible. This does not pay in building any foundation walls, cisterns, tanks, and such structures where it is necessary to prevent the flow of water through the walls. If the wall does leak, there are but two things to do in order to remedy the defect: Either the pores must be plugged up with some substance which is not porous to water, which is not dissolved by water, which may be easily and cheaply applied, and which will not chemically attack the concrete, or a separate layer of waterproof material must be laid against the surface of the concrete, using the concrete merely for its mechanical strength and trusting entirely to this auxiliary layer to repel water.



The Winning Team in the Wentworth County School Fair Live-stock Judging Competition.

It is perhaps obvious that in every case where it is possible to do so the waterproofing materials or layers should be applied to the concrete on the side next to the water. Unless this is done, the concrete will always contain water and the waterproofing will simply prevent the water from flowing out. Under these conditions neither the waterproofing nor the concrete is apt to give entirely satisfactory service. The construction of waterproof concrete needs carefulness and thorough workmanship, but when we consider the difficulty of making a real, lasting job of waterproofing, after a wall has commenced to leak, it will be seen that care in the mixing and laying is more than repaid. There are several good waterproofing proportions differing but slightly. The 1-2-4 mixture is most commonly used. This means one part of cement, two parts of sand, and four parts of gravel or broken stone. With these proportions, one bag of cement mixed with the proper amounts of sand and gravel will give a bulk of finished concrete measuring about four cubic feet.

Portland cement should be used for all work of this kind. It may be purchased ready for use in either bags or barrels, but the bags are far more convenient for handling. The sand and stone may be obtained anywhere. It is important, however, to have them clean, with no mud or sediment clinging to them or mixed with them. To be sure of this they may be piled on a sloping board platform and thoroughly drenched with water, turning them over several times in order to clean the bottom and interior layers. The sand must be coarse, or a mixture of coarse and fine for the most economical results. The total spaces between the particles of fine sand are more and the total surface of the sand particles which the cement must coat is greater with fine sand. Hence, the finer the sand the more cement must be used and the more expensive the concrete. Coarse sand, with a small amount of fine sand mixed in is desirable, for the fine sand fills up some of the spaces between the coarse particles and makes a more solid concrete. It will always pay to buy coarse sand rather than use fine sand which is free. The appreciable saving in concrete will be great.

Contrary to the prevalent idea, gravel makes a better concrete than broken stone. It is more dense

and it is stronger after it has aged; particularly is this true of a gravel of quartz pebbles.

The concrete should be mixed a little wetter than is ordinarily done, and the mixing must be thorough in order that the proportions may be properly intermingled. In laying, great care must be exercised not to separate out the ingredients by pouring or dropping from a bucket or barrow through a considerable height. If this is done, the job will be spoiled. After laying, the concrete should be tamped slightly in order to drive out the air and fill the voids or holes. Following this, the surface layers should be spaded. That is, a spade is placed in between the wall and the form and drawn up and down in order to slightly "puddle" the surface, driving back the gravel a little and leaving the surface with a grout as nearly airless and non-porous as possible.

By following the suggestions given, the concrete cannot be penetrated by water, but concrete that will not absorb moisture to some extent cannot be made. It is only possible to prevent absorption by adding some waterproofing compound to the concrete when it is laid. The mixture laid under the above conditions is dense and close grained due to the excess of cement, and it is without air bubbles because of the excess water. It is filled with very tiny capillary tubes which will not allow the passage of water yet will absorb it in small quantities. This is undesirable in many places where concrete is used, and to prevent it some one of the following methods are employed.

If it is old work which is to be protected, only surface coatings can be used, and their object is a filling of the pores spoken about. Four substances are commonly used for this, namely, neat cement, asphalt, paraffin, and an alum-soap compound. This last is known as the Sylvester treatment, and is one of the most effective. In a different form it is used also for new work as will be explained later. For surface coating a hot castile soap solution is made by dissolving three-quarters of a pound of the soap in one gallon of hot water. A solution, of one-half a pound of alum to four gallons of water, is then prepared. The substances are thoroughly dissolved and alternately applied to the wall, the latter being perfectly dry. The hot soap solution is first applied, a flat brush being used and care being taken to avoid bubbles covering the work. After this coat dries for twenty-four hours, a coating of the alum water is put on and allowed to dry for a similar length of time. In this way, alternate coatings to the extent desired may be used, allowing a full day to elapse between the coatings. There is a chemical process which takes place between the substances used, the resulting compound plugging up the pores in the cement. The cost of this process for two coatings of each material will be from 35 to 40 cents per square yard.

Paraffin, although rather expensive, is often used for small jobs. It may be melted and applied while hot, the walls also being slightly warmed, or it may be dissolved in some solvent such as benzol, xylol, or even benzine of the common kind, these liquids quickly evaporating. Several coatings will be needed, and each coating will cost in the neighborhood of 50 cents per square yard. If you do the work yourself and do not count the cost of your own time and labor, this cost will be materially reduced.

Asphalt and other bituminous products are the easiest to handle and the surest of results in unskilled hands. They are applied as liquids, allowed to dry, and further coatings given. Probably the cost for two coats will not exceed 25 cents per square yard.

Cement grout is a mixture of cement, sand, and water or just cement and water, very liquid and applied like paint. It is not very efficient when used on old concrete, for it readily peels or cakes off after a short time. For a temporary repair this or a mixture of the same substances just plastic enough to handle with a trowel is the most universally used.

The surface coatings spoken of are as valuable for concrete blocks, brickwork, and porous stone as for straight concrete work. Good brick needs very little attention, although it will absorb from 3 to 5 per cent. of its weight of water, but such brick is expensive and seldom met with on the farm. The common brick used will often absorb from 15 to 25 per cent. of its weight in water. Concrete blocks, especially if made by the continually tamping process known as the dry process, are extremely porous.

While the above coatings appear to be satisfactory for simple work, in large structures such as dams, reservoirs, and sewers much more care must be taken. Strong layers are used because of the heavy water pressure against them. Felt or burlap saturated with tar or pitch, rolled in a continuous layer against the wall and held there, is not only a satisfactory water retainer but also prevents the leakage of foul gases which chemically attack the concrete. A method known as the integral process is practiced where it would be too expensive to use the thorough workmanship described in the early part of this article. This consists in the addition to the cement, when mixed, of some fine, dry powder consisting of extremely small particles, usually alum and lime. These, because of their size, may fill in the spaces between the cement and sand grains and make the whole structure more dense. Usually only the cement which lies near the surface is thus treated. Still another treatment is to add some soap or oil emulsion to the mixture. This forms a jelly within the concrete and fills the pores.

Lastly, the well-known Sylvester process before mentioned is used. Alum is added to the cement and castile soap is added to the water with which the mixture is made. Chemical action then goes on in the mass, forming a compound which, as before, fills the spaces.

Many, many other substances may be used. In fact, one farmer in waterproofing a cracked wall filled the cracks with corn stalk pith and wet it, causing it to swell and fill the cracks completely. The whole object of waterproofing is to fill all holes, pores, and cracks. Any method of doing this satisfactorily is entitled to consideration.

THE DAIRY.

Plenty of Water for the Cows.

Producers of winter milk often neglect one important source of profit. This source of profit is water, but not the kind for which one can be prosecuted for adulteration. In the latter connection, it is worth noting that one man in 1919 made five hundred dollars by adding water to the milk he sold, but it is just possible that if he had given his cows all the good, pure water they wanted to drink, at regular intervals, his income would have been just as great from actual milk produced as from poorer methods combined with the breaking of the law. Only a few days ago we chanced to see several systems of running water in operation in dairy stables. Only one or two of these systems were what manufacturers of barn equipment would call strictly modern or up-to-date. Nevertheless, they were in successful operation. We do not know what an exact survey of several hundred farms would show, but we have been somewhat surprised to note that the men in many cases who are pointed out to us as progressive and successful dairymen are the men whom we later on find out have systems of running water installed.

The men to whom we previously referred were asked just how much benefit it was to them, aside from the convenience, and every one of them thought the cows would drink at least a third more water from the time they were put in the stable in the fall until they were let out in the spring, and one or two said that the cows would give at least a third more milk. In one or two of these barns the stables were fitted up with steel stanchions, cement floors and mangers, and with, in one case, individual drinking bowls, and in another case bowls for each two cows. In three or four cases, long, continuous troughs were placed above the manger just so that the cows could get their muzzles into them easily. In one stable the trough had a galvanized lining, but in another stable there was just a plain wooden trough which for some time had been giving perfect satisfaction. On one side of this stable a large steel or galvanized iron tank was mounted near the ceiling, and from this tank the water flowed into the trough, its level being regulated by a float located in a small, closed compartment beneath the tank.

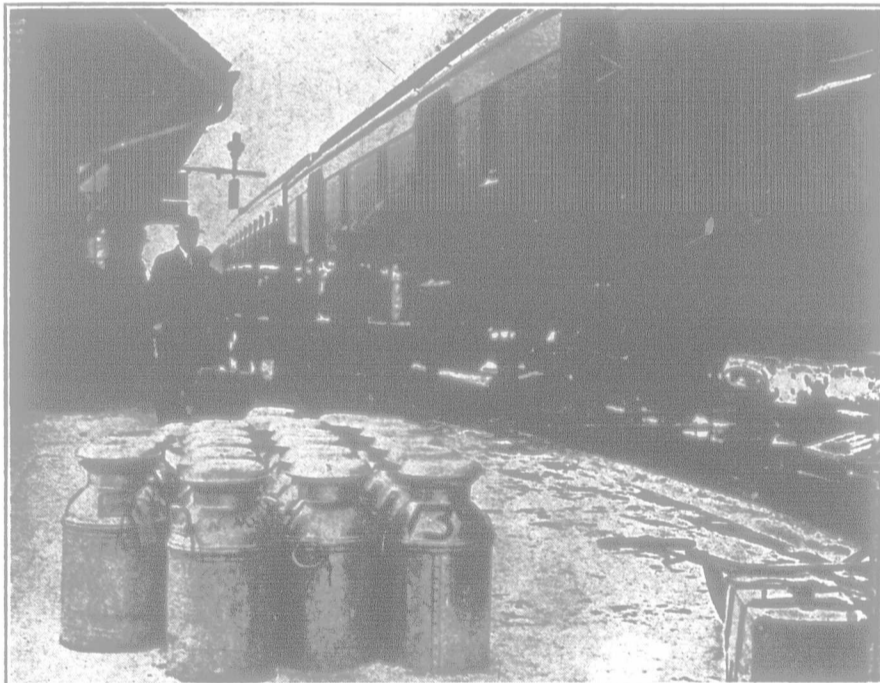
There is no doubt that running water in the stable has a very material effect upon milk production, if only for the fact that water in the stable is warmer and can be used more economically in the system of the cow, but everyone who has turned cattle out to water on a cold winter's day, where possibly they had to break the ice with their muzzles before they could get a drink, knows full well that oftener than not the cattle will not drink anywhere near the amount they require. It is, therefore, quite within reason that when they have the water available in the stable they will drink fully a third more, as has been mentioned. The following paragraphs are quoted from Eccles on the subject of water for cows:

"Large amounts of water are necessary for producing the milk itself and for the digestion and assimilation of the larger quantities of feed required to make it. The author found by experiments that a cow producing 27 pounds of milk per day drank 77 pounds of water. The same cow when dry drank only 15 pounds per day. Another cow producing over 100 pounds of milk per day used an average of 250 pounds of water. These figures show that the water requirement is in proportion to the milk produced and the food consumed. They also show that the question of water supply is much more important for the cow in milk than for the dry cow. Dry cows need not be watered more than once daily in winter time and do not seem to want it oftener. During the summer the demand for water is greater on account of the greater evaporation from the skin. Cows on heavy feed, producing large quantities of milk should always have access to water at least twice daily. For the best results, water of good quality should be supplied close at hand, since if the animals are required to walk long distances in cold weather, they may not drink a sufficient amount, and the milk flow may be reduced for this reason. Water contaminated by drainage from barnyards or with sewage should be avoided for sanitary reasons, as well as for the additional reason that cows may not drink as much as is needed for the best results.

"In very cold climates it is profitable to warm the water for dairy cows. It is cheaper to warm the water with a tank heater by burning coal or wood than to supply the necessary heat by allowing the animal to burn high-priced feed in its body for this purpose. A cow producing 25 pounds of milk daily requires about 1 pound of corn daily to warm the water used if it be given at the freezing point. Larger producers would require a correspondingly larger amount for this purpose. An even more important reason for warming water is that a heavy-milking cow will not drink enough water if it is near the freezing temperature. The activities of the organs of digestion and milk secretion are almost stopped for a while if a cow drinks 30 or 40 pounds of ice water. Where water is warmed it is generally brought to a temperature of about 60 degrees F."

Comparative Milk and Cream Prices

An interesting point has developed in some sections as regards the price received by shippers of whole milk per can as compared with the price received by cream shippers per pound butter-fat. Some dissatisfaction has been shown by cream shippers who have for the most part been receiving in the neighborhood of seventy cents per pound butter-fat, while neighboring milk shippers have been receiving \$3.10 per can of eight gallons as per the limit fixed by the Board of Commerce for the City of Toronto. It is a little difficult to work out a comparative price for butter-fat unless one works on the assumption that the percentage of fat in the milk and in the cream are uniform. However, some secretaries of milk producers' associations have deemed it fair to consider that the average test of winter milk is 3.6 per cent., and this is probably not far out when it is considered that there is usually a good percentage of Ayrshire or Jersey blood in the cream-producing herds. Of course there are herds of these breeds that would average very much more than this, but assuming the milk to test 3.6 per cent. fat and the cream to test 30 per cent. fat, the comparative price for butter-fat



Taking on the Morning's Milk for Shipment to City Consumers.

when the price of whole milk is \$3.10 per eight-gallon can may be worked out as follows:

\$3.10 per can of 82½ pounds is the equivalent of \$3.75 per hundred pounds, from which must be deducted express and city delivery charges of 25 cents per can, or 31 cents per hundred pounds. This leaves a net price to the producer for whole milk delivered at his local station of \$3.44 per hundred.

With milk testing 3.6 per cent., and cream testing 30 per cent. butter-fat, 12 pounds of cream will be secured from every 100 pounds of milk, leaving 88 pounds of skim-milk. Valuing the skim-milk at 65 cents per hundred, which is certainly not too high and yet, no doubt, quite fair when it is considered that it is being fed under all conditions and by the indifferent as well as the good feeder, we find that the skim-milk in 100 pounds of whole milk is worth 57 cents. Subtracting this from \$3.44 as the value of the whole milk, we get \$2.87 as the value of 12 pounds of 30 per cent. cream secured from 100 pounds of 3.6 per cent. milk delivered at the producer's local station. To be comparative, the price for cream must be a price delivered in Toronto, so that we must add express and delivery charges of 31 cents per 100 pounds of cream. But 100 pounds of whole milk only furnishes 12 pounds of cream, which will cost 4 cents for express and delivery, bringing the comparative price of the cream from 100 pounds of milk up to \$2.91; delivered in Toronto. This is the price then which must be received by the producer for the 3.6 pounds of butter-fat contained in the original 100 pounds of whole milk. Each pound of butter-fat is therefore worth 80.8 cents, if the producer is to get the equivalent of \$3.10 per can for whole milk.

On the other hand, the market price for creamery butter seems low even in comparison with the price of 70 cents per pound butter-fat that is being paid to cream shippers, and some producers have wondered how

the creameries can continue to pay this price. In some cases, it is claimed that any difference is being made up by giving lower tests, but if this is being done it should be very easy for the cream shipper to detect it. One shipper that we know of has solved the problem of low tests by providing in his contract with the creamery to which he ships, that he, as well as the creamery, would test the cream, and that if there should be any difference between their tests at any time, a test made by the O. A. C., at Guelph, will settle the matter finally. Since making this contract he has been rather amused to find the creamery test invariably one-half per cent. higher than his own.

The Dairy Season of 1920.

EDITOR "THE FARMER'S ADVOCATE":

In the spring a dairyman's thoughts naturally turn to cows, feed, milk, cheese and butter. He wonders what is in store for him during the coming season. The past five seasons have been so out of the ordinary, that dairymen are beginning to ask what 1920 has "up its sleeve." As usual, there is a pessimistic note among the buyers of dairy products. A large firm to whom we have been selling the cheese made during dairy school term for a number of years, in reply to our letter of inquiry regarding the purchase of 1920 dairy school cheese, said, "we are not interested in cheese this spring"—and this, in spite of a recent reliable European market report which says: "Europe is in need of cheese and shipments will go to Antwerp, which is the chief distributing centre for Canadian produce. As soon as credits are arranged and when completed large shipments will ensue." If this reflects actual conditions in the cheese markets of Europe, Canadians holding cheese should not worry. Personally, I should like to see greater development of our home markets for cheese. Right here in Canada is a great big market for Canadian cheese, but the difficulty seems to be that Canadians are not cheese eaters. This is probably due to the fact that we in Canada do not know the value of cheese as a food. At thirty to thirty-five cents a pound, cheese is the cheapest buy on the food market. If cheese were eaten once a day, instead of meat, it would mean a big saving in cost for table supplies. However, the fact is, grocery-men seem to be shy on buying cheese. If they are approached and urged to buy cheese, they seem afraid. There is less risk in buying cheese than in any food commodity they handle. It will keep for an almost indefinite length of time, if kept reasonably cool. If the cheese are paraffined, they lose practically nothing in weight, and if properly made they will improve with age. Scientists tell us that a pound of cheese is equal in nutritive value to at least two pounds of average meat, and it costs only about half as much money. Why then, are not Canadians using more cheese? It comes back to the proposition we started out with, the people do not understand its value as a food.

One of the best aids to the 1920 cheese trade, would be a campaign in Canada demonstrating to the people the value as a food, of our home product, Canadian Cheddar Cheese—not only in towns and cities, but in villages and on farms. No food can equal cheese for muscle-building and our farmers will need a good deal of muscle from April 15th to November 15th, 1920. Why not lay in a stock of muscle-former right now and help out the cheese situation at the beginning of the season? If 500,000 farmers each bought a cheese weighing 70 pounds, or two flats weighing 35 pounds each, it would mean a market obtained for thirty-five million pounds of cheese right at the opening of the season, and we should start with a clean slate and empty warehouses for the year, 1920. I hope the plans of the National Dairy Council to do work of this kind will be carried out, as it is one of the greatest dairy needs to-day and would, to a large extent, make us independent of the uncertainties of transportation to, and the intricacies of exchange on, foreign markets. Surely we as Canadians have enterprise and courage enough to tackle this problem and thus prevent what looks to be at present, a very serious situation in our cheese trade. We ought to spend some money right now in advertising the value of cheese as a food for the benefit of the people in Canada, and our cheese business.

A BETTER BUTTER BUSINESS FOR 1920.

So far as the reputation of Ontario butter is concerned, we seem to have one about as poor as is possible. Having got as far down as we can in the scale, we shall probably have a change for the better during the coming season. It is an old saying that when things are at their worst, matters begin to improve.

Our creamerymen and farm butter-makers have this decided advantage over cheese manufacturers, in that their market is largely at home. Canadians are large consumers of butter, and fortunately for some of our butter-makers, they are not so "pertickler what they eat," as in the case of some countries. But the public taste is changing in Canada, and it will be more important in future to make good butter to sell at home, than has been necessary in the past. Ontario consumers like fresh-made butter and do not lay in stocks ahead—they leave that to speculators. This too, has been favorable for Ontario butter, as it did not have to pass through the testing stage in cold-storage. In this respect, many think there will be a decided change in the near future—if not in 1920, then it is sure to come in 1921, and Ontario butter will have to stand up in flavor and general good keeping quality for at least four to six months. To make this kind of butter, grading of cream and butter, and the pasteurization of milk or cream will be necessary. Already the buyers have "pretty near" offered a premium on such butter for 1920. Possibly by 1921 they will "go over the top." Everything points to

marked changes in our methods of butter-making in Ontario before many moons have appeared in the sky. To the writer it looks as if we need to:

1. Grade the cream delivered at our creameries and pay a higher price for the number one grade stuff at the rate of three to five cents per pound fat extra. This will induce farmers, or cream producers to strive for top grades, because it will pay them to do so. Nothing else under heaven will cause the farmers of Canada to change their methods. All the appeals by circulars, articles in the press, or speeches from public platforms, though delivered by angels, will not cause very much improvement in the quality of cream delivered. The "pocket-nerve" is a most sensitive one. Our creamerymen in Ontario at least should enter into a "gentleman's agreement" on this point. It should not be necessary to have legislation. Laws at best are expensive to administer, and are bound to be galling at some point. Freedom to do what is right is the highest type of freedom known to mankind.

2. Aim to have the cream delivered and churned sweet. We have been making some interesting tests in the Creamery Branch of the Dairy School, this past winter. We have found that sweet cream pasteurized, cooled and churned with not over .3 to .35 per cent. acid, reckoned as lactic acid, not only made high-grade butter, but the fat practically all "churned out" of the butter-milk, leaving a very small loss. The old idea of "souring" cream before churning is rapidly passing away with modern churners. The shorter the time which elapses between milking the cow and churning the cream into butter, the better will be the quality of the butter, other things being equal. This means in creamery practice, frequent delivery, pasteurization immediately after delivery and churning as soon as possible after the fat has become cooled and hardened. To do this effectively means that the very latest and most modern kinds of machinery are needed and the butter-maker must be a trained man. Our creamerymen cannot afford to continue the use of out-of-date machinery, nor hire behind-the-time men to make the butter.

3. The third requirement is pasteurization of the cream by heating the sweet cream to 170 degrees F., holding for fifteen to twenty minutes, then cool to about 50 degrees F., and hold for at least four hours before churning. This gives mild-flavored, long-keeping butter, which will suit either local or foreign markets. As the butter-maker, in many cases, does not know when and where the butter is to be marketed, he must aim to make a butter that will suit any market. The markets of the world are rapidly becoming standardized, which will simplify the butter-maker's problems.

4. The fourth point is to grade the butter. At this point there is some difference of opinion. Some authorities claim that grading the butter will cure all the evils of the creamerymen. My own judgment favors grading cream in preference to grading butter, if only one can be done. However, if both cream and butter can be graded, so much the better. The main thing is to do something better than we have been doing, and not continue in the same old rut that we have been in for some time in this Province.

ICE-CREAM, CITY MILK, CONDENSERY AND POWDER MILK.

So far as the ice-cream trade and city milk business goes, the prospects are good. People in towns and cities are receiving higher wages than ever before, and they are spending their money freely. The man or firm who is supplying the trade in these two lines of dairying is sharing in the general prosperity. There has been considerable "kicking" at the supposed high cost of milk and its products, but this has been largely on the surface. The people have the money and they are spending it not only for the necessities of life but also for life's luxuries. It is reported that one of the largest ice-cream plants in America is being erected in Toronto, where there are already, one would think, enough establishments of this kind to supply a city twice the size of Ontario's capital. Men must have large faith in the ice-cream business who will venture their money on a large enterprise in what has always been considered a luxury, but is becoming a food more largely each year.

The markets for condensed and powder milk are reported dull, chiefly on account of difficulty in exchange, which will probably right itself before the season is over. The corporations which control these huge concerns are extending their business in all directions. Creameries and cheeseries are being either purchased outright, or are "crowded to the wall." There is only one way for the small factoryman to compete with these moneyed interests, and that is to combine their business in such a way as to have all the benefits of buying and selling on a large scale, without losing their identity. Unless they do this, nothing is more certain than that the small factories, whether owned privately or co-operatively will either have to sell out, or go out of business. A small business concern with little capital, simply cannot compete with "big business" having plenty of capital to tide them over times of depression in the markets. The factory which has to sell regardless of price, in order to pay patrons, and labor, and to meet ordinary running expenses, is seriously handicapped.

THE MAN ON THE FARM.

I have left till the last, that most important link in the dairy chain—the man who produces the raw material for dairy manufactured products. What about him? The prospects are none too bright for the milk producer. He is faced at the beginning of the season with advancing costs of everything required to produce milk—labor, seed, implements, feed, fertilizers, groceries, boots, clothing—all these have gone to un-

heard-of prices. Instead of having an increased return for his products in order to meet these increased costs of production, he is met with dull markets and sagging prices. To the man who is facing sixty dollars a month, house, etc., for a hired man; who is paying \$60 to \$90 per ton for cow and hog feed; who is being asked two dollars per bushel for seed oats and forty-seven dollars a bushel for red clover seed, the prospects are not very "rosy" for 1920, and he is asking, "where do I get off at?" And yet, many will go into the game, "just once more" with all the faith of a gambler, who believes that fortune's wheel must turn in his favor some time, and why not in 1920? The foregoing is not too dark a picture. The writer knows whereof he writes, because he is, as the Dutchman said, "against it up," and is not writing from a theoretical viewpoint, which is a common weakness among many writers and speakers on farm topics. The Honorable Minister of Agriculture for Ontario is reported as having said that College Professors must get in closer touch with farms and farmers. If I may be so bold as to offer a suggestion, it is that all the Professors at the O.A.C. should either be compelled to buy and manage a farm, or where they cannot do so for financial reasons, that such be furnished to them, then they will know the real problems of a farmer in a way that cannot be obtained otherwise.

O. A. C., Guelph.

H. H. DEAN.

Scours in Calves.

Probably no other trouble rises up so frequently and prominently before the dairymen who raises calves, as scours. The occurrence of this ailment is, in a sense, an indication of the owner's success in calf rearing, because if calves can be brought along without being affected by scours they stand a good chance of being free from the other forms of trouble. Scours are of two kinds, common scours, indigestion, or inflammation in the stomach and the more deadly and virulent kind known as white scours or calf cholera.

WHITE SCOURS.

White scours is contagious and infectious and is due to an infection of the navel after birth, whereby the germ of this disease enters the blood of the calf shortly after birth by means of the freshly seared navel cord. Generally speaking this disease usually appears within three days of birth and is characterized by a whitish, foul-smelling dung accompanied by a general air of dejection and a hollow-eyed appearance.

In rare cases it may not appear until the calf is from four to eight days old, but in any case treatment is not generally satisfactory. The first indication of the disease is an indifference to the dam on the part of the calf. It stands with its head down and will not suck. The diarrhoea appears very shortly and faces are of a grayish-white color, frequently of a foamy nature and containing hard lumps of coagulated milk or clots of blood. The calf will lie down much of the time and, while straining will accompany the passing of the faeces in the early stages, they will be passed involuntarily later on. The calf rapidly becomes weak and saliva will flow plentifully from the mouth, while a sticky mucous is noticeable on the tongue. Breathing becomes fast and shallow while the temperature rises at first but lowers again as weakness comes on and may be below normal at death. This lowering of the temperature and bloody diarrhoea are pretty sure indications of death. Fatality seems to be more certain if the disease appears very soon after birth. The disease rarely occurs except during spring and fall.

The immediate cause of white scours is, of course, infectious bacteria. The general causes and treatment have been well set forth by Dr. G.H. Conn, Ames, Iowa, who says that the presence of the colon bacillus is not unusual in the intestinal tract but that this bacillus, it is thought, sometimes becomes virulent to such an extent as to cause outbreaks in stables previously free from it and in which there has not been any known means of infection from outside. In such cases faulty care is believed responsible for the sudden virulence of the bacteria by reason of the calf not being allowed to get the first milk or colostrum of the dam, or on account of the fact that boiled milk has been fed to the very young calf. Where heavy losses are caused with animals raised artificially we are told that it is wise to suspect dirty feeding vessels or boiled milk, because, in boiling, some ferments are destroyed that may play a very important part in the process of digestion and even prevent the growth of the bacillus.

Cows in infected stables may carry the disease in the vagina in such a way as to cause infection during birth. The germs of the disease may be in the litter or on the floors or walls of the stables. The calf may become infected through the contamination of cow-teats by contact with dirty straw when lying down or by licking the floors and walls. The virulence of the disease may be retained in a stable for a long time and if no steps are taken to prevent its recurrence it may appear regularly with disastrous effect every spring and fall for several years. Treatment can be given but it is not always satisfactory. Mild laxatives such as 1:1 to 2 ounces of castor oil, are recommended by Dr. Conn, in order to remove the fermenting material from the digestive tract. Afterwards, intestinal antiseptics may be given and a level teaspoonful of the following, dissolved in a small quantity of raw milk, and given three or four times a day after thoroughly mixing, is recommended. Two parts sodium sulphate; one part tannic acid and one part iron sulphate (all by weight). Linseed, barley and oat gruels, together with the feeding of eggs in milk will aid considerably in keeping up the strength of the calf. Prevention is always better than

a cure and rigid cleanliness, frequent disinfection, clean straw for bedding and clean hands for attendants will do more than any cure to keep down the ravages of white scours. If it is known that the stable is already infected, cows about to calve should be removed to clean stalls several weeks before calving. The vagina of the cow, the stall itself and the litter should be disinfected, and the calf should always be allowed to suck the first milk of the dam.

COMMON SCOURS.

Indigestion in calves as in other animals and human beings can be brought about by various causes and the first thing to do is to cut down the ration so that the calf may get a chance to rid itself of the cause of irritation. Half the battle lies in beginning treatment as soon as anything wrong is noticed. If the milk is cut down one-half and in severe cases withheld entirely, the calf will probably appear normal after one or two feeds have passed, so that full feeding can be gradually resumed. In any case feeding should be light for a few days after an attack of scours, until the calf has regained its strength. In severe cases, two or three ounces of castor oil in a little milk may be necessary. Special points to observe in preventing and controlling scours are, condition and temperature of the milk, cleanliness and over-feeding. Milk should be fresh and sweet and fed at a temperature near that of blood-heat or about 95° to 100° F. This is about the temperature that the calf would get the milk if it were sucking the cow and having it at this temperature prevents any tendency to check the digestive processes by taking chilled milk into the system. As the calves get to be two or three months old, milk of a somewhat lower temperature may be fed, but in any case the temperature at each feed should be as uniform as possible.

Overfeeding is probably the most frequent cause of scours. To satisfy a calf's appetite for milk is to over-feed it, because it is impossible to give a calf what it will take without overfeeding. Weighing the milk is a good practice and cannot be too highly recommended. Where several calves are fed in the same pen, it is best to tie them at feeding time so that each one may receive no more than its share and for the same reason it is not advisable to give all the feed night and morning. Roughage fed during the day will prevent overloading the calf's stomach. Care should be taken to see that the calves do not get much of the foam from separator milk. This may easily cause bloating and sickness. If the feeder is careful to provide clean quarters and protect the calves from extremes of temperature and if he avoids overfeeding, common scours should never prove serious. Prevention of sickness is far more successful than curing it and the dairyman who is contently on the lookout for disorders is seldom likely to be troubled much by them.

Milking Machine Notes.

It is interesting when in dairy districts to study the progress of the milking machine as an assistance to the dairy farmer. Not so very long ago we happened to visit several farms, among which were three or four that were actively interested one way or another in milking machines. On two farms two different makes of machines were installed and working successfully. On another farm a machine had been installed, but at the time of our visit the herd of forty cows was being milked by hand. In another herd the owner was thinking seriously of purchasing still a different make. Another man was seriously interested in watching his neighbors lose out, but had not made up his mind yet whether or not it would pay him to invest. The extremes of attitude were shown by two men, one of whom had one of the more moderately-priced machines installed and who said that if his machine were to be taken away he did not believe he could get his boys or his men to do the milking. The other man, with a larger herd, had no difficulty in getting his herd milked by hand, and thought the results secured were better. At the time of our visit there were three milkers, and usually there were four.

Now, aside from the matter of price and the question of individual preference in machines, there are only three principal matters of interest in connection with milking machines once they are installed and in active operation. One must first of all decide, of course, whether it will pay him to install a machine, but if he thinks it will pay him to do so, and before he actually does install, he should pay particular attention to the three important points referred to. The first of these is the matter of the operator. This is probably the most important point so far as the effect of the machine upon the cows in the herd is concerned. We have tried to follow carefully the conclusions reached from all experiments with milking machines, not the least of which are those conducted by our Dominion Experimental Farms system, and the conclusion is invariably reached that if the operator is a good one the results from machine milking are at least equal on a whole to the results from hand milking. In one survey made upon a large number of farms, in one of the States to the south of us, it was found that the farmer's son made the most successful operator of the milking machine. He was even better than his father for some reason not stated. Hired help, especially of the kind one so often meets with nowadays, is not usually satisfactory. There does not seem to be the same personal interest in the individuals of the herd which would lead the employee to see that the machine is adjusted to suit each cow when necessary. More than that, it is necessary that the cows be stripped when milked with a machine, just as with hand milking, and this is too often neglected,

with the result that the cows are dried up through no fault of their own, nor is it through any fault of the machine.

Next to the matter of the operator is the matter of cleanliness, which is doubly important from the standpoint of market milk. We have many times seen can after can of sour milk turned back from a cheese factory when this milk had been drawn by a machine and should have remained sweet. On the other hand, we have asked men who were receiving milk from a large number of patrons whether there was any more sour milk from men with milking machines than from men without, and sometimes they have said yes, but that it was due to carelessness on the part of the patrons. They have proven this in more than one instance by pointing to men who have used a milking machine for years without ever having a can of sour milk turned back. Some dairymen will tell you that it is next to impossible to keep a milking machine clean, and yet only the other day when visiting a successful user of a milking machine we smelled of the tubes and failed to find the faintest trace of anything out of the way. Very little special care was given to this machine, but it was given regularly, which is the important point.

The third point in connection with milking machines is the ability to get repairs promptly. We know of several machines that are not now in use, or were not when last we visited the farm, simply because repairs had been difficult to obtain. This is an important point with all farm machinery, and is so important in fact that many farmers follow the old rule, which says that the best machine is the one made nearest home.

There can be no doubt that milking machines, when properly used, are of great assistance to the dairy farmer. He must, however, take into account the size of his herd, the ease with which he can get labor, the kind of labor he can get, and his financial resources. A milking machine, we believe, should pay with any herd of fifteen good cows, but each owner must decide his own conditions for himself. Getting rid of the hard, steady work is more important to some people than to others, and five hundred dollars is a lot more to some people than to others.

Some February Holstein Records.

The official records of 94 cows and heifers were accepted for entry in the official Holstein Record of Merit during the first half of February. The mature cows numbered 32, and were headed by Princess Echo De Kol 2nd., that made 35.33 lbs. of butter from 708.9 of milk, at the age of six years and nine months. Next comes Korndyke Queen De Kol 6th, a nine-year-old cow, that made 31.64 lbs. butter from 787.9 lbs. milk. Johanna Butterbank 2nd is another 31-lb. cow in this class, and Cornelia Victoria Korndyke, the only other 30-lb. cow. Nine senior four-year-olds show Lady Waldorf Pietje 2nd, to have made 36.09 lbs. of butter from 508.3 lbs. of milk. Five junior four-year-olds are led by Grace Fayne Aaggie, with 25.81 lbs. of butter from 521.8 lbs. of milk. In the senior three-year-old class, Trenton Keyes Hermes has a long lead with 30.09 lbs. of butter from 573 lbs. of milk. The best junior three-year-old record was made by Cornelia Korndyke Pontiac that produced 20.5 lbs. of butter from 369.9 lbs. of milk. A rather wonderful record appears in the senior two-year-old class, where Glen Alex. Queen De Kol 3rd, at the age of two years and eight months, has a record of 32.81 lbs. of butter from 577.7 lbs. of milk. This heifer wins the Canadian championship for both seven and thirty days. Second to her comes Colantha Queen Butter Girl, a heifer that we are informed made 24.20 lbs. of butter under Manitoba conditions, and without succulent feed. The junior two-year-old class is led by May Echo Pontiac 2nd, with 22.45 lbs. of butter from 504.7 lbs. of milk. Only one entry appears in the mature class for records made at least eight months after calving. This comes from Calamity Snow Mechtildie, that in 30 days made 92.25 lbs. of butter, acquiring thereby second place only in Canada to Jemima Johanna of Riverside.

HORTICULTURE.

Vegetable Crops Under Glass.

PART I—LETTUCE.

Of first importance part from the ability of the grower is the type of house best suited to the requirements of the crops being grown. It will be admitted by all that for the production of such crops as lettuce and tomatoes plenty of head room is essential. Not only to prevent rapid changes in temperature but healthier conditions obtain owing to the greater volume of air, and a much higher temperature can be maintained during bright weather for the same reason. Separate houses are best, with top and side ventilation. Connected houses, while economical to build and heat, throw too much shade, especially after a snowstorm. In considering the forcing of most crops it is desirable that the temperature of the soil should be as high as overhead, that is to say, the soil should be given every opportunity to rise or fall in temperature according to the temperature overhead. This being so the question arises as to how this may be brought about.

The raised bench is the best example in this connection, but these are out of the question when operations are on a large scale. My object is raising this question is to point out that even with the sandiest

soils, much healthier soil conditions would obtain if better aeration was provided. With soil beds this could be accomplished by means of drain tiles. We know of the benefits derived from underdrainage in field operations. When this is an acknowledged fact from an outdoor standpoint it surely must follow that it is just as necessary indoors. Granting that indoors the soil moisture is under control and as a result is never in a saturated condition, still we must remember that crops are being grown during the cold dull, months with a comparatively low temperature as compared with outdoors during summer, hence the necessity for as warm soil conditions as possible without attempting applied bottom heat, which would be folly with such crops as lettuce, radish and cauliflower, but would be desirable in the case of tomatoes, melons and cucumbers.

The most important greenhouse vegetable is lettuce not on account of the difficulties in growing, but on account of the enormous consumption. The type of lettuce grown locally for the Montreal market is the loose leaf or Grand Rapids, none of the growers attempting to produce the Head or Boston type. My remarks will apply to the former.

Lettuce requires a rich well-drained soil for a quick growth. For preference a heavily manured sandy loam is best: good crops, however, can be grown on a variety of soils. If lettuce is grown exclusively it is possible to take off four crops by catering to an early fall and late spring trade. This is not good practice as the bench space would be idle all summer, it being too late for tomatoes or cucumber planting. Records were kept at Macdonald College to determine the length of time taken to develop marketable heads. The early fall and late spring crops took 72 days, the midwinter crop 128 days. Making allowance for time in seed and pricking off benches it was possible to grow four crops. The usual procedure with the large growers is to sow seeds in rows on a raised bench, prick off to same type of bench 3 inches apart, planting from there to solid beds 6 inches apart.

With leaf lettuce watering is done overhead and with the early fall and late spring crops little care need be taken, but during the dull months water should be carefully applied, wetting the plants as little as possible. This should be done early in the day during bright weather so that plants may dry quickly. Carelessness in this regard may cause mildew or rot, especially if combined with a high temperature.

The night temperature should be 45° to 50° F. depending on weather conditions. During the day this may be considerably increased by sun heat, especially if the houses are lofty. Proper ventilation is an important factor in controlling disease as well as in maintaining a proper temperature. During sunny weather air should be freely admitted providing cold draughts are avoided.

Green aphid is the most troublesome insect pest. These are controlled by tobacco fumigation or by evaporating nicotine. White Fly is troublesome at times if tomatoes are grown on the establishment. These are controlled by hydrocyanic acid gas. Mildew is the most troublesome disease. Plants showing mildew should be carefully removed and the path of soil dusted with fresh slacked lime. Careful watering, heating, and ventilating is the best means of control. Rot is another fungus disease which may be troublesome and is controlled by the same means as mildew.

Head lettuce has been experimented with at Macdonald College, but the loss caused by drip from the glass during mild days following severe weather, proved that for this northern climate it was not a safe proposition excepting possibly as a late spring crop.—Address by A. H. Walker, Macdonald College, Quebec, at the Ontario Vegetable Growers' Convention.

Agriculture in New York State.

DUST OR LIQUID SPRAYING.

In a certain section of New York State there is a boom on in favor of dust spraying. Great things are claimed for this method of applying fungicides and poisons. Bulletins are issued from Cornell University recommending this style of spraying as superior to any others. While at Cornell and seeking to find Professor Wetzel, Plant Pathologist, in order to learn what were the materials used in dusting, I met two young men who were not only ready but eager to tell me what I wanted to know, and a great deal more. They believed in dust spraying, and were ready on any occasion to boost it. One of them was the demonstrator who was sent around to various orchards to show how dusting should be done, and that the people might later in the season see its good effects. He very promptly gave the formula almost universally used—sulphur 90 per cent., arsenate of lead 10 per cent., both very finely ground. As to their claims for dust spraying I was not wholly convinced, having previously heard from better authorities that there were two sides to the story.

While in another part of the State some time before, I called upon Senator T. B. Wilson, a very extensive and successful orchardist, who formerly had given considerable time to lecturing on orchard practice at farmer's institutes. Mr. Wilson told of the experience of a neighbor a few miles away, that was really striking. This man's orchard was separated from his neighbor's on one side by the line fence only. One tree grew right on the line between them. The neighbor had neglected the "pink" spray—the spray that is applied just before the blossoms open. The other sprays were applied carefully at the proper time. Mr. Wilson's neighbor applied the "pink

spray" to his orchard and to his half of the tree on the line. Result, he had apples in his orchard and on his half of the tree on the line, while his neighbor had none.

Mr. Wilson has used the dust spray and with good results. He told of a certain section of one of his orchards on which he had once used the dust sprayer throughout the season, and said he had never had finer Jonathans. The great advantage of that method was in the saving of time. He said that one could spray as much after three o'clock in the afternoon as during a whole day with a spray pump. You drive the team right along and just keep waving the blower back and forth as you go, and the dust is just like a thick fog all through and over the row of trees. Of course, it costs about double for materials, but the saving in labor about balances that.

Asked as to authorities on spraying, Mr. Wilson said that Professor Parrott, of the Experiment Station at Geneva was, in his opinion, unexcelled in America. And there is this about him, he will not give out a mere opinion. He makes no public statement unless he is positively sure.

Professor Parrott, when located, proved to be a most charming and unreserved sort of man. He could not, he said, speak for any other locality but his own. Even in his own state there were localities where conditions were so different from those in Western New York that other means and methods than those most successful in the one district proved best in the other. He was under engagement to lecture on spraying in Pennsylvania soon and he found it needful, especially when far from home, to qualify all his statements as possibly inapplicable in other localities.

Professor Parrott emphasizes the importance of the earlier sprayings. They name the first spray "Delayed Dormant." It is given when the leaves of the blossom buds are out $\frac{1}{4}$ to $\frac{1}{2}$ inch. This takes the place of the "Dormant Spray" formerly recommended. The second is the "Pink Spray," when the blossoms show pink. The third is the "Calyx" spray, when the last of the petals are falling. Later sprays are determined by weather conditions and control of scab. The two earlier sprays, the first especially, Professor Parrott thinks the most important. He cited the case of a grower who omitted these earlier sprays, and scab came in and the lime-sulphur applications given later burned the foliage so that both leaves and fruit dropped. He believes that this burning of the foliage by late applications of spray mixture results from the presence of scab on the leaves. "Scab and burning are related," he said with strong emphasis.

Asked as to the merits of lime-sulphur vs. Bordeaux mixture, he said that for New York, at least, they would stick to the lime-sulphur. The Bordeaux was the best fungicide of the two, but they were afraid of the russetting of the fruit, which occurs when it is used. In that connection another remark of his is very significant and full of hope. "San Jose scale is not a serious pest now." The lime-sulphur sprayings administered for other purposes suffice to keep it unnoticeable.

On the remark being made that our own Professor Caesar had never declared in favor of dust spraying, Professor Parrott said that he was justified in being conservative on that question. The dust spray is not as effective a fungicide as the liquid sprays, and another weakness was that for codling moth, being a floating fog which settled gently and was not driven down into the calyx as was the case with liquid spray delivered from proper nozzles, its effect was much less pronounced.

Nevertheless, he said, it was wise for orchardists to have a dust spraying outfit on account of the greater ease and quickness with which the work could be done in case of need. When work was crowding it was often a choice between spraying an orchard in a hurry and not doing it at all.

Afterwards meeting a farmer with a large orchard, the talk turned to spraying. This farmer, by the way, is present master of a local Grange, and therefore may be taken as not one of the no-account stripe. His idea, as to the cause of the ineffectiveness of later sprays when the earlier ones had been omitted, was that to be of any use in preventing scab, spraying should be done when the fungus was just starting. Once firmly established no after treatment would be efficacious. He spoke most favorably of the "spray gun" by which, without a bamboo or other extension rod, liquid spray could be sent in almost as finely divided a fog and to as great a distance as was possible with dust. It required a much stronger engine, however, as a pressure of 250 pounds to the square inch was necessary for good work. Middlesex Co. T. B.

Reliable Authority.

EDITOR "THE FARMER'S ADVOCATE":

I have been very much interested in the letters by W. T. Macoun on varieties of apples which have been running in your valuable journal for the past few weeks. These letters are replete with information on all the worth-while varieties for the prospective planter and may have some effect in increasing the producing of the King of all fruit, the apple, throughout Western Ontario. Mr. Macoun has long been our authority in his line and Professor Caesar our sure reference as regards sprays and spraying. The Dominion is surely fortunate to possess two such men, so much so that the fruit growing industry owes to them both very much, and if the fruit growers and farmers generally would pay attention there should be a very great improvement all along the line of fruit growing in Western Ontario in the near future. We earnestly trust this will come to pass.

Middlesex Co.

E. T. C.

Top Working Unprofitable Apple Trees by Grafting.

Top working fruit trees is an old-established practice in orcharding, which of late years has assumed greater commercial importance than formerly, because of the greater knowledge of varieties and their limitations which is being slowly acquired by horticulturists generally. It not so long ago that grafting was veiled in more or less mystery, as seemed to be fitting for an operation that, to the uninitiated at least, appeared to ignore Nature's laws and made possible the growing of several kinds of fruit upon the same tree. Needless to say, this use of grafting, whereby several varieties of pears, apples and crab apples could be made to bear fruit from the same root system has little or no connection with commercial orcharding. The commercial orchardist of these days has no time to fool away with infinitesimal quantities of each kind of fruit, any more than he can afford to maintain an orchard in which there are to be found varieties that represent the whole range of the nurseryman's catalogue. In fact, the reverse is almost true, since the best use to which the art of grafting could be put in most of the orchard districts of Eastern Canada is to reduce the number of varieties grown for market by working over trees of the less profitable varieties to those that have proven more valuable commercially.

But there are other uses which the fruit grower can find for this neglected but important operation. There are, in addition to varieties that are poor sorts commercially, others that have been planted in localities altogether unsuited to them. Certain varieties with tender root systems, for instance, have been planted in districts where they almost invariably die from root killing. In such cases top grafting can frequently be used to grow these varieties on hardy root systems with considerable commercial success. Some growers also use top grafting as a means of bringing certain varieties into bearing sooner than they otherwise would. The Northern Spy is an instance of a variety of this kind, because it normally requires from twelve to fifteen years to reach bearing age after planting. When top grafted on a variety like Tolman Sweet, for instance, the fruit grower has a good chance of bringing it into bearing at an earlier age.

These advantages, therefore, give to grafting an importance that it did not use to possess, and at this season of the year the fruit grower should be prepared to go ahead with the work of working over any trees that need it. Top working should be done preferably before the buds begin to swell, although it may be

done when the trees are beginning to show leaf if the scions have been kept dormant and show no growth. There are three essential parts of a graft, namely, the stock, the scion and the wax or covering which is applied to the graft to prevent the drying out of stock and scion until a union has taken place.

THE SCION.

The scion is the wood of the new variety that is to be grafted on the old or unprofitable tree. It is illustrated by the two small upright pieces of wood shown in figures 4, 5, 6 and 18 of the accompanying illustration, which was prepared for "The Farmer's Advocate" by T. Sheward, British Columbia. A great deal of the success in grafting depends upon the quality and the condition of the scions at the time the work is done, so that they should be carefully prepared and stored until ready for use. Preferably scions should be gathered in the autumn after the wood is well ripened. Moreover, since the future of the new tree depends on the quality of its fruiting wood, it is advisable to cut scions only from trees that are known to be good producers. Just how much influence careful selection really has is not definitely known, but it is believed to be considerable and, anyway, in this case it is just as easy to be sure as it is to be sorry. They should be cut before cold weather sets in if they are to be cut in the fall, because there is less sap in the twigs in severe winter, which makes it easier for the scions to dry out if cut at this time. It is quite satisfactory and practicable, however, to cut them early in the spring, provided, as mentioned above, that they are cut before there is any sign of growth. Scions should be cut now on mild days from last year's growth of healthy, productive trees that produce fruit of good color. The scion wood should show maturity and well-developed buds. Watersprouts are not desirable as a rule, although in certain instances there is no reason for thinking that they would not make satisfactory grafts. The whole of the season's growth should be removed with each cut and then any immature tips or coarse parts at the base can be cut off afterwards. For holding the scions until it is desired to use them, the whips should be tied in bundles of convenient size, say fifty or one hundred, and imbedded in moss, sawdust or sand that is slightly moist, but not wet. If they must be carried any distance they can be preserved in good condition by wrapping in moss and then in oiled paper to exclude the air. When stored the object is to keep them thoroughly dormant so that the best place is a cool cellar that is not too dry, because

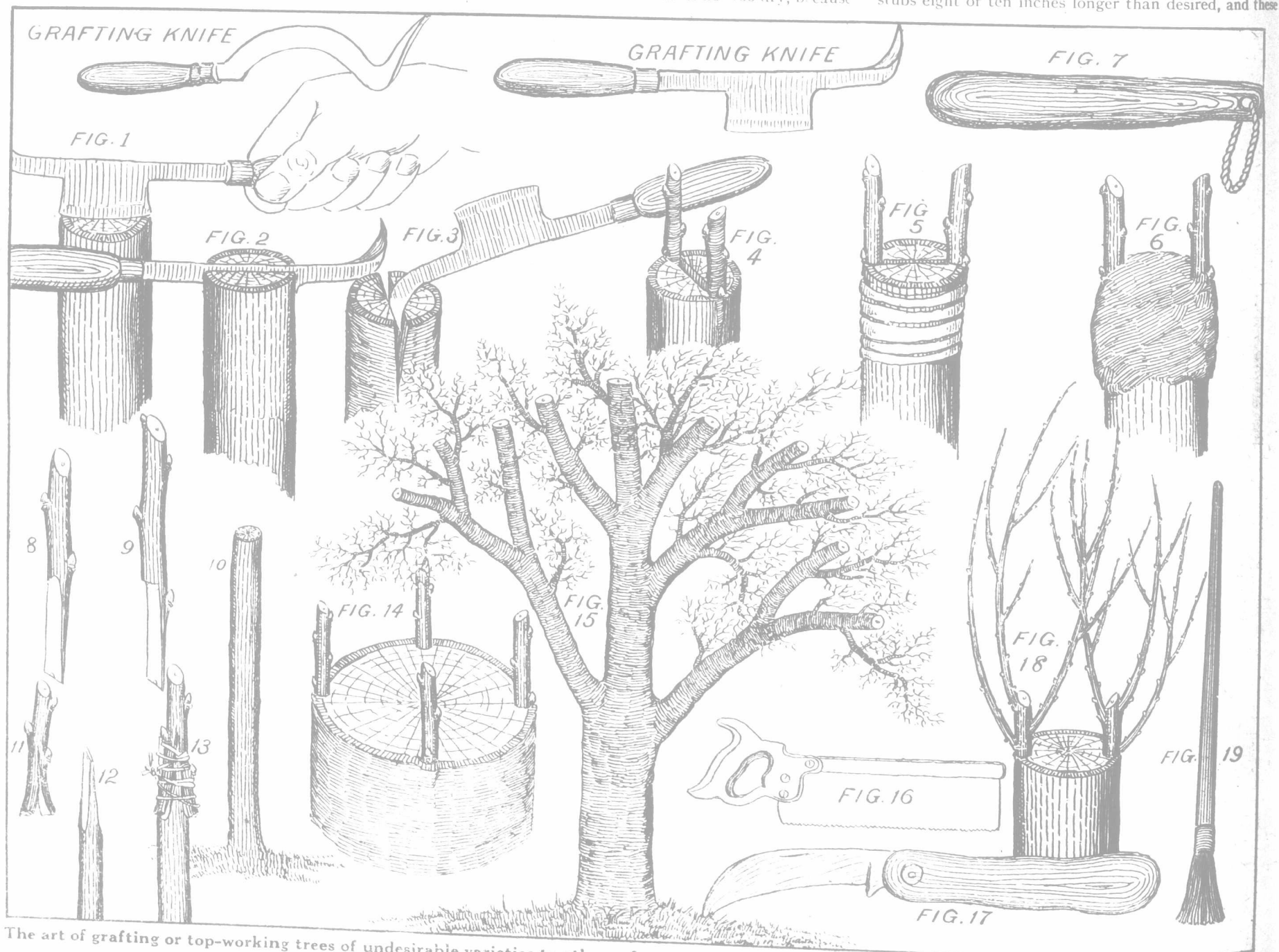
they can be kept there in a fresh, plump condition. If they are kept too moist they will rot.

THE STOCK.

The stock is the branch or tree onto which the scion is grafted and is, of course, important as providing the root system and food supply for future growth of the graft. The first and most important consideration here, from standpoint of the future usefulness of the tree, is the selection of branches on which to graft the scions. Preferably these should be two inches or less in diameter, and as rarely as possible over three inches. It is possible to graft limbs as large as five inches in diameter, but usually this is done by bark grafting, illustrated by figures 9 and 14 of the diagram. Where a large limb is grafted in the usual way, by cleft grafting, the pressure on the small scion is too great to admit of average success. Branches for grafting should be selected with a view to having the finished tree symmetrical and well balanced, which means that the grafts must be distributed evenly. Figure 15 in the accompanying diagram is more or less misleading and should not be followed, because in the first place it shows too many large stubs and, in addition, implies several grafts too far from the centre of the tree. Grafts should be so placed that the tree will be wholly worked over to the new variety, but in the illustration there is too much room left for fruiting wood of the old variety to develop near the centre of the tree. Some of the smaller branches seen nearer the centre of the tree would make suitable positions for grafts instead of the large stubs as shown. Branches selected for grafting should not point toward the centre of the tree and should not be growing in the direction of another branch which is to be retained.

MAKING THE GRAFT.

As intimated before, cleft grafting is the method usually followed in top working, and figures 1 to 4 show the successive steps followed in making the graft. The first step is to saw off the stock fairly close to the branch or limb from which it springs. It is necessary to make the cut square, but if there is no other branch that can be grafted to good advantage, the stub should be made long enough so that if the graft does not grow the first time the stub may be shortened and another graft put in the next year. As a general rule the limb should not be cut off until one is ready to put in the graft, but occasionally, in order to save time in a busy season, the limbs are cut off in the winter months with stubs eight or ten inches longer than desired, and these



The art of grafting or top-working trees of undesirable varieties to others of greater commercial importance should be understood by every orchardist. It is not difficult and can be easily acquired.

ting.

in a fresh, plump condition. they will rot.

Stock.

h or tree onto which the scion is inserted, is important as providing the opportunity for future growth of the most important consideration is the future usefulness of the branches on which to graft the scions should be two inches or less, as possible over three inches. Scions as large as five inches in diameter is done by bark grafting. Figure 14 of the diagram. Where a scion is too great to admit of being grafted, grafting should be done by the finished tree system, which means that the graft is made by cutting a branch from the tree. Grafts should be wholly worked over to illustration there is too much of the old variety to develop. Some of the smaller branches of the tree would make suitable of the large stubs as shown. ing should not point toward should not be growing in the which is to be retained.

THE GRAFT.

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used by every orchardist.

merely shortened again when the grafting is done. This has the advantage, where it may be done safely, of allowing opportunity to remove the brush, in addition to saving some time, but in this northern climate, and especially in the larger and cooler apple sections of Ontario, it may be dangerous unless it is left until only a short time before grafting, because the limbs are apt to dry out and the whole tree thus be spoiled.

Cleft grafting is so called because the graft is inserted in the stock by means of a cleft made across the freshly-cut surface of the latter as shown in figure 3. This cleft is made by means of a grafting knife and a mallet, the former being easily made by a blacksmith out of an old rasp and fitted with any suitable handle. One edge of the rasp can be rounded out to an edge for part of its length, and this ground or filed sharp so that it can be driven into the stock easily. The end of the rasp is then turned up to a narrow wedge shape so that once the cleft is made the knife can be withdrawn and the wedge inserted as in figure 3 to hold open the cleft while the scions are being placed properly. The cleft should not be made too deeply, because it is not desirable to have more wood surface exposed than necessary, and later when the time for waxing comes the shorter the cleft can be made the less waxing there will be to do. It is not necessary to have any special mallet for grafting, because it is impossible to get anything more convenient or efficient than a short piece of apple limb about 2 1/2 inches in diameter and a foot long. A hole can be bored through one end of this and a string fastener put on so that after making the cleft the mallet may merely be dropped from the wrist, or, it may be hung on a small limb until wanted.

With the cleft made and held open with the wedge of the grafting knife, the next step is to cut the scions. These, it will be remembered, were cut in whips from last year's growth. One whip as cut from the tree may make several scions, each of which should bear at least two and preferably three strong buds. The scion requires some shaping before fitting it into the cleft, and usually this is done before cutting it from the whip. The shaping required is shown in figure 8, which shows a two-bud scion cut wedge-shaped. The wedge is made with a small, very sharp knife, preferably a regular budding knife, which, when properly sharpened, will leave a smooth cut behind it. The idea is to make the wedge with two cuts, leaving one edge of the wedge thicker than the other for reasons that will be noted later. It is also important that the thick edge of the wedge shall be immediately under the lower bud, and it is advisable to start making the wedge just about even with this bud. In cutting the scion from the whip it is not advisable to cut too close to the top bud for fear of drying out the wood and injuring the bud. Cut the scion away about a quarter inch above the top bud.

THE PART THE CAMBIUM PLAYS.

Now that we are ready to actually set the graft, we must understand fully the significance of the grafting operation, or failure is almost certain. Between the bark and the wood is a thin layer of meristematic or growing tissue, which throws off wood on one side and bark on the other. It is from this thin greenish layer that all new wood and bark is made, and hence if the scion and stock are to grow together so as to form a union the cambium of stock and scion must be brought into contact with each other. This can be done very easily, but one must know just in what part of the branch it lies, because one cannot see to put the two together. To bring about this union of the two cambiums is the reason why the scions are set in the position shown by figure 4. It will be noticed that two scions but no more can be set in each cleft. This is because with each cleft there are only two places in it where the cambium layer is exposed. The scion is set well down into the cleft so that the lower bud faces outward and is about level with the top of the stock. If, instead of placing the scions quite upright as in figure 5, they are given a slant outward, the union between the two cambiums is surer to take place. After the scion is set, the grafting knife is withdrawn and here we see the value of making one side of the scion-wedge thicker than the other. When the cleft comes together and presses on the scions so as to hold them in place, the thick edge of the wedge makes sure that the pressure comes where it is needed—that is at one edge of the wedge where the cambium of the scion is.

MAKING AND USING THE WAX.

The third essential to successful grafting is the use of wax to keep rain, air and other foreign substances out of the cut surfaces. This is applied much after the fashion illustrated in figure 6, which, however, shows the use of more wax than is really necessary. All that is necessary is to cover closely all the top surface of the stub so that water will run off it easily and to cover also the sides of the cleft below the lowest bud of each scion, and as far down as the stock is split. Any extra wax applied is wasted, except that the tips of the scions should have a dab of wax to protect the cut surface there. The graft is now complete and ready to grow when the sap moves freely.

There are several kinds of waxes that can be used. Originally, most of the waxes used to be liquid and were applied hot, but this method of waxing is too inconvenient for the average person. Probably the most satisfactory wax is made of four parts by weight of resin, two parts of beeswax and one part of tallow. A more pliable wax can be made for outdoor use in rather cool weather by using boiled linseed oil instead of tallow. Sometimes, in such cases, another part of resin is substituted for one part of beeswax. Grafting wax is simple to make, and requires only to have the ingredients melted thoroughly together, emptied quickly

into a vessel of cold water and pulled like taffy as soon as it can be handled. If the resin is thoroughly melted and the pulling continued long enough, a clean, creamy, pliable wax will be secured. In pulling, the hands should be well greased or oiled and when grafting it is well to carry a small quantity of the linseed oil to the orchard, because if the weather is cool the wax may stiffen if unused for some time, and a little oil worked into it will make it pliable again without an unnecessary amount of working. A good grafting wax will not crack when on the tree, or else the air will reach the wound before it is healed over. At this point it is well to mention that in addition to scion, balls of grafting wax, grafting knife, mallet and knife for cutting scions, the grafter should carry with him a sharp pruning saw (not one with a double cutting edge) and a pair of hand pruning shears.

AFTER TREATMENT OF TOP-WORKED TREES.

Since the object of top working trees is to get rid of all the old fruit-bearing wood and replace it with new wood from the grafts, it is evident that, ultimately, all the old top must be cut away. Only enough should be cut away the season the grafting is done to give the scions a good chance to grow. Many scions are lost or die because they did not get a chance to live, due to the greater ability of some strong branch left nearby to get the sap sent up from the roots. On the other hand too much top should not be cut away for fear of inducing sun scald. If possible the new grafts should receive partial shade at least during the summer and about 3 or 4 years should be taken to remove all of the old top.

Of the two scions in each stub, only one should be left finally. If both grow one should be cut out after the union has been well made and the wound at least partially healed over. Future pruning of the graft is more or less like that of a growing tree. It should never be allowed to develop mainly toward the centre of the tree, and it is well to remember that grafts have a tendency to grow upward. During the first summer at least it is well to examine the new grafts and remove any nearby shoots or branches that are interfering with their growth.

FARM BULLETIN.

The Debate in the House of Commons.

The feature of the week in the House of Commons, at Ottawa, has been the debate on the address in reply to the speech from the Throne. Considerable interest was aroused by virtue of an amendment to the address proposed by the Honorable W. L. Mackenzie King, leader of the Opposition, who claimed that the speech from the Throne disclosed an entire absence of proposed legislation, on the part of the Government, which would deal with the various questions that are foremost in the thought of the country at the present time. Further, Mr. King said, "it is because the people of the country are believing that the Government does not represent the will of the people that we hear the demands that we wish to voice: the need for a new Parliament and a new Government." His resolution reads: "We respectfully submit to your Excellency that in the interest of the peace, order and good Government of this Dominion, such a condition of our public affairs should be brought to a speedy termination, and that the only effective remedy is to be found in an appeal to the electors at a general election. We, therefore, respectfully represent that your Excellency's advisers should forthwith bring forward the promised Franchise Bill for the enrolment of the electors and give it precedence over all other business, and that upon the enactment of such a measure as may be necessary, and the making of temporary provisions for the urgent public service, they should take the proper constitutional steps to obtain your Excellency's approval of an appeal to the people at the polls."

Hume Cronyn, London, moved the address in reply to the speech from the Throne, and advised that borrowings of the Government should either cease altogether or be brought down to the irreducible minimum. It was his opinion also that every unnecessary expenditure should be ruthlessly vetoed and he said that deflation of swollen credits is more vital than the erection of magnificent public edifices, or memorials. Over-manning and duplication of work within the Government Departments should be abolished for the sake of economy, and the speaker suggested that a Bill dropped nine years ago, providing for the appointment of a permanent tariff commission, be reintroduced. He also believed that production should be aided by the encouragement of suitable immigration, and would restrict immigrants to those who would settle on the soil and become permanent citizens. He also favored a committee to consider proportional representation. The address was seconded by R. McGregor, Pictou, Nova Scotia, who dealt largely with the vocational training and land settlement of returned soldiers. The speaker strongly urged the development of the iron and steel industry in Canada.

Following the leader of the Opposition, who followed the seconder of the address, Sir George Foster, Acting Prime Minister, largely devoted his time to a rebuttal of Mr. King's remarks. Referring to rumors of dis-sension within the Cabinet, Sir George said: "If he will take my word for it, let me say that there is not now, nor has there been since Union Government has been formed, any line of policy adopted on which the Government has not stood as a unit." With reference to the tariff, the Acting Prime Minister said he would like to know where the leader of the Opposition stood on the

question. Referring also to the high cost of living, he said that a panacea for this had not yet been found, and that the only cure for the sick world was greater production.

On Wednesday, W. F. Cockshutt, Brantford, the high priest of protection in Canada, told the House that in his opinion the agrarian movement in Canada was dangerous to the future welfare of the country. He hoped the U. F. O.-Labor Coalition in Ontario would succeed, but did not think it could. Class legislation was bound to follow the formation of a farmers' Government in Canada. Thursday was farmers' day in the House, and Honorable T. A. Crerar proclaimed in plain language the policy of the farmers' movement in Canada. He favored the holding of an immediate general election, and declared that he and those who thought with him would vote for the Liberal amendment proposed by the Honorable Mackenzie King. Mr. Crerar explained that the tariff on implements used in production and on the necessities of life should be removed, and said that there should be a general revision of the tariff. He also favored boosting the tax on luxuries to somewhere about fifty per cent. of their value. At the same time he would impose an excise duty on luxuries manufactured in Canada and declared that protection is nothing more nor less than a form of state socialism. He thought the speech from the Throne was very meagre, and that problems never before met with now faced the country. Referring to the platform of the Canadian Council of Agriculture, Mr. Crerar said: "I challenge any honorable member in this House to take the platform of the Canadian Council of Agriculture, word by word and line by line, and see anything in it that is of a class character," and in reply to a question as to whether the present Ontario Government was fully representative of every class, he said: "That Government of Ontario which contains eight farmers and one lawyer is just as representative of the people as the Government that preceded, which contained eight lawyers and one farmer." He further declared that it is not the policy of the farmers of this country to sweep away the tariff at one step, and said that "we are embarking on new national policies of one kind or another, and I believe that in a democratic country like this the people should have an opportunity to give expression to their views on these important policies and questions. There should be public debates from one end of the country to the other. After all, we are the servants of the public, and it is our business to reflect in legislation what the majority of the people of this country require."

T. W. Caldwell, Victoria and Careleton, New Brunswick, the new farmer member from the Maritime Provinces, believed that the opinion held by the farmer members represented the majority of the public of Canada to-day. O. R. Gould, the new farmer-member from Assiniboia, believed that the new national policy of the farmers' movement was big enough and broad enough for all classes in the Dominion to stand upon in the interests of a greater nation.

On Friday, Dr. Michael Clark, Red Deer, the lieutenant of Honorable Mr. Crerar, who leads the agrarian movement; Major G. W. Andrews, representing the returned soldiers and labor element of Central Winnipeg; Thomas McNutt, Saltcoats; and Levi Thompson, Qu'Appelle, each favored an immediate election. Dr. Clark, who is probably the most eloquent speaker in the House of Commons, severely criticized Sir Thomas White, as Finance Minister, and in the course of his remarks regarding the tariff said: "Farmers hold these views because in Canada they were hit so hard by the tariff that they had to study economics and the result of the study of economics will be precisely the same among the workmen of the country, among the women of the country, and of both front benches in Parliament, if they had the same promptings to study that the farmer had."

Western Ontario Clay Workers and Drainage Men Meet.

The Western Ontario Clay Workers' Association and the Ontario Farm Drainage Association held a very successful joint convention at London, on February 24, 25 and 26. On the first and last days the Associations held their meetings separately, but combined on the 25th to hold a joint conference on matters pertaining to farm drainage. A very complete program was prepared and carried out by these two conventions. Authorities in Canada and the United States expressed their views on matters pertaining to the production of clay products, while the Drainage Association devoted a good deal of its time to consideration of farm drainage problems. On the evening of February 25 a splendid joint banquet was enjoyed by the delegates present, and at the conclusion everyone felt that a very profitable and instructive convention had been staged.

C. S. Parker, of London, Ontario, former President, retired and Wm. McCredie, Lyons, Ontario, was elevated to the presidency of the Western Ontario Clay Workers' Association. The First Vice-President is Alfred Wehlann, Cairo, Ontario; second Vice-President, H. H. Hallatt, Tilbury, and the Third Vice-President, R. T. McDonald, Bridgen; Secretary-Treasurer, G. A. Armstrong, Fletcher. A permanent fuel committee was appointed and made up of the following members: C. S. Parker, Chairman; Wm. McCredie, R. T. McDonald, Alfred Wehlann and G. A. Armstrong.

The Ontario Farm Drainage Association elected the following officers: President, S. W. Hyatt, Mt. Brydges; First Vice-President, J. E. Jackson, Downsview; Second Vice-President, W. Walsh, Florence; Secretary-Treasurer, F. L. Ferguson, O.A.C., Guelph.

Toronto, Montreal, Buffalo, and Other Leading Markets

Week Ending March 4. Receipts and Market Tops.

Dominion Department of Agriculture, Live Stock Branch, Markets Intelligence Division

	CATTLE						CALVES					
	Receipts		Top Price Good Steers (1,000-1,200)				Receipts		Top Price Good Calves			
	Week Ending	Same Week	Week Ending	Week Ending	Same Week	Week Ending	Week Ending	Same Week	Week Ending	Same Week	Week Ending	
Toronto (U.S.Y.)	Mar. 4	1919	Feb. 26	Mar. 4	1919	Feb. 26	Mar. 4	1919	Feb. 26	Mar. 4	1919	Feb. 26
Montreal (Pt. St. Chas.)	5,658	7,349	7,206	\$14.50	\$15.75	\$14.50	921	883	1,030	\$24.00	\$19.25	\$24.00
Montreal (East End)	344	602	365	13.50	—	13.50	582	1,062	418	20.00	15.00	20.00
Winnipeg	628	616	541	13.50	—	13.50	557	440	673	20.00	15.00	20.00
Calgary	880	1,544	857	12.75	15.50	12.50	71	39	35	16.00	12.50	16.00
Edmonton	1,568	1,492	1,357	12.50	14.92	11.50	123	—	160	10.00	10.00	10.50
	635	530	547	12.00	13.50	12.00	57	43	52	12.00	11.00	12.00

	HOGS						SHEEP					
	Receipts		Top Price Selects				Receipts		Top Price Good Lambs			
	Week Ending	Same Week	Week Ending	Week Ending	Same Week	Week Ending	Week Ending	Same Week	Week Ending	Same Week	Week Ending	
Toronto (U.S.Y.)	Mar. 4	1919	Feb. 26	Mar. 4	1919	Feb. 26	Mar. 4	1919	Feb. 26	Mar. 4	1919	Feb. 26
Montreal (Pt. St. Chas.)	6,056	4,493	10,130	\$19.00	\$18.50	\$19.50	719	1,113	730	\$23.00	\$18.25	\$24.00
Montreal (East End)	805	1,135	1,990	19.75	18.00	20.25	104	108	104	18.00	15.00	17.00
Winnipeg	555	688	825	19.75	18.00	20.25	48	107	150	18.00	15.00	17.00
Calgary	1,856	4,238	2,360	19.25	17.25	18.75	191	133	256	16.00	15.50	17.00
Edmonton	513	1,710	692	19.75	17.15	19.75	449	61	1,383	13.50	17.00	15.00
	863	585	710	19.00	16.75	18.65	109	194	11	10.00	10.00	15.00

Market Comments.

Toronto (Union Stock Yards).

Barely ten hundred cattle were on sale on the Monday market, and under keen competitive bidding prices advanced 75 cents, and in some instances \$1, above the values prevailing during the previous week, all classes participating in the advance. On Tuesday the market was quiet but values were fairly well maintained. Trading was, however, easier on Wednesday when late arrivals brought the receipts up to twenty-six hundred head, and most of the sales were made at a shade easier prices. On Thursday, there were eight hundred cattle on sale, and buyers were indifferent, and refused to bid except at a substantial decline in values; and the market closed with a weak undertone at values 50 cents to 75 cents below Monday's quotations. Owing to the weak condition of the dressed meat trade, any large volume of cattle would have a tendency to send prices to lower levels. The week's offering included a few loads of heavy cattle which were readily absorbed at satisfactory prices, anything with weight and quality being taken at prices from \$13.50 to \$14.50, one steer of fourteen hundred and ten pounds selling at \$14.50 per hundred. A load averaging twelve hundred and fifty pounds moved at \$14.25 per hundred on Monday, while a better load of thirteen hundred pounds average sold on Wednesday at \$14.10, and another load of twelve hundred pounds at \$14. Most of the good quality steers in the ten-hundred to twelve-hundred-pound class sold from \$13 to \$13.75. Eight head averaging eleven hundred and fifty pounds sold at \$14, while twenty-five head of equal weight sold at \$13.40; medium quality went to the scales from \$11.75 to \$12.50. The handy-weight butcher class included a few baby beef steers and heifers, and these commanded a premium, \$15 per hundred being paid for six head that weighed from seven hundred to nine hundred pounds; other sales in this class included a load averaging nine hundred pounds at \$13, a load of eighteen head, of medium quality from \$9 to \$10.50, and common from \$7 to \$9. Cows and bulls moved in sympathy with other classes; extra good cows suitable for the Kasher trade were taken from \$11 to \$12, one cow of twelve hundred and forty pounds realizing the latter price. Most of the good cows moved from \$10 to \$10.75, and medium quality from \$8 to \$9.50. Best bulls sold from \$10 to \$11, and common from \$7 to \$9. The milk cow trade was featureless; few choice milkers were available with only an occasional sale up to \$165 per head, most of the transactions occurring at \$100 to \$135. The calf market was fairly active and prices more or less stationary all week; one or two extra choice calves sold at \$24, with good veal calves from \$20 to \$23, medium from \$15 to \$17.50, and common calves from \$11 to \$15.00.

With less than seven hundred sheep and lambs on sale, trading in this department was active and values firm. A pair of spring lambs of Dorset breeding and weighing sixty pounds each sold at \$24 per hundred; best yearling sold from \$20 to \$23.50, good sheep from \$10 to \$13.50, with a few sales at \$14 to \$15 per hundred.

Montreal.

The total number of cattle for sale on the two markets during the week was

TORONTO					MONTREAL (Pt. St. Charles)				
CLASSIFICATION	No.	Avg. Price	Price Range	Top Price	No.	Avg. Price	Price Range	Top Price	
heavy finished	184	\$14.00	\$13.00-\$14.25	\$14.50					
STEERS good	773	12.88	12.25-13.50	14.00	27	\$13.10	\$13.00-\$13.50	\$13.50	
1,000-1,200 common	6	10.75		12.50					
STEERS 700-1,000 good	1,601	12.27	11.25-13.00	13.25	24	12.75	12.50-13.00	13.00	
common	426	9.93	8.50-10.50	11.00	51	11.50	10.50-12.00	12.00	
HEIFERS good	987	12.38	11.25-13.00	13.50	2				
fair	263	10.07	9.00-11.00	12.25	11	10.50	9.50-11.00	11.00	
common	13	8.25	7.50-9.00	11.00	44	8.75	8.00-9.25	9.25	
COWS good	146	10.20	9.50-11.00	11.50	23	11.00	10.50-11.50	11.50	
common	592	7.91	7.00-9.00	9.00	58	8.75	7.00-9.50	9.50	
BULLS good	69	9.85	9.50-10.50	11.00	3	11.00		12.00	
common	49	8.34	7.75-9.00	9.75	23	9.00	8.00-10.00	10.00	
CANNERS & CUTTERS	157	5.76	5.25-6.50	6.50	30	6.25	5.50-6.50	6.50	
OXEN									
CALVES veal	879	19.58	18.00-22.50	24.00	14	11.50	11.50-	11.50	
grass	42	10.00	9.00-11.00	11.00	550	17.75	17.00-18.00	20.00	
STOCKERS 450-800 good	234	9.65	9.00-10.00	10.00	32	8.50	8.50-	9.00	
fair	34	8.71	8.00-9.50	9.50					
FEEDERS 800-1,100 good	119	10.91	10.50-11.50	11.50					
fair									
HOGS selects	5,440	18.93	18.50-19.00	19.00	634	19.40	19.25-	19.75	
(fed and watered) heavies					5				
lights	474	16.89	16.50-17.00	17.00	161	19.25	19.25-	19.75	
sows	135	14.92	13.50-16.00	16.00	3	15.40		15.75	
stags	7	13.33	11.50-15.00	15.00	2				
LAMBS good	445	21.61	19.00-23.00	23.50	3	17.75		18.00	
common	36	16.72	15.00-18.00	18.00	48	16.50		17.00	
SHEEP heavy	215	12.85	11.00-15.00	15.00	21	12.25	12.00-	13.00	
light					32	11.50	11.00-12.00	12.00	
common	23	6.05	5.00-7.50	8.00					

Hog receipts were comparatively light and quotations were advanced. A few hogs sold on Monday as low as \$18.50 and \$18.75, fed and watered, but as this was out of line with the prices being paid for f.o.b. hogs for direct shipment, the fed and watered prices were subsequently advanced to \$19.00, and remained at this level for the balance of the week, while f.o.b. prices were \$18, with a carload or two at \$18.10. Light hogs were quoted at \$17, and sows from \$14 to \$16.

Of the disposition from the Yards for the week ending February 26, Canadian packing houses purchased 284 calves, 5,840 butcher cattle, 566 hogs and 462 lambs. Local butchers purchased 300 calves, 440 butcher cattle, 632 hogs and 200 lambs. Canadian shipments were made up of 13 calves, 104 milch cows, 8 bulls, 252 stockers and 147 feeders. Shipments to United States points consisted of 233 calves, 177 butcher cattle and 82 lambs.

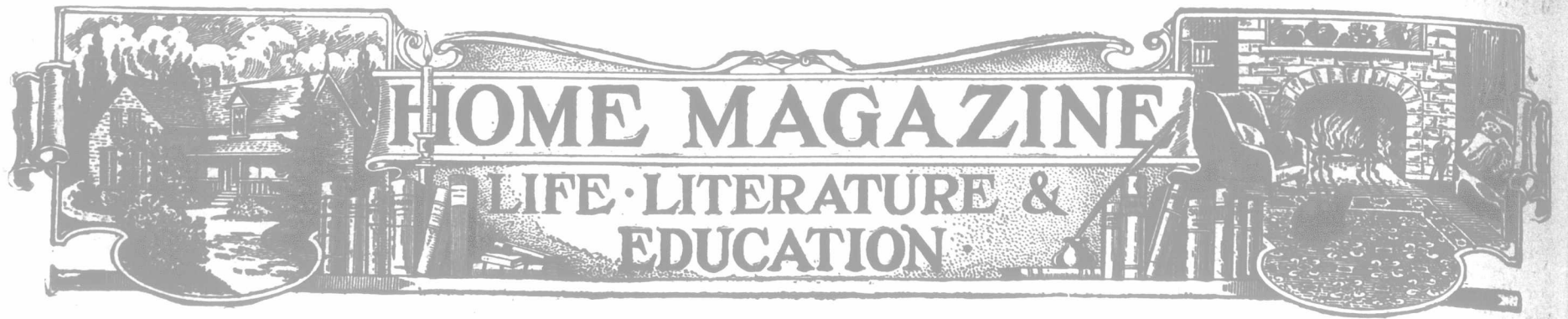
The total receipts from January 1 to February 26, inclusive, were 43,904 cattle, 5,987 calves, 59,333 hogs and 12,843 sheep; compared with 55,033 cattle, 4,790 calves, 62,490 hogs and 21,988 sheep received during the corresponding period of 1919.

slightly over seven hundred head. One hundred of these were bulls that had been stall-fed at one of the markets by a local dealer, while two loads of steers came from the Winnipeg market. The bulls were sold at prices averaging about \$11 per hundred, and the best of the Winnipeg steers brought \$13. The highest price paid on the market throughout the week was \$13.50 for a pair of steers averaging eleven hundred and eighty pounds. On Saturday twenty-four cattle averaging nine hundred and ninety pounds were sold for \$13. A dozen head of young thin steers, averaging six hundred pounds, were sold for \$8.75, and the balance of the steers offered brought between \$10.50 and \$12.50 per hundred. Numbers of butcher cattle were weighed up in mixed lots containing bulls, cows, steers and heifers; the best of these lots brought \$11.25 and \$11.75 per hundred. There were no choice heifers. One fat heifer of dairy breeding, weighing nine hundred and twenty pounds brought \$12 and a few fat heifers were included in lots at \$11.25 and \$11.75, as were also the best bulls and cows offered. Medium heifers were sold up to \$11, and fair cows up to \$9.50. Cannors were \$5.50, and everything better than a canner brought \$6.50 or more. The lowest price for bulls was about \$8. The market was most generally conceded to be 50 cents or better above that of the previous week. Among

the receipts at packers' sidings were eleven loads of cattle bought on the Toronto market, and one hundred and thirty-eight steers bought by one of the firms, in the county of Dundas; one hundred of these latter steers were bought at \$14.25 f.o.b., and the balance at \$13.25 f.o.b. There was a good demand for veal calves of quality. The percentage of young calves offered, made some lots hard to sell, as these calves cannot be killed in packing plants that are under Government inspection. During the war this regulation was not very rigidly enforced, but at present calves must be at least three weeks old and in fair condition. The young calves are being culled out and slaughtered at places other than packers. The Quebec laws, forbidding the slaughter of calves under three weeks old is being enforced, and it is becoming extremely difficult and unprofitable to handle calves under three weeks old, or thin, unhealthy calves of any age. Light calves were sold during the week for \$13 per hundred, fair calves from \$16 to \$17, and good milk-fed calves from \$18 to \$20. The most general price being around \$18.

There were one hundred and sixty-five sheep and lambs offered. The best lambs were weighed out at \$18, and odd sheep at \$12.50 and \$13. The general prices were \$11 to \$12 for sheep, and \$17 to \$18 for lambs.

Hogs totalled eleven hundred and



Three Gifts.

BY W. M. LETTS, IN THE "SPECTATOR," LONDON.

"Courage, Love and Fun."—(George Wyndham's motto.)

Each day a beggarwoman at the portal Of God's high house, by urgent need emboldened,

I ask three gifts for you, my well-beloved, Three gifts beyond the wealth of djinn or mortal.

Courage to stand now all the earth seems quaking
And wise men grow perplexed and kingdoms totter,
Now faith is sifted, old tradition tattered,
A broken world in need of each man's making.

Love that shall find your kith in friend and stranger,
Brother in man and beast, in saint and sinner,
And cleanse your heart of grudge or pride or grievance,
Bidding you seek Christ in an asses' manger:

Fun ever quick to kindly speech and laughter,
Swift with a jest the day your heart is breaking,
Fun that shall cheer dull years and send you whistling
Clear-eyed and cool to meet the brave Hereafter.

With these you shall not need men's praise or pity,
Defeat shall brace you, conquest make you humble;
So you shall fight and march and sing till moonrise
Lights up the walls of the Celestial City.

For the Rose Lover.

WHO does not love roses?—from the old-fashioned tiny pink rose of little perfume that grows ten feet high and is never troubled with an insect pest, through all the varieties to the highly-bred beauties that need much care and coddling but amply repay for all the pains taken with them. Among them all perhaps none is more lovable than the sweet old "cabbage" variety of grandmother's gardens, which bloomed beside the "old man" and "sweet Mary," and should not be allowed to become extinct, so beautiful is it in coloring and so daintily elusive of perfume.

Among the most satisfactory of the newer kinds are the hybrid perpetuals, hybrid teas and tea roses, all of which do best when planted in late fall; but many kinds may be set out in spring if secured early.

All roses like a rich, well-drained clay soil best, although the teas and hybrid teas do fairly well on a lighter soil. Choose a warm, sheltered, sunny situation, and if the drainage is not naturally good dig out to 2½ feet in depth, put in 6 inches of gravel, then fill in the soil. The latter should be enriched with well-rotted cow manure, black leaf mould or compost.

Purchase healthy 2-year-old bushes grown out of doors by a reliable dealer. When they come sprinkle well with water and cover with a sack until you get time to set them out, which should be as soon as possible. If the bushes seem very dry or it is not convenient or favorable to set them out for some days, dig a shallow trench and cover the roots with soil, watering them well. Several days left thus will do no harm.

When planting spread the roots out nicely, keeping them free from contact with manure, cover with fine soil, fill in and firm down, watering sufficiently. Budded stock should be placed with the

point of budding 3 inches below the surface.

If the growth is rapid and the surface of the soil is kept constantly cultivated to keep up a dust mulch, insects will be less likely to do harm. If aphids appear sprinkle with tobacco dust and spray afterwards with water. Preventive spraying should be done in late fall, winter and spring, while growth is dormant. The less the bushes are sprayed in the growing season the better. Preventive spraying should be done with rose Bordeaux, to which, for the early spring spraying, a little arsenate of lead

soap dissolved in 2 gals. hot water. Strain and apply to leaves. The soap will help to rout aphids. Apply twice during the growing season. (1) After the leaves are well unfolded in spring, and (2) after the first blooming set. If mildewed spots appear cut off the affected parts and burn them. A remedy sometimes found effective is to apply by a powder bellows a mixture of one-third scot and two-thirds flowers of sulphur.

Do not sprinkle rose; bushes in the evening, as this may cause mildew; also do not mulch with fresh manure. Depend, rather on the dust mulch.

cut flowers. Late in fall cut out all weak growth and cut back the canes so that not too much bush will be left to be battered about by winter winds. Hybrid perpetual roses need more cutting back than hybrid teas, while climbers need very little cutting back at all.

In a very severe climate bushes may be protected by sacking, crates of leaves, etc., put on in early winter.

Shrubs for the Farm Home

WHILE trees are needed for the skyline, and vines to form a softening drapery for the home, shrubs are necessary for the ground-line, to form a sort of connecting link between the trees and the ground, the house and the ground.

Often they are very effective when banked in front of trees, and always they are needed about the foundations of the house, although here they must not be placed in a solid, compact row. The house must not look as if it were rising from a wreath of shrubbery.

For corners where tall shrubbery is needed, to screen the chicken or laundry yard, or to hide ugly fences, nothing can be better than the lilacs and so-called "mock orange" or "syringa," which is not a syringa at all. To keep up a succession of bloom you can depend upon forsythia or golden bells (yellow) which blooms in April; Japonica or Japanese quince, which follows closely in early May, with its rosy red blossoms; the deutzia and spirea van Houttei, with beautiful white flowers; the lilacs and mock orange; the altheas, pink or white, which bloom in August; the garden hydrangea with its great panicles of flowers which come about the first of August and last for six weeks; and the barberries and red-stemmed dogwoods which carry color right into the winter. Nor would anyone who knows them miss the dainty pink flowering almond, and the beautiful, feathery smoke tree. Among evergreen shrubs, whose foliage is beautiful all the year around, is the Japanese holly, which grows about 4 feet high.

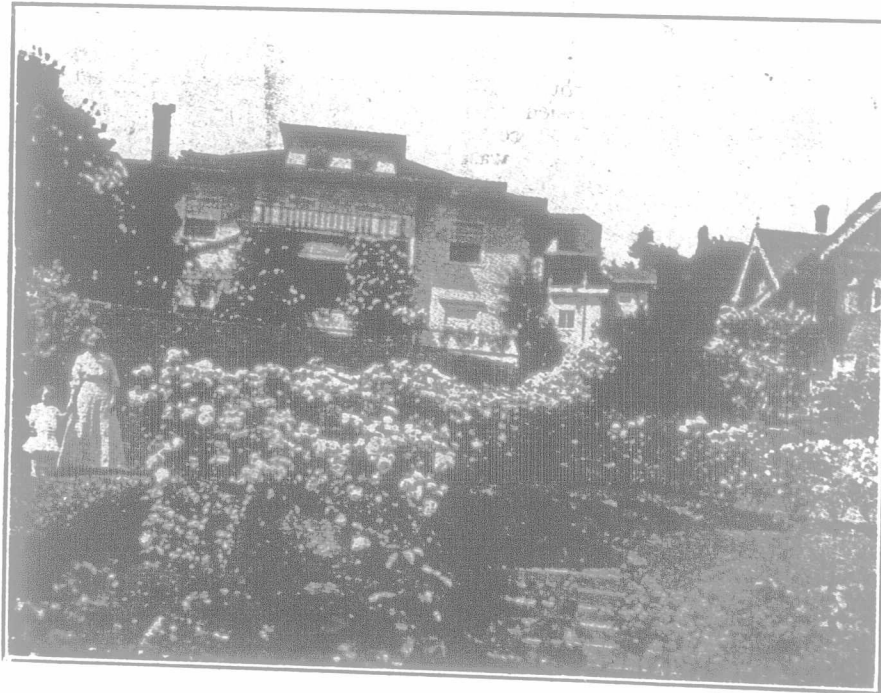
To be successful with shrubs you must take great pains at first. The ground should be rich and well-drained. If not naturally so a deep root-bed should be dug out, drainage material (gravel) put in the bottom for several inches, and the whole filled in with soil enriched with manure rotted until it is resolved almost into a black mould. Soil from the edge of the barnyard is usually good. At no time should raw manure be permitted to touch the roots, as it burns the tiny rootlets.

When planting, some cut back the roots and tops a little. Later very little cutting back will be needed unless the growth should seem spindling, when it may be resorted to in early spring to induce a sturdier growth.

Shrubs should be let grow as naturally as possible. It will be necessary, of course, to cut out dead wood, and to prune out a little, or rub off young shoots, if the shrubs threaten to grow too thick; also lawless and unsightly branches may be cut off, so that the shrub will be kept graceful in form. Never prune them into stiff little trees or round balls; let the branches droop gracefully as they will.

There is one point about pruning, however, that must be remembered. Some shrubs, such as the forsythia, deutzia and spireas, blossom on the last year's wood. The best time, therefore, to cut these back, if necessary, is just after they have finished blossoming. Others, such as the viburnums and altheas, bloom on new growth; therefore, any cutting back that is done to them should be done in very early spring before growth starts.

It is well to keep in mind, nevertheless, that a pruning knife in the hands



Roses by the Bushel.

is added. To make rose Bordeaux dissolve 1 lb. sulphate of copper (blue vitriol) in 2 gals. hot water in an earthen vessel. Let stand over night, then strain through a cloth and keep in a well-corked glazed jug. Also dissolve 1 lb. fresh unslaked lime in 2 gals. cold water. Let stand over night, stir and strain through a cloth into another jug that can be tightly corked. When you want to spray shake the jugs, mix a quart of each and add 1½ gals. water.

To prevent mildew spray with a mixture of ½ oz. sulphide of potassium dissolved and mixed with 1 oz. shavings of pure

During dry weather soak right down to the roots with water, and after the buds appear soak the roots occasionally with weak liquid manure. In early winter a mulch of rotted manure may be put over the roots, and dug in in spring. Leave only one bud to a shoot if fine blooms are desired.

If unnecessary shoots are rubbed off according as they appear, very little pruning will be needed except to cut out old useless wood. For summer and late fall blooms, cut back after the first blooming season. Sometimes this is done sufficiently by taking long stems with the



Pink Climbing Roses and White June Lilies.

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of an amateur usually makes him a dangerous man. More shrubs have probably been ruined by butchery than were ever ruined by neglect.

When planting be sure to firm the soil down well. Cultivate the surface of the ground frequently to keep up a dust mulch and prevent the moisture from escaping. During a long spell of drouth give water down to the lowest tip of the lowest root. In late fall dress the surface of the ground with fine manure which, after the mellowing influence of the winter, can be dug carefully into the soil in spring.

Order your shrubs at once if you have not already done so; you may have to allow for some days' delay.

Your Health.

Chronic Appendicitis.

"MEDICUS."

I B. S., Middlesex Co., Ont.:—"I have a pain over the appendix which hurts when I press on it. At times it is only sore, at other times the pain is sharp like a knife. I have a dull aching pain in my back and hip. Lifting or standing or walking much will cause a return of the pain, although at times it will come back without any provocation."

Answer.—One would suspect chronic appendicitis. There are likely some adhesions between the appendix and other organs which will explain why you are worse at times. Your backache and pain in the hip is "rheumatism." The aches and pains have no relationship at all with true rheumatism. There is likely pus in your appendix, and the poison is being absorbed every day and causes you backache and pain in the hip ("rheumatism").

Patients with chronic appendicitis usually have heartburn and gas on the stomach and naturally start to diet themselves. They will eat something out of the usual and they are worse. That article is tabooed. Then another and another till finally they actually starve themselves. A thin person is invariably nervous, and, once nervous, rather introspective. The ache becomes a pain, a pain an excruciating torture. The moral is:—"Don't diet yourself too much." It is better for such patients to put on flesh rather than get thin.

The treatment is operative. If the appendix contains pus it cannot be removed by drugs or any other treatment. It would be advisable to put on flesh, say 5 or 10 pounds above your normal weight, eating liberally of sugar and starches. Do not delay too long before you have your operation. Your "rheumatism" will only get worse and you will have to come to it eventually.

Alcohol.

ALCOHOL is a heart depressant, and in large doses is dangerous in a serious illness like influenza pneumonia. It may have a slight, transitory, stimulating effect, but this is soon followed by depression. When anything hot, like mustard, pepper, alcohol is taken into the mouth or stomach, it acts reflexly on the heart, but it is only a matter of a few minutes before the sensation of warmth passes off.

Alcohol does not break up a cold, nor does it prevent you from getting cold. Alcohol warms the skin and makes you feel warm. In reality you are losing heat. The "lumber-jacks" have learned this lesson from bitter experience. On one occasion a man took a cask of whiskey into a lumber camp, and the first thing the men did was to take an axe and knock a hole in the cask so that the whole of the whiskey ran out. They did not dare to have the whiskey there, for if it was there they felt sure they would drink it, and if they drank it they would likely freeze to death.

A party of engineers were surveying in the Sierra Nevada. They camped at a great height above the sea level, where the air was very cold, and they were miserable. Some of them drank a little whiskey and felt less uncomfortable; some of them drank a lot of whiskey and went to bed feeling very jolly and comfortable indeed. But in the morning the men who had not taken any whiskey got up all right; the men who had taken a little whiskey got up feeling very unhappy; the men who had taken a lot of whiskey did not get up at all; they were simply frozen to death. They had warmed up the surface of their bodies at the expense of their internal organs.

So whiskey is not advisable to take before going out in the cold, nor is it of service in treating colds, and may actually be dangerous to use in a serious illness like influenza.

(To be continued.)

The Children's Story.

Gypsy.

N. J. SNELL.

OF just what breed she was, I do not know, although I think her mother was an Indian pony, but of this I am not sure. She was given to the children when quite young, and was then about the size of a Newfoundland dog. In color she was iron gray, with the most beautiful and intelligent brown eyes that I ever saw in a horse.

Of course, the children made a great pet of her, as did also their father and mother and even the hired man. She learned to come at a whistle, and would follow one all over the place, like a dog. Gypsy especially loved to go into the house, which privilege, owing to her small size she was sometimes allowed.

One day the family drove to a neighboring town, leaving Gypsy in the fenced-in door-yard. When they returned, late in the afternoon, the pony was nowhere to be seen. The gate was fastened securely and there was no means of her getting away unless—horrible thought!—some one had taken her! Frightened at the very idea, the children hurried into the house, and there, stretched comfortably upon the sitting-room rug was Gypsy! She had opened the kitchen door, which had been closed but evidently not latched, with her mischievous little nose, and walking in, had made herself at home, and had taken a nap upon the soft carpet.

seeing in our corner that I had acknowledged gifts from readers "for the rich and needy." I don't write as plainly as I might do, and the printer evidently mistook "sick" for "rich." But the printer's error has been ringing in my head ever since, and I want to talk today about the danger of being desperately needy when we think we are rich.

There is the earnest appeal of faithful love in our Lord's message to the lukewarm members of the church in Laodicea. In His sight they are blind and starving, naked and utterly wretched. Yet they are quite satisfied with their condition, and think they are rich. Their eyes are fixed in outward things, but the Lord is looking at the heart. He pleads with them to come to Him for "gold tried in the fire", that they may be really rich.

Of course we know, as a matter of theory, that a man may be a millionaire and yet pitifully poor—even from an earthly point of view. There is very little satisfaction in having a grand dinner on the table if a man is sick in body or troubled in mind. A man who loves his wife, and sees her smiling welcome when he comes in, is far richer than the man who has a freezing reception from an iceberg decked out in velvet, lace and jewels. A palace, which has cost millions, may be far less of a home than a two-roomed shanty on a wide prairie, where loyal love keeps the home-fire burning. Those who spend their whole lives in the pursuit of riches may attain their objective, and find that they have thrown away their chance of happiness. Agur said he had not the knowledge of the holy, and yet—even from a worldly point of view—his prayer was a wise one: "Give me neither poverty nor riches." Plain food and a reasonable amount of work help to keep the body healthy and the heart happy. I saw

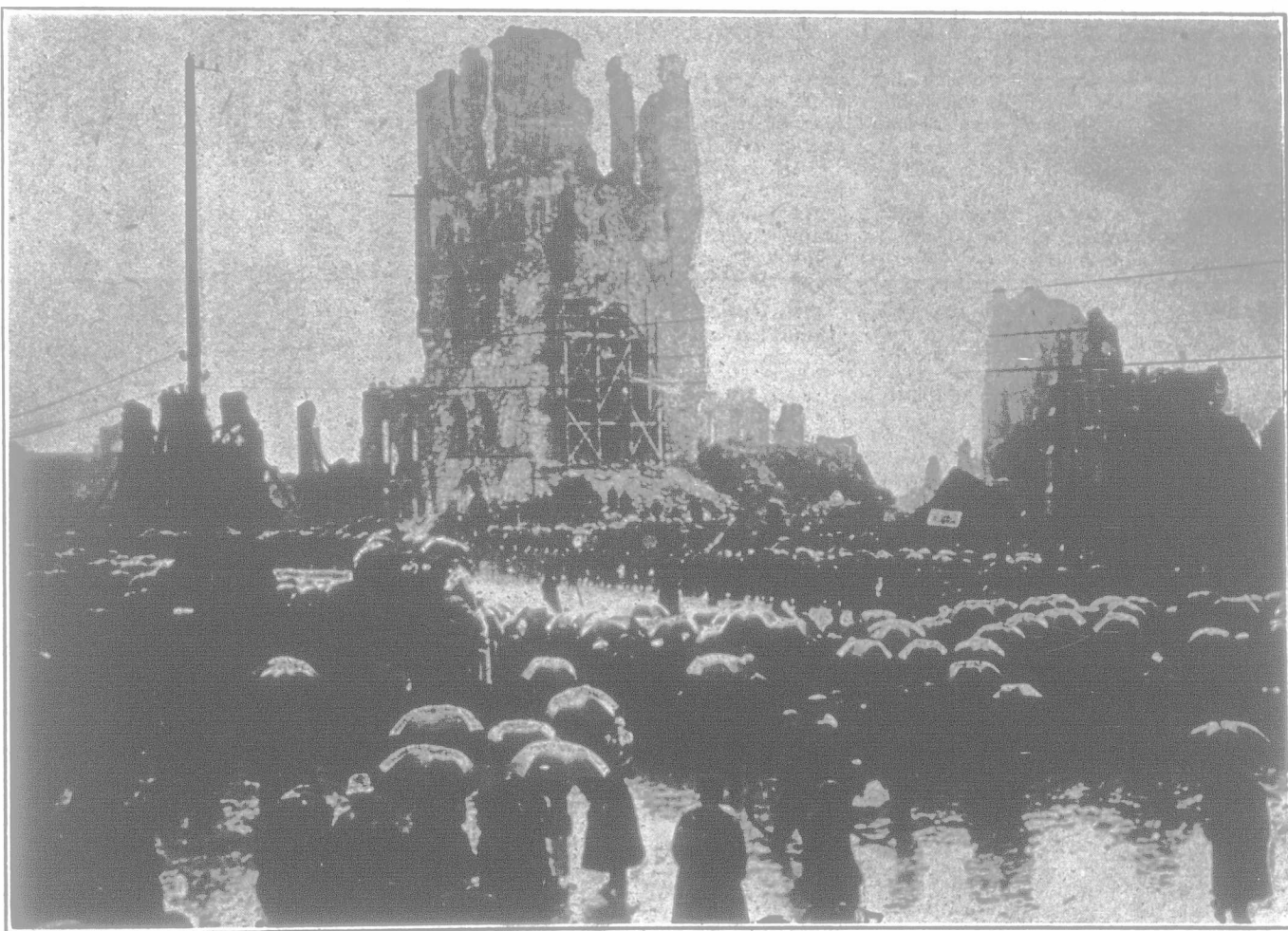
Such a bargain is only too common, and gold is very light when weighed in the balance against love and happiness—or even against health.

Life is a priceless opportunity. We can't afford to make wealth our objective—it is too trivial.

Some years ago there was a sad, though "grand", funeral in Paris. A rich man had died; but even in death he tried to make his money minister to his love of display. He planned his own funeral, and his instructions were carried out. The coffin cost \$100,000. The shroud was cloth of gold, and the pearl buttons on the waistcoat were valued at thousands of dollars. But the magnificent funeral was a terrible mockery. The poor were angry with the man who had thrown away sums in senseless extravagance. They interrupted the ceremony by cat-calls, tin whistles and hisses. The man, who tried so hard to prove that he was rich was really so poor that even the thousands of people who had been working for him showed neither regret for his death, nor respect for his body. Money cannot buy respect from anybody; while true worth of character—real wealth—wins appreciation even from enemies.

And it is utter folly to seek riches by wrong means, by cheating or oppression. Dishonesty and cruelty are attempting to fight against God. Though He may let injustice go on for a time, it is madness for a weak man to expect to win against Eternal Righteousness. It is useless to gain riches by ungodly means, and then try to bribe the Judge of all the earth by giving large sums away in so-called "charity."

"They shall cast their silver in the streets, and their gold shall be removed: their silver and their gold shall not be able to deliver them in the day of the wrath of the LORD."—Ezek. 7:19.



France Honors Belgium's Heroic Towns.

M. Poincare, the late French President, presented the Croix de Guerre to the heroic Belgian towns of Ypres, Dixmude, Nieupoort and Furnes. Photo shows general view of the town of Ypres during the presentation of the Croix de Guerre.

Hope's Quiet Hour.

Rich and Needy.

Because thou sayest, I am rich, and increased with goods, and have need of nothing; and knowest not that thou art wretched, and miserable, and poor, and blind, and naked: I counsel thee to buy of me gold tried in the fire, that thou mayest be rich; and white raiment, that thou mayest be clothed, and that the shame of thy nakedness do not appear. Rev 3:17,18.

A few weeks ago I was startled by

in the paper a few days ago that a "rich" woman had worn a million dollar's worth of jewels at one time. I can't see how she could get any real or lasting pleasure out of that foolish display, when her jewels might have saved the lives of thousands of God's little children who are starving in Europe.

A "rich" lady, in her grand drawing room, who has sold herself for gold and thrown away her crown of beautiful love for a cold niche in society, may well feel herself a beggar as compared with many a happy wife and mother. There is at least as much happiness to be found in a small house as in a large one. Happiness is the companion of love, and those who sell love for wealth will find that happiness refuses to stay in their hearts.

If there is sadness as well as kind pity in our Lord's appeal to lukewarm Christians, who are unaware of their spiritual poverty; there is glad tenderness in His message to the church in Smyrna: "I know thy works, and tribulation, and poverty, (but thou art rich). . . . fear none of those things which thou shalt suffer. . . . be thou faithful unto death, and I will give thee a crown of life."

I read in this morning's paper of a young missionary who had poured out his life in eager service in the far North. He died of pneumonia at the age of 30, and went forward to meet the Lord he loved and served so faithfully. He was not afraid to spend his precious youth in trying to teach the Eskimo the Gospel of Christ. His life on earth was a short

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the Farm Home

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one,—but the Great Life, which is slowly but surely transforming the world's ideals, was only a few years longer. Those who are making the most of life, those who are really great, are not seeking the world's admiration but are consecrating themselves to God's service. They are winning the prize. Life, as Browning declares,

"Is just our chance of the prize of learning Love."

Are we daily giving love, and proving our love by practical kindness? If not, let us begin today. The messenger of God has been very busy in our midst, calling a man here, and a woman or a child there, to drop the business of earth and go into the nearer presence of the King. It may be my turn next—or yours! The time of probation is daily growing shorter. Don't let us waste it in selfish greed.

The marvellous success of "The Forward Movement" is practical proof that Canadian Christians are willing to deny themselves in order to carry the good tidings of God's love to all the dark places of the earth. Many millions of dollars have been poured into the treasury of God by all sorts and conditions of men. The publicity of the huge campaign, and the sense of competition, helped largely to swell the amount gathered by various communions of Christians. The money all looks alike—in the eyes of men—but Jesus still "sits over against the treasury, and beholds how the people cast money into the treasury." He notices that many "rich" people cast in much; but it is when the "poor" deny themselves, and present their gifts, that He calls His disciples to rejoice with Him.—S. Mark 12: 41-44.

This morning I received a letter from a widow in Alberta, enclosing two dollars for the needy. Though she asked me to act as her steward, I know she put the money in the hand of God for His use.

The "Forward Movement" millions are a gift from the Bride of Christ to her Lord, but He does not receive the gift in bulk. He looks at the offspring made by each individual, and some people who seem to be poor may—in His opinion—have given more than the millionaires. God still loveth a "cheerful" giver, and His smiling "Thank you!" is worth more than the admiration of all the world. His blessing always maketh rich, and one who has offered Him a gift of love can joyously say:

"Thou hast shone within this soul of mine
As the sun on a shrine of gold.
When I rest my heart, O Lord, in Thine,
My bliss is manifold."

DORA FARNCOMB,

For the Sick and Needy.

Four gifts for the sick and needy have found their way into the Q. H. P. this week. One dollar each from J. S. W. and from "one who has much to be thankful for"—(surely we all have much to be thankful for!) A friend in Cromarty sent five dollars and Mrs. T. C. M., sent two dollars. I am sorry X. Y. Z. (or is it X. Z. Y?) had to wait so long for the acknowledgement of his gift of \$5, which reached me Jan 6. The delay was caused by the fact that my "Quiet Hour" was crowded out one week, and the next week my appeal for the Armenian Fund (being urgent) went to the press ahead of my other M. S. S. Literature for the "shut-in" has come from many readers. Thanks to you all!

DORA FARNCOMB,
6 West Ave., Toronto.

The Fashions.

Fashion Notes.

SHORT full skirts are being pushed forward this spring by the people who manoeuvre the changes in fashions. But people are not quite so easily pulled round by these folk as they used to be. For instance the long tight skirts that came in early last fall were driven out without ceremony; people would have none of them. And so it is, perhaps, because of this new independence that comparatively few skirts on the new spring suits seen on the streets are very full. Short enough, they are—6 to 8 inches from the ground—but still on the

tight side. Later in the season, when the fluffly summer goods appear the fullness will come to its own, with the very short sleeves prophesied for hot weather, which it is hoped, none but very young girls will try to wear.

Many of the spring coats ripple slightly below the waist, while Eton and Bolero jackets are again claiming attention. Sleeves are narrow, and what is known as the "Turkish hem"—a sort of puffed hem—is seen on some of the skirts. The draped skirt has again vanished into the past.

At present navy blue is very much in favor for suits, with the usual sprinkling of sand, taupe, elephant hide, and black; but for summer white promises to be greatly in vogue, with many shades of blue, jade and scarab green, and buttercup, cockatoo and lemon yellow. Except for party dresses, however, it is invariably wise to choose white or the less conspicuous blues and greens, leaving the vivid colors, in general wear, for smocks and sweaters.

Taffeta is very much in fashion for dresses, but it does not wear well. It is better to choose satin, satin charmeuse, crepe de chine, satin crepe, or one of the heavier Japanese habutai silks for dressy wear, with Shantung or kumsi-kumsa for the more serviceable gowns. Later in the season will come the whole array of cotton materials—voiles, muslins, crepes, etc.—which are best of all, and prettiest too, for hot weather wear.

In both suits and dresses belts, as a rule are very narrow. Collars also are long and narrow, and fit rather closely at the back of the neck, but there are some signs of the revival of the ever popular "sailor".

Hats are of every conceivable color, size and shape. Indeed in the hat line it seems almost impossible to be out of style provided one adheres to the mode of using very little trimming and considering becomingness of "line" first.

How to Order Patterns.

Order by number, giving age or measurement as required, and allowing at least ten days to receive pattern. Also state in which issue pattern appeared. Address Fashion Department, The Farmer's Advocate and Home Magazine, London, Ont. Be sure to sign your name when ordering patterns. Many forget to do this.

Positively no patterns will be supplied except those illustrated.

When ordering, please use this form:—
Send the following pattern to:

Name.....
Post Office.....
County.....
Province.....
Number of Pattern.....
Age (child or misses' pattern).....
Measurement—Waist..... Bust.....
Date of issue in which pattern appeared.....

2957. Girls' Dress.
Cut in 4 sizes: 8, 10, 12 and 14 years.
Size 12 will require 4 yards of 40-inch material. Price 10 cents.

2808. Girls' Dress.
Cut in 4 sizes: 6, 8, 10 and 12 years.
Size 8 requires 3½ yards of 27-inch material for the dress, and ¾ yard for the bolero. Price 10 cents.

2729. Ladies' Costume.
Cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 38 requires 6 yards of 44-inch material. Width of skirt at lower edge is about 17½ yard. Price 10 cents.

2954-2874. Ladies' Coat Suit.
Coat 2954 cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Sizes 38 requires 4 yards of 44-inch material. Skirt 2874 cut in 7 sizes: 22, 24, 26, 28, 30, 32 and 34 inches waist measure. Size 26 requires 3 yards of 36-inch material. Width of skirt at lower edge is about 15½ yard. TWO separate patterns 10 cents FOR EACH pattern.

2513. Child's Short Clothes Set.
Cut in 5 sizes: 1, 2, 3, 4 and 5 years.
Size 4 requires for the dress, 2¾ yards. For the petticoat 1½ yard. For the combination 1½ yard, of 36-inch material. Price 10 cents.

2955. Girls' Dress.
Cut in 4 sizes: 4, 6, 8 and 10 years.

Size 6 requires 2½ yards of 42-inch material. Price 10 cents.

2750. Ladies' Cover-All Apron.
Cut in 4 sizes: small, 32-34; medium, 36-38; large, 40-42, and extra large, 44-46 inches bust measure. Size medium will require 4½ yards of 36-inch material. Price 10 cents.

2943. Ladies' Service Dress.
Cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 38 requires 6½ yards of 36-inch material. Width of skirt at lower edge, is 2¼ yards. Price 10 cents.

2928. One-Piece Dress.
Cut in 3 sizes: 16, 18 and 20 years.
Size 18 will require 4½ yards of 44-inch material. Width of skirt at lower edge is about 1½ yard. Price 10 cents.

2964-2891. A Pretty Costume.
Waist 2964 cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Skirt 2891 cut in 7 sizes: 22, 24, 26, 28, 30, 32 and 34 inches waist measure. To make this design for a medium size will require 5¾ yards of 36-inch material. Its width at the lower edge is 1¾ yard. TWO separate patterns 10 cents FOR EACH pattern.

2795. Girls' Dress.
Cut in 3 sizes: 12, 14 and 16 years.
Size 14 will require 4½ yards of 36-inch material. Price 10 cents.

2952. Girls' Dress.
Cut in 4 sizes: 8, 10, 12 and 14 years.
Size 12 requires 3¼ yards of 36-inch material for the dress, and 1½ yard for the guimpe. Price 10 cents.

2779. Ladies' House Dress.
Cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 38

will require 5½ yards of 36-inch material. Width at lower edge is about 2¼ yards. Price 10 cents.

2770. A Simple Apron.
Cut in 4 sizes: small, 32-34; medium, 36-38; large, 40-42; and extra large, 44-46 inches bust measure. Size medium requires 5 yards of 36-inch material. Price 10 cents.

2958. Maternity or Invalid Skirt.
Cut in 4 sizes: small, 22-24; medium, 26-28; large, 30-32; and extra large, 34-36 inches waist measure. Size medium will require 3½ yards of 40-inch material. Price 10 cents.

2949. Ladies' Shirt Waist.
Cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 38 requires 2¾ yards of 36-inch material. Price 10 cents.

2819. Child's Dress.
Cut in 3 sizes: 2, 4 and 6 years. Size 4 requires 2¾ yards of 36-inch material. Price 10 cents.

2787. Boys' Suit.
Cut in 4 sizes: 2, 3, 4 and 5 years.
Size 4 will require 1¾ yards of 27-inch material for the blouse, and 1¾ yards for the trousers. Price 10 cents.

2956. Ladies' Dress.
Cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 38 requires 5¾ yards of 44-inch material. Price 10 cents.

2950. A Stylish Frock.
Cut in 3 sizes: 16, 18 and 20 years.
Size 18 will require 4¾ yards of 44-inch material. Width of skirt at lower edge is about 1½ yard. Price 10 cents.



require 5 3/8 yards of 36-inch material. At lower edge is about 2 1/4 yards. Price 10 cents.

A Simple Apron.
Cut in 4 sizes: small, 32-34; medium, large, 40-42; and extra large, 48-50 bust measure. Size medium requires 5 yards of 36-inch material. Price 10 cents.

Maternity or Invalid Skirt.
Cut in 4 sizes: small, 22-24; medium, large, 30-32; and extra large, 38-40 bust measure. Size medium requires 3 1/2 yards of 40-inch material. Price 10 cents.

Ladies' Shirt Waist.
Cut in 7 sizes: 34, 36, 38, 40, 42, 44 inches bust measure. Size 38 requires 2 3/4 yards of 36-inch material. Price 10 cents.

Child's Dress.
Cut in 3 sizes: 2, 4 and 6 years. Size 4 requires 2 3/4 yards of 36-inch material. Price 10 cents.

Boys' Suit.
Cut in 4 sizes: 2, 3, 4 and 5 years. Will require 1 1/2 yards of 27-inch material for the blouse, and 1 1/2 yards for the trousers. Price 10 cents.

Ladies' Dress.
Cut in 7 sizes: 34, 36, 38, 40, 42, 44 inches bust measure. Size 38 requires 5 1/2 yards of 44-inch material. Price 10 cents.

A Stylish Frock.
Cut in 3 sizes: 16, 18 and 20 years. Will require 4 1/2 yards of 44-inch material. Width of skirt at lower edge, 1 1/2 yard. Price 10 cents.



2940. Girls' Dress.
Cut in 4 sizes: 8, 10, 12 and 14 years. Size 10 will require 4 1/4 yards of 30-inch material. Price 10 cents.

2951. Girls' Dress.
Cut in 4 sizes: 6, 8, 10 and 12 years. Size 8 requires 3 1/4 yards of 36-inch material. Price 10 cents.

2962. Practical Work Dress.
Cut in 7 sizes: 34, 36, 38, 40, 42, 44 inches bust measure. Size 38 requires 5 3/4 yards of 36-inch material. Width of dress at lower edge is about 2 1/4 yards. Price 10 cents.

2947. Ladies' Apron.
Cut in 4 sizes: small, medium, large and extra large. Size medium requires 4 1/2 yards of 36-inch material. Price 10 cents.

A Modern Miracle.
Behold the pretty cotton plant
With blossom white and full!
They pick the downy stuff and, lo!
They make us suits of wool!
—Spokane Spokesman-Review.

"Little Bobby shows great determination," said the boy's mother.
"Yes?" queries the proud papa.
"Yes." He spent the whole day making soap bubbles and trying to pin one to the wall."—Blighty.

"Do you think that stimulants would hurt me, doctor?"
"Not if you leave them alone."—Boston "Transcript."



THE first time I used Corn Syrup (CROWN BRAND) in baking, it was frankly out of curiosity and, of course, in the hope of saving sugar money. The use of CROWN BRAND Syrup in cake-making reduces waste by adding to the keeping qualities. My muffins, sponge cakes and other bake things have a wonderfully fresh flavor that you notice at once. They don't dry up as rapidly, don't crack or get stale so fast—the last slice is as palatable as the first, just as moist and digestible.

CROWN BRAND Syrup as a cake sweetener is economical because it is so reasonably priced in the first place.

It does lower my cost of baking!

And this is merely one of the pleasant surprises I am getting every day, since I discovered "the great sweetener."—*Aunt Mary*

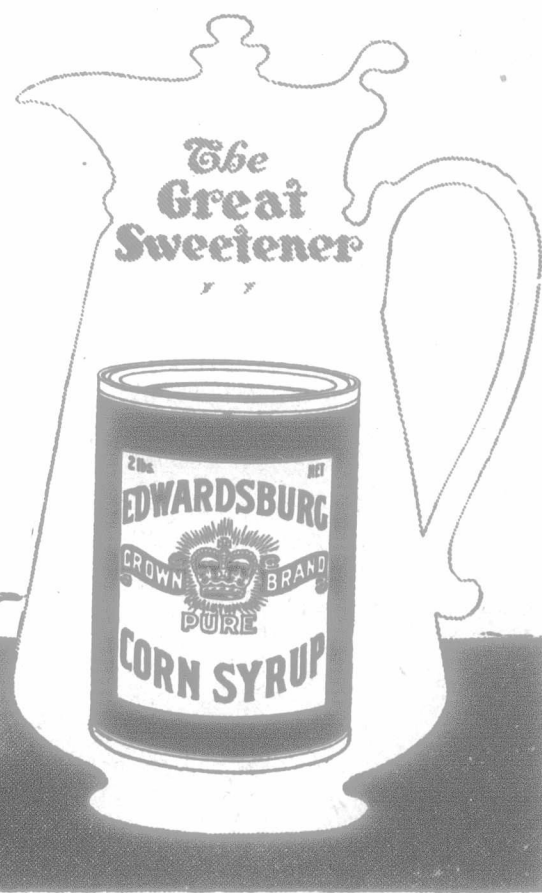
If you have not yet discovered "the great sweetener," if you have used CROWN BRAND Syrup only as a spread for daily bread or to sweeten girdle cakes or hot breads, try it now for baking.

At your Grocer's in 2, 5 and 10 lb. tins

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WISCONSIN INCUBATOR AND BROODER BOTH \$19.50 FOR FREIGHT AND DUTY PAID

130 Egg Incubator
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BOTH FOR \$19.50 Freight and Duty PAID

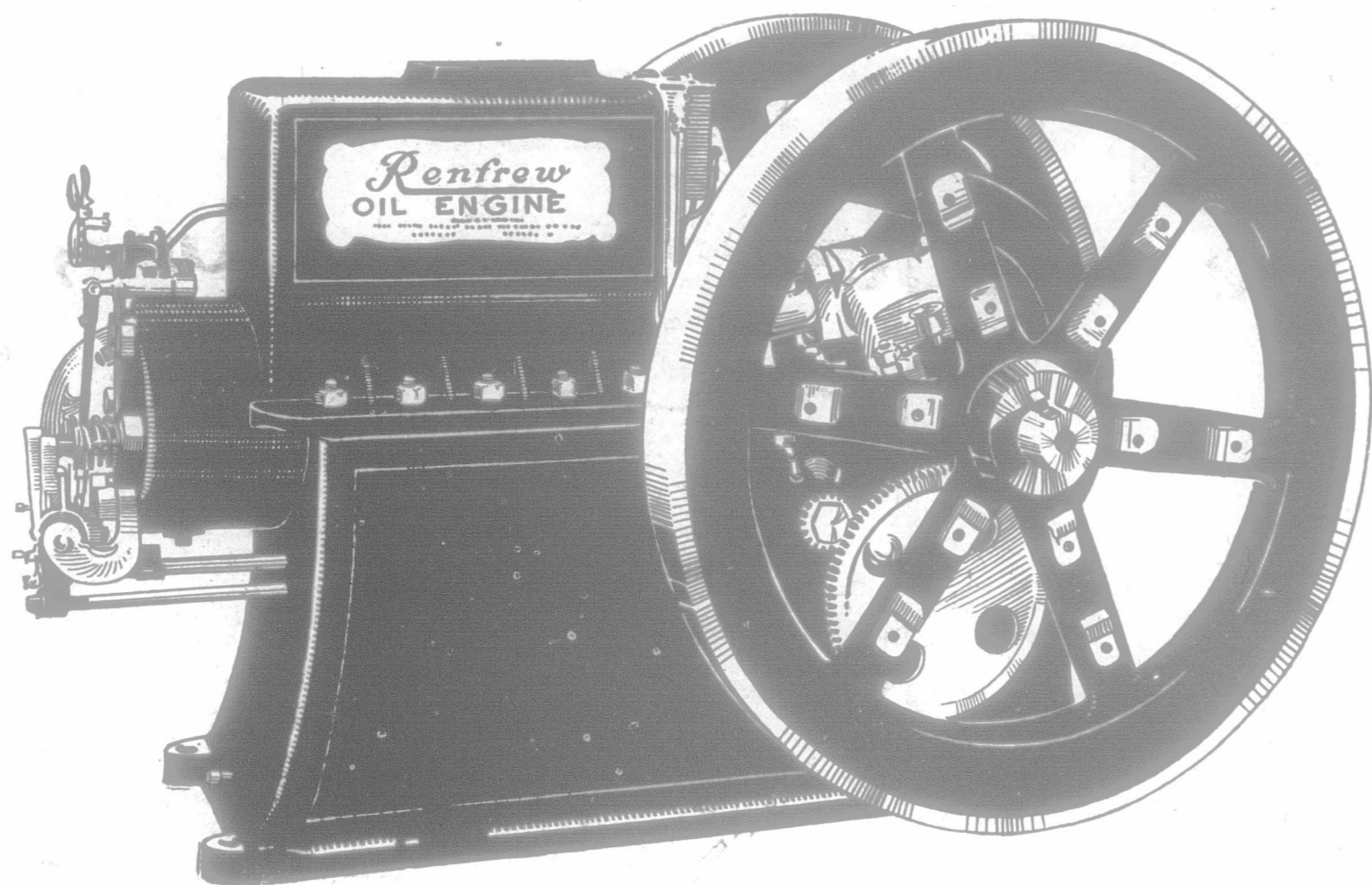
If ordered together we send both machines for only \$19.50 and we pay all freight and duty charges to any R. R. station in Canada. We have branch warehouses in Winnipeg, Man. and Toronto, Ont. Orders shipped from nearest warehouse to your R. R. station. Hot water, double walls, dead air space between, double glass doors, copper tanks and boilers, self-regulating. Nursery under egg tray. Especially adapted to Canadian climate. Incubator and Brooder shipped complete with thermometers, lamps, egg testers—ready to use when you get them. Ten year guarantee—30 days trial. Incubators finished in natural colors showing the high grade California Redwood lumber used—not painted to cover inferior material. If you will compare our machines with others, we feel sure of your order. Don't buy until you do this—you'll save money—it pays to investigate before you buy. Remember our price of \$19.50 is for both Incubator and Brooder and covers freight and duty charges. Send for FREE catalog today, or send in your order and save time.

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Does God Have a Plan for Your Life?
Find a vital answer in McConkey's little booklet "The God-Planned Life." Entirely free. Address SILVER PUBLISHING CO. Dept. Y, Bessemer Building, Pittsburg, Pa.

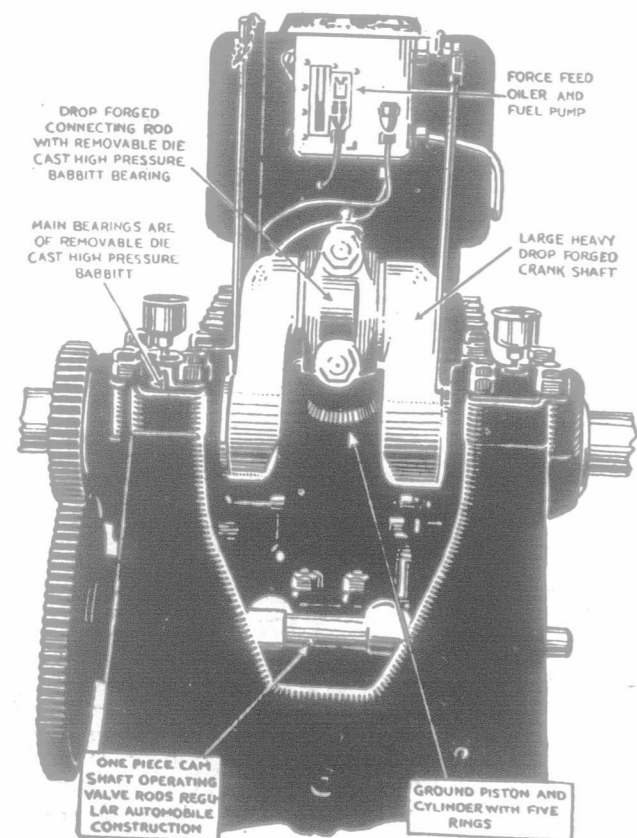
FOR SALE Registered Clydesdale Mare
Lady Elgin (37699) 4 years old. Off Imp. Sire and Dam, and in foal to Imp. horse. Will weigh Eighteen hundred, and a first class mare. Price reasonable.
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POULTRY WANTED
It will pay you to sell your poultry to the best market in Western Ontario. Special prices this month for heavy live hens. Be sure and sell to C. A. MANN & CO. 78 King St. London, Ontario



ONE of the many features of the Renfrew Oil Engine is the absence of all supplemental and accessory equipment, such as batteries, coils, wires, carburetor, etc. That means to the owner of one of our engines a big saving in repair bills.

Our engine operates on the high compression principle. That is, the pure air is drawn into a cylinder through the intake valve, where it is compressed to a point where it becomes practically red hot. It is easy to understand that this red-hot air will ignite the fuel. This method of ignition does away with all electrical and ignition apparatus.



DROP FORGED CONNECTING ROD WITH REMOVABLE DIE CAST HIGH PRESSURE BABBIT BEARING
 MAIN BEARINGS ARE OF REMOVABLE DIE CAST HIGH PRESSURE BABBIT
 FORCE FEED OILER AND FUEL PUMP
 LARGE HEAVY DROP FORGED CRANK SHAFT
 ONE PIECE CAP SCREW OPERATING VALVE RODS REGULAR AUTOMOBILE CONSTRUCTION
 GROUND PISTON AND CYLINDER WITH FIVE RINGS

The Danger of Fire



is reduced to an absolute minimum, because of this system, and also because the Renfrew Oil Engine will not burn gasoline. Between the two a farmer using one of these engines ensures himself against any danger from fire.

Back-firing is impossible. A back-fire in a gasoline engine will often ignite the fuel in the carburetor, the flames from which often spread to nearby material, causing very heavy loss.

It starts and runs on any cheap fuel such as kerosene (coal oil), naphtha, fuel oil, crude oil, etc. You can easily see what a very

The Renfrew Oil Engine Requires No Carburetor, No Coils, No Magneto, No Batteries, No Wires

big saving can be made in operating this engine. There is an abundance of these fuels to be had, whereas gasoline is becoming more expensive and harder to obtain every day.

And the Renfrew Oil Engine uses only half the amount of fuel required to operate other "oil engines." In that way owners of our engines effect a very Big Saving in Fuel Cost.

Indeed, we estimate that in a year's operation

This Saving Will Pay For the Initial Cost of the Engine



It operates on a remarkably small amount of fuel. To operate a 6 H.P. Renfrew Oil Engine for ten hours costs 78 cents, or \$1.50 less than the operation of a gasoline engine for the same period of time. It will operate perfectly on

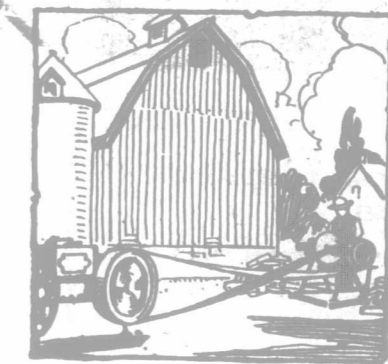
fuel oil costing only 8 cents a gallon!

Between that big saving, which in a year would amount on any farm to a considerable figure, and the saving effected through having no repair bills on electrical ignition or car-

buretor, the owner of a Renfrew Oil Engine quickly realizes what a splendid economy it is. And as

A Labor and Time Saver

it has no equal. It performs sturdily and consistently, the hard tasks of the farm, the jobs that take up so much of the farmer's time—shelling, sawing, grinding, washing, pumping, etc., and makes farm life even more worth while.



Powerfully Built Lives Long

Because of its sturdy construction the Renfrew Oil Engine has a long life, and it does not vibrate. There is nothing flimsy in its construction, and yet it can be moved about from place to place quite easily. It is easy to operate because of the simple principle of its construction. A novice can get from it the full value of its power, and it will operate in all weathers, hot or cold, without adjustment. Even in the coldest weather it will start without hesitation. That is a very important feature.

We Guarantee Them

Letters from all over the country from owners of the Renfrew Oil Engine assuring us of the splendid services and performances have satisfied us that our guarantee of absolute satisfaction is an honest one.

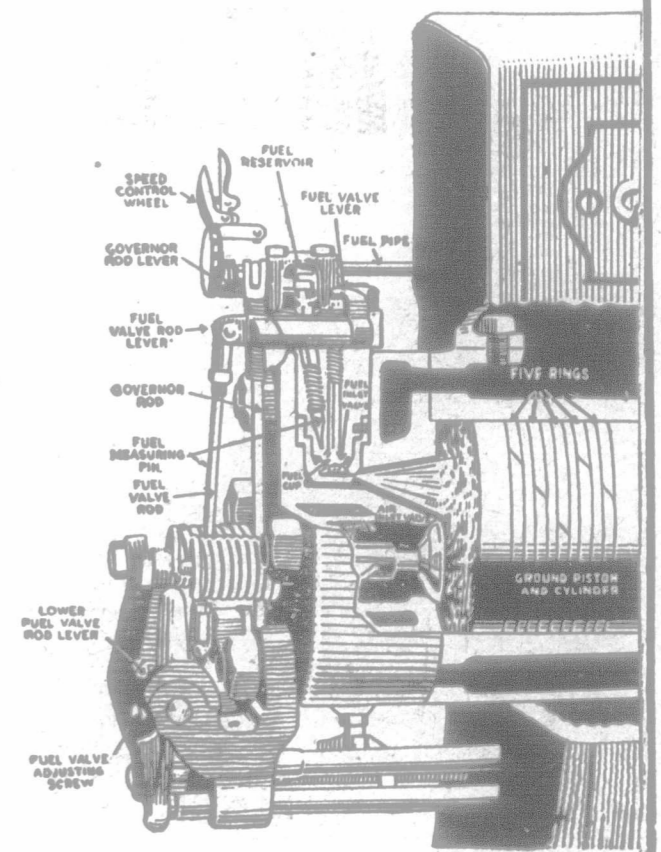
The engine is Made in Canada by skilled workmen and is not high in price. We build the Renfrew Oil Engine in 6 and 9 Horsepower sizes only. Write for our catalogue.

Renfrew OIL ENGINE

The Renfrew Machinery Limited, Renfrew, Ontario

Branches at Montreal, Que., Sussex, N.B., and Milwaukee, U.S.A.

Other Lines: Renfrew Cream Separator, Renfrew Handy Two-wheel Truck Scale, and Happy Farmer Tractor.



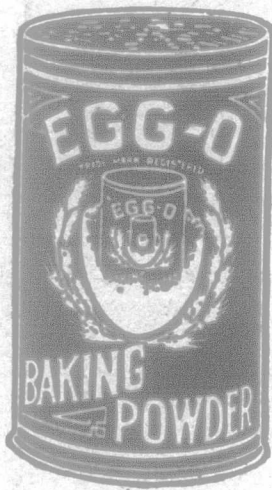
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Buttermilk or water
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Hinman Milkers are better for the cows than hand-milking, because they are more uniform, more restful.

Milk is cleaner because it does not come in contact with outside air, human hands, dirt or other contamination. Hinman Milkers save much time and money.

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The Ingle Nook

Rules for correspondence in this and other Departments: (1) Kindly write on one side of paper only. (2) Always send name and address with communications. If pen name is also given the real name will not be published. (3) When enclosing a letter to be forwarded to anyone, place it in a stamped envelope ready to be sent on. (4) Allow one month in this department for answers to questions to appear.

Re Baby Clinics.

Dear Junia.—I am sure all women who read the magazine section of the "Advocate" greatly appreciated the articles by Junia, Eliza, Sibyl. We think the Christmas Number was particularly good and enjoyed the articles by M. C., Dawson, Crerar and Miss Laidlaw, may I say "Them's my sentiments too." To me especially have your articles been interesting and consoling (let me whisper, Junia) I was beginning to think I must be fanatical and queer, for my opinions seem to clash so with those of neighbors, though hubby is my faithful pal, and believes in all those "educated foolish ideas." But never mind, I often think maybe a fanatic is simply a pioneer of thought. There is only one thing that you and I have not agreed about; maybe I shall tell you some day. But we both heartily indorse your ideas on medical inspection of schools, loose sensible clothing, the duty of women as the cook and all the other ideas.

I certainly wish I could have your privilege of hearing the lectures and music you undoubtedly hear and oh! the congenial friends you must find!

The stork brought us a dear little baby girl last June. The doctor and nurses said she was remarkably healthy and strong; so also was I.

As I am desirous of giving her the best attention possible and as I already have obtained so much help and benefit from your talks, I thought maybe you would help me further by answering the following questions.

1. Are the clinics for country people's babies and for both the rich and poor?
2. What is the clinic fee?
3. Where are they held and when?
4. If unable to attend the clinic could one obtain literature treating on babies?
5. A baby that weighed seven and one-half pounds when born should weigh how much at eight months, and how much should they gain each month succeeding?
6. Where could I obtain information or a chart dealing with weight measurements, etc., of a perfect baby from time of birth until a few years of age?
7. Where could I obtain reliable information dealing with physical and mental development of a baby.
8. Where could I obtain literature on care and feeding of babies?
9. Should milk for the babies be allowed to boil up, or just heated until it forms a "skim" over the top and then kept at that temperature for five or ten minutes?

Would it not be a good idea Junia if the Government had pamphlets on "Care and Feed of Baby," in the township clerk's office and everyone who registered a baby's birth receive one of said booklets. I think in this way more parents could be reached with good advice. For most mothers no matter how ignorant would read them out of curiosity if nothing else.

I hope I have not taken up too much of your valuable time, and trust you will be able to help me. I am

Yours truly,
Middlesex Co., Ont. A. H. S.

The baby clinics are for everybody. I don't think there is any fee. They are held wherever it is arranged to hold them, usually in a village, town or city, to suit the convenience of the doctors. Any place can have a baby clinic by just starting one. Write to the Provincial Department of Public Health, Parliament Buildings, Toronto, for all information, re how to proceed. Yes, you can get a pamphlet called "The Baby," by writing to the Provincial Department of Health for it. It is an excellent help for young mothers and gives directions about feeding. "Medicus," I understand, intends to take up the question of feeding before long in these pages. I have referred your inquiry regarding your baby's weight to him. He says a girl baby that weighed 7½ lbs. at birth should weigh from 16 to 18 lbs. at 8

months, and should gain 2 oz. a week during the succeeding months.

Kindergarten Training.

For "One in Need," Middlesex Co., Ont.
For kindergarten training you will require a Normal Entrance certificate. Afterwards you can take the kindergarten course, one year, in Toronto. Apply to the Department of Education, when ready. Kindergarten teachers receive about as much salary as other teachers.

A Bride's Difficulties.

For "A Business Girl."
The archway decorated with vines and ferns would be very pretty. But why trouble so about seating all the guests? The wedding ceremony is so short that the younger ones can stand; very well. Better that than clutter your parlors up too much with seats. Could you not procure some sort of curtains (borrow them for the occasion), to screen off the dining-room? A number of small tables would be nicer than one long one. Let the guests seat themselves, reserving only one table for the bridal party and parents, or other most immediate relations.

You do not say whether you want a hot or cold repast. If hot, then your menu might be as follows:

- Consomme.
Fowl and Ham. Mashed Potatoes.
Another Vegetable. A Green Salad.
Pudding. Cake.
Bonbons, Salted Almonds, Olives.
Coffee. Tea.
You might have hot chicken patties instead of the sliced fowl.
A cold luncheon might be as follows:
Cold Fowl. Potato Salad.
A Green Salad.
Strawberries and Cream.
or Ice Cream.
Bonbons, Olives, Almonds.
Coffee. Tea.

The menu really may be varied in any way you like. So long as you have plenty of good things served daintily, one course at a time, you will be all right. The bread, butter, pickles, almonds and olives may be on the tables from the beginning. Have as little confusion as possible in serving. Have pretty flowers on each table—white on the bride's table.
The Ingle Nook wishes you every happiness.

Good One Dish Meals for March.

Rolled Flank Steak with Vegetables.—Take 1 lb. flank or round steak, 2 potatoes, 2 carrots, 2 onions, 1 small turnip, 2 parsnips, 1 cup canned tomatoes, 1 cup bread crumbs, 1 tablespoon butter, 2 teaspoons salt, ¼ teaspoon pepper, 2 tablespoons flour. Cut the vegetables into slices, then into small dice. Dredge the steak with flour and spread over it a dressing made of the crumbs, 1 teaspoon salt, pepper and butter. Roll up and tie, then sear in fat until well browned on all sides. Place the vegetables in a baking-dish, sprinkle with the other teaspoon of salt, and lay the meat-roll on top. Add enough water to almost cover the meat. Cover closely and bake slowly for two hours, adding more water, if needed. A small, thin slice of steak may need less cooking.

Potatoes and Cheese.—Four cups diced potatoes, 2 tablespoons chopped onion, ½ teaspoon pepper, 4 tablespoons flour, 4 tablespoons butter or dripping, 1 teaspoon salt, 2 cups milk, ½ cup cheese. Cook the potato cubes in boiling salted water with the onion until the potatoes begin to get tender, then drain and put into a baking dish. Make a sauce of the flour, fat, salt, pepper and milk, first rubbing and cooking the flour and fat together, then adding the milk slowly, beating all the time. When cooked add the grated cheese, pour over the potatoes and bake, uncovered, to a golden brown.

Vegetable Chop Suey.—Take 1 cup cooked beets (the vegetables should all

...and should gain 2 oz. a week the succeeding months.

Kindergarten Training.

"One in Need," Middlesex Co. Kindergarten training you will receive a Normal Entrance certificate. You can take the kindergarten course, one year, in Toronto, or to the Department of Education, Ottawa. Kindergarten teachers receive about as much salary as other teachers.

A Bride's Difficulties.

A Business Girl." The archway decorated with vines and flowers could be very pretty. But why not so about seating all the guests? The wedding ceremony is so short that the younger ones can stand, very well, that than clutter your parlour with much with seats. Could you not cure some sort of curtains (borrow for the occasion), to screen the dining-room? A number of small tables would be nicer than one long one. The guests seat themselves, reserving a table for the bridal party and for other most immediate relatives.

do not say whether you want a cold repast. If hot, then your luncheon might be as follows:

- Consomme.
 - Roast Ham. Mashed Potatoes.
 - Vegetable. A Green Salad.
 - Cake.
 - Nuts, Salted Almonds, Olives.
 - Coffee. Tea.
- might have hot chicken patties or the sliced fowl.
- luncheon might be as follows:
- Grapefruit.
 - Potato Salad.
 - A Green Salad.
 - Strawberries and Cream.
 - or Ice Cream.
 - Nuts, Olives, Almonds.
 - Coffee. Tea.

enu really may be varied in any like. So long as you have a good things served daintily, at a time, you will be all right. Pickles, butter, pickles, almonds and may be on the tables from the beginning. Have as little confusion as possible in serving. Have pretty flowers on the table—white on the bride's table. Single Nook wishes you every

One Dish Meals for March.

Flank Steak with Vegetables.—Flank or round steak, 2 potatoes, 2 onions, 1 small turnip, 2 cups canned tomatoes, 1 cup mushrooms, 1 tablespoon butter, 2 salt, 1/4 teaspoon pepper, 2 cups flour. Cut the vegetables into small dice. Dredge with flour and spread over it a layer of the crumbs, 1 teaspoon oil and butter. Roll up and fry in fat until well browned on both sides. Place the vegetables in a shallow dish, sprinkle with the other 1/2 of salt, and lay the meat-roll on top. Add enough water to almost cover. Cover closely and bake two hours, adding more water as needed. A small, thin slice of steak is best cooking.

Chop Suey.—Take 1 cup of the vegetables should all

be cut in small dice.) 1 cup cooked turnips, 1 cup cooked carrots, 1 cup canned string beans, 1 cup onion, 2 tablespoons vinegar, 1 tablespoon "kitchen bouquet," 2 tablespoons butter, 1 cup meat stock, 2 tablespoons flour, 1/4 teaspoon mustard, 1 teaspoon sugar, salt and pepper to season. Mix all the dry ingredients and add to the melted butter. Blend together and add the meat stock and vinegar gradually. Cook until thick. Pour the hot mixture over the cooked vegetables; let boil up once and serve very hot.

These dishes are all nutritious and excellent for luncheon or supper on a cold day.

Current Events

Principal William Scott, well known to thousands of ex-Normal students in Ontario died in Toronto last week.

A Farmers' Party is now an actuality at Ottawa, with Hon. T. A. Crerar as Leader, Dr. Michael Clark and Mr. J. A. Maharg as his chief Lieutenants, and Mr. Levi Thomson, Qu' Appelle, as Whip, assisted by Messrs. Reid and Kennedy.

The exchange is improving. At time of going to press the Canadian dollar is rated at 88 1/4 cents in the United States.

Hon. T. A. Crerar is supporting the Liberals in calling for an election, which some of the Unionist members from the cities would postpone until after the census is taken in 1921. In a speech in the House of Commons on March 4th, Hon. Mr. Crerar favored the removal of the tax on implements used in production and on the necessities of life, and a revision of the tariff with a tax on luxuries to probably 50 per cent. of their value.

Mr. W. F. Nickle, M.P., Chairman of the Commission appointed by the Provincial Government of Ontario to investigate conditions among the soldier settlers at Kapuskasing, began the investigation on March 4th. The settlers most of whom are destitute, all wish to leave the camp.

At a meeting of the Ontario Good Roads Association, on March 3rd, Hon. F. C. Biggs announced in full the list of Provincial highways to be constructed in Ontario.

A Divorce Bill relegating divorces to the Courts instead of Parliament is to be introduced in the Senate by Senator Barnard.

A movement has been started in Montreal to provide Memorial Workshops for ex-soldiers. The workshops will supply such work as partially disabled soldiers can do.

Student teachers at Calgary Normal School have formed a branch of the Teachers' Alliance, and will demand a minimum of \$1,200 for teaching during the coming year.

Canada and the Western States linked forces at a conference at Buffalo on March 2nd, in forming a plan to deepen the river route in the Great Lakes-to-the-Sea enterprise under consideration by the International Waterways Commission.

The C. P. R. has opened an office in Hambourg preparatory to resuming business relations with Germany.

Railways in the United States were handed back to private owners on March 1st. Many observers look forward to a gigantic struggle between the railroads and labor.

Ex-Premier Asquith's re-entry into the British House of Commons was the occasion of a great popular demonstration. Northcliffe is about to abandon Premier Lloyd-George, whom he claims to have "made," and back up Mr. Asquith whom he wrecked.

The Japanese people are demanding universal manhood suffrage.

The Japanese Imperial Prince is to take a 2-years course of study at the French Military School at St. Cyr.

The Italians have begun a siege of Fiume with a stringent blockade against foodstuffs and other commodities.

Chiefly because of the insistence of Great Britain, a Commission has been formed in Paris to investigate conditions in Central Europe. Great Britain is even willing to allow Germany to float a loan in the Allied countries, giving security ahead of reparation. It has been announced semi-officially that the Supreme Council recognizes that Germany and Austria must be sent supplies and raw materials, since reconstruction of industries in those countries is a matter directly affecting the whole of Europe.

It seems probable that only about 40 of those named in the list of 900 Germans accused of illegalities during the war will be brought to trial, according to a recent decision of the Inter-Allied "Justice Committee" at Paris. The whole process of the trial will be left in German hands, but the Allies reserve the right to re-try any case if it is thought that justice has not been done. Holland has agreed to intern the ex-Kaiser. The general belief is that the decision in regard to the trials will do much to stifle hate and will help to restore stable conditions in Europe and the world. Germany believes the democratic spirit in England and Italy brought about the change in the Entente's policy.

Lenin is not satisfied with the proposed peace conditions with Poland. France is still resentful against recognition of Russia, and Foch advises arming and training the Poles to fight against the Bolsheviks. The Polish Diet has rejected, by a big majority, the Socialist proposal to make peace at once with the Soviet Government.

The terms of the Peace Treaty with Turkey will be presented to that country on March 22nd. By them Turkey is stripped of virtually all her territory in Europe, but retains her sacred places, including Constantinople, which city, however, shall be under chaperonage of the Allies. The Allies will maintain military and naval control over the Straits. The American public is indignant at the French insistence upon maintaining the Turkish Government in Constantinople.

Serial Story

"His Family."

BY ERNEST POOLE.

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CHAPTER XXVII.

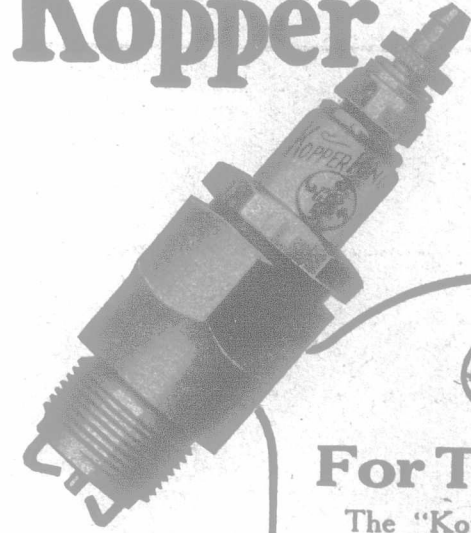
Roger found her like that one evening. He heard what he thought was a sob from the room, for she had forgotten to close the door. He came into the doorway but drew back, and closed the door with barely a sound. Frowning and irresolute, he stood for a moment in the hall, then turned and went into his room. Soon he heard Deborah enter the house and come slowly up the stairs. She too had had a hard day, he recalled, a day all filled with turbulence, with problems and with vexing toil, in her enormous family. And he felt he could not blame her for not being of more help at home. Still, he had been disappointed of late in her manner toward her sister. He had hoped she would draw closer to Edith, now that again they were living together in their old home where they had been born. But no, it had worked just the opposite way. They were getting upon each other's nerves. Why couldn't she make overtures, small kindly proffers of help and advice and sympathy, the womanly things?

From his room he heard her knock softly at the same door he had closed. And he heard her low, clear voice:

"Are you there, Edith dear?" He listened a moment intently, but he could not hear the reply. Then Deborah said "Oh, you poor thing. I'm awfully sorry. Edith—don't bother to come downstairs—let me bring you up your supper." A pause. "I wish you would. I'd love to."

He heard Deborah come by his door and go up the second flight of stairs to the room she had taken on the third floor. "I was wrong," he reflected, "she has

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The "Kopper King" is a heavy duty plug, suitable for use in automobile, truck or tractor.

As for protection for the body of the plug, a heavy coating of copper eliminates rust trouble, preventing absolutely the temper trying exasperation of a spark plug rusted fast into the cylinder head.

The copper surface does more; it prevents carbon troubles; carbon under electrical heat will not adhere to copper.

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And the Reason Was—

"Have you any more of those lovely tea biscuits?"

"You are just twenty minutes too late, Mrs. Thompson. When we opened this booth at two o'clock we had thirty dozen of them, all baked by Mrs. Irwin, if you please! And by half past three they were all sold."

"Oh! And I promised Harry I'd buy some."

"She certainly is a marvellous cook, isn't she? I got her recipe for tea biscuits, but I can't make them anything like hers."

"I wonder what magic Mrs. Irwin works to bake so beautifully?"

"Well, I never knew until to-day. She told me she uses

Milled from selected hard wheat in model mills, untouched by human hands until opened in the kitchen, Cream of the West Flour will bake the finest bread, biscuits, buns, muffins, etc., with a surprisingly good flavor.

Cream of the West Flour

The Campbell Flour Mills Co., Limited
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Maple Leaf Milling Co., Limited
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16

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THE funds of The Bank of Toronto are employed in the financing of such constructive undertakings as add wealth to the nation. The farm is the chief source of Canada's wealth. The Bank of Toronto considers the financing of farm crops and live stock the first call upon its available funds.

Farmers will find our Managers posted on market prices, and always ready and willing to advise in matters pertaining to the financial end of their business.

If you plan farm development and increased production, the resources of this Bank are at your service.

THOMAS F. HOW
General Manager

THE BANK OF TORONTO

Incorporated 1855

20

been trying—but it doesn't do any good. Women simply haven't it in 'em to see each other's point of view. Deborah doesn't admire Edith—she can't, she only pities her and puts her down as out of date. And Edith feels that, and it gets her riled, and she sets herself like an angry old hen against all Deborah's new ideas. Why the devil can't they live and let live?"

And he hesitated savagely between a pearl gray and a black cravat. Then he heard another step on the stairs. It was much slower than Deborah's, and cautious and dogged, one foot lifted carefully after the other. It was John, who had finished his kitchen supper and was silently making his way up through the house to his room at the top, there to keep out of sight for the evening. And it came into Roger's mind that John had been acting in just this fashion ever since Edith had been in the house.

"We'll have trouble there, too!" he told himself, as he jerked the black satin cravat into place, a tie he thoroughly disliked. Yes, black, by George, he felt like it to-night! These women! These evenings! This worry! This war! This world gone raving, driving mad!

And frowning with annoyance, Roger went down to his dinner.

As he waited he grew impatient. He had eaten no lunch, he was hungry; and he was very tired, too, for he had his own hard day. Pshaw! He got up angrily. *Somebody* must be genial here. He went into the dining room and poured himself a good stiff drink. Roger had never been much of a drinker. Ever since his marriage, cigars had been his only vice. But of late he had been having curious little sinking spells. They worried him, and he told himself he could not afford to get either too tired or too faint.

Nevertheless, he reflected, it was setting a bad example for George. But glancing into his study he saw that the lad was completely absorbed. With knees drawn up, his long lank form all hunched and huddled on the lounge, hair ruffled, George was reading a book which had a cover of tough gray cloth. At the sight of it his grandfather smiled, for he had seen it once before. Where George had obtained it, the Lord only knew. Its title was "Bulls and Breeding." A thoroughly practical little book, but nothing for George's mother to see. As his grandfather entered behind him, the boy looked up with a guilty start, and resumed with a short breath of relief.

Young Elizabeth, too, had a furtive air, for instead of preparing her history lesson she was deep in the evening paper reading about the war abroad. Stout and florid, rather plain, but with a frank, attractive face and honest, clear, appealing eyes, this curious creature of thirteen was sitting firmly in her chair with her feet planted wide apart, eagerly scanning an account of the work of American surgeons in France. And again Roger smiled to himself. (He was feeling so much better now.) So Betsy was still thinking of becoming a surgeon. He wondered what she would take up next. In the past two years in swift succession she had made up her mind to be a novelist, an actress and a women's college president. And Roger liked this tremendously.

He loved to watch these two in the house. Here again his family was widening out before him, with new figures arising to draw his attention this way and that. But these were bright distractions. He took a deep, amused delight in watching these two youngsters caught between two first, on the one side their mother and upon the other their aunt; both obviously drawn toward Deborah, a figure who stood in their regard for all that thrilling outside world, that heaving sparkling ocean on which they too would soon embark; both sternly repressing their eagerness as an insult to their mother, whom they loved and pitied so, regarding her as a brave and dear but rapidly ageing creature "well on in the thirties," whom they must cherish and preserve. They both had such solemn thoughts as they looked at Edith in her chair. But as Roger watched them, with their love and their solemnity, their guilt and their perplexity, with quiet enjoyment he would wait to see the change he knew would come. And it always did. The sudden picking up of a book, the vanishing of an anxious frown, and in an instant their young minds had turned happily back into themselves, into their own en-

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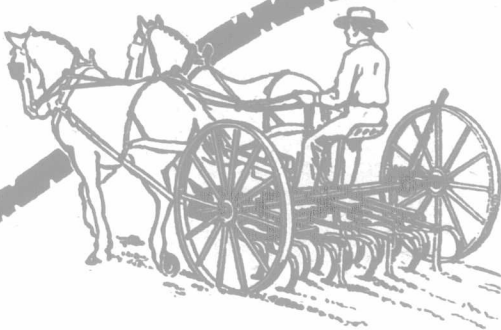
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growing lives, their plans, their intimate dreams and ambitions, all so curiously bound up with memories of small happenings which had struck them as funny that day and at which they would suddenly chuckle aloud.

And this was only one stage in their growth. What would be the next, he asked, and all the others after that? What kind of world would they live in? Please heaven, there would be no wars. Many old things, no doubt, would be changed, by the work of Deborah and her kind—but not too many, Roger hoped. And these young people, meanwhile, would be bringing up children in their turn. So the family would go on, and multiply and scatter wide, never to unite again. And he thought he could catch glimpses, very small and far away but bright as patches of sunlight upon distant mountain tops, into the widening vista of those many lives ahead. A wistful look crept over his face.

"In their lives too we shall be there, the dim strong figures of the past."

Deborah came into the room, and at once the whole atmosphere changed. Her niece sprang up delightedly.

"Why, Auntie, how lovely you look!" she exclaimed. And Roger eyed Deborah in surprise. Though she did not believe in mourning, she had been wearing dark gowns of late to avoid hurting Edith's feelings. But to-night she had donned bright colors instead; her dress was as near décolleté as anything that Deborah wore, and there was a band of dull blue velvet bound about her hair.

"Thanks, dearie," she said, smiling. "Shall we go in to dinner now?" she added to her father. "Edith said not to wait for her—and I'll have to be off rather early this evening."

"What is it to-night?" he inquired.

"A big meeting at Cooper Union."

And at dinner she went on to say that in her five schools the neighborhood clubs had combined to hold this meeting, and she herself was to preside. At once her young niece was all animation.

"Oh, I wish I could go and hear you," she sighed.

"Afraid you can't, Betsy," her aunt replied. And at this, with an instinctive glance toward the door where her mother would soon come in to stop by her mere presence all such conversation, Elizabeth eagerly threw out one inquiry after the other, pell mell.

"How on earth do you do it?" she wanted to know. "How do you get a speech ready, Aunt Deborah—how much of it do you write out ahead? Aren't you just the least bit nervous—now, I mean—this minute? And how will you feel on the platform? What on earth do you do with your feet?"

As the girl bent forward there with her gaze fixed ardently on her aunt, her grandfather thought in half comic dismay, "Lord, now she'll want to be a great speaker—like her aunt. And she will tell her mother so!"

"What's the meeting all about?" he inquired. And Deborah began to explain.

In her five schools the poverty was rapidly becoming worse. Each week more children stayed away or came to school ragged and unkempt, some without any overcoats, small pitiful mites wearing shoes so old as barely to stick on their feet. And when the teachers and visitors followed these children into their homes they found bare, dirty, chilly rooms where the little folk shivered and waited for food and the mothers looked distracted, gaunt and sullen and half crazed. Over three hundred thousand workers were idle in the city. Meanwhile, to make matters worse, half the money from uptown which had gone in former years into work for the tenements was going over to Belgium instead. And the same relentless drain of war was felt by the tenement people themselves; for all of them were foreigners, and from their relatives abroad, in those wide zones of Europe already blackened and laid waste, in endless torrents through the mails came wild appeals for money.

In such homes her children lived. And Deborah had set her mind on vigorous measures of relief. Landlords must be made to wait and the city be persuaded to give work to the most needy, food and fuel must be secured. As she spoke of the task before her, with a flush of animation upon her bright expressive face at the thought that in less than an hour she would be facing thousands of people, the gloom of the picture she

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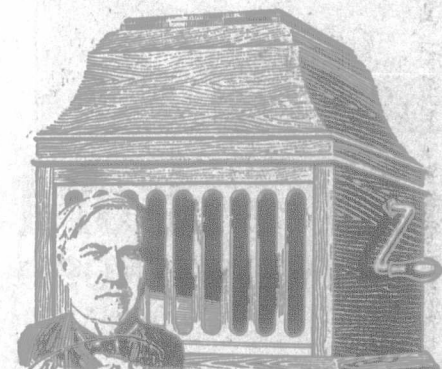
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To save yourself as well as your fields and horses, won't it pay you to look into this right away?

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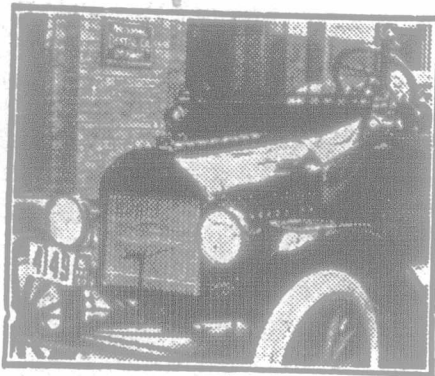
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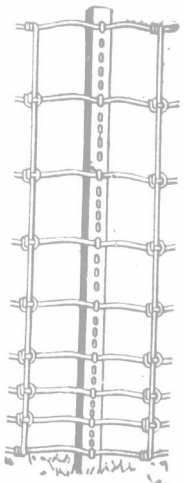
These posts cost little if any more than No 1 Cedar Posts. They last at least twice as long. They can be driven in in one-tenth the time. They cut out the toughest work on the farm, digging post holes. SHARP POINT POSTS give you an All-Steel fence—stronger, better and cheaper than any combination of wood and steel.

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Painted was dispelled in the spirit she showed.

"These things always work out," she declared, with an impatient shrug of her shoulders. And watching her admiringly, young Betsy thought, "How strong she is! What a wonderful grown-up woman!" And Roger watching thought, "How young."

"What things?" It was Edith's voice at the door, and among those at the table there was a little stir of alarm. She had entered unnoticed and now took her seat. She was looking pale and tired. "What things work out so finely?" she asked, and with a glance at Deborah's gown, "Where are you going?" she added.

"To a meeting," Deborah answered.

"Oh." And Edith began her soup. In the awkward pause that followed, twice Deborah started to speak to her sister but checked herself, for at other dinners just like this she had made such dismal failures.

"By the way, Edith," she said, at last, "I've been thinking of all that furniture of yours which is lying in storage." Her sister looked up at her, startled.

"What about it?" she asked.

"There's so much of it you don't care for," Deborah answered quietly. "Why don't you let a part of it go? I mean the few pieces you've always disliked."

"For what purpose?"

"Why, it seems such a pity not to have Hannah back in the house. She would make things so much easier." Roger felt a glow of relief.

"A capital plan!" he declared at once.

"It would be," Edith corrected him, "if I hadn't already made other plans." And then in a brisk, breathless tone, "You see I've made up my mind," she said, "to sell not only part but all my furniture—very soon—and a few other belongings as well—and use the money to put George and Elizabeth and little Bob back in the schools where they belong."

"Mother!" gasped Elizabeth, and with a prolonged "Oh-h" of delight she ran around to her mother's chair.

"But look here," George blurted worriedly, "I don't like it, mother, darned if I do! You're selling everything—just for school!"

"School is rather important, George," was Edith's tart rejoinder. "If you don't think so, ask your aunt."

"What do you think of it, Auntie?" he asked. The cloud which had come on Deborah's face was lifted in an instant.

"I think, George," she answered gently, "that you'd better let your mother do what she thinks best for you. It will make things easier here in the house," she added, to her sister, "but I wish you could have Hannah, too."

"Oh, I'll manage nicely now," said Edith. And with a slight smile of triumph she resumed her dinner.

"The war won't last forever," muttered Roger uneasily. And to himself: "But suppose it should last—a year or more."

He did not approve of Edith's scheme. "It's burning her bridges all at once, for something that isn't essential," he thought. But he would not tell her so.

Meanwhile Deborah glanced at the clock.

"Oh! It's nearly eight o'clock! I must hurry or I'll be late," she said. "Good-night, all—"

And she left them.

Roger followed her into the hall. "What do you think of this?" he demanded. Her reply was a tolerant shrug.

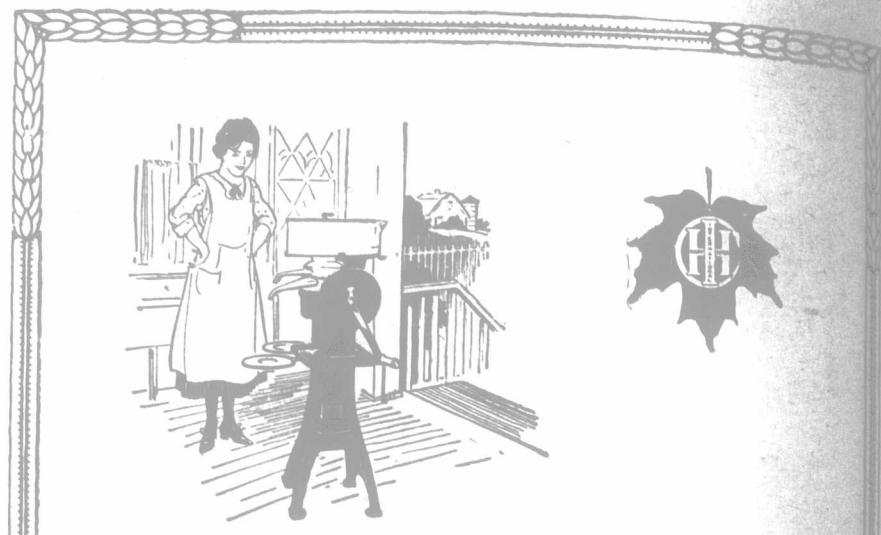
"It's her own money, father—"

"All her money!" he rejoined. "Every dollar she has in the world!"

"But I don't just see how it can be helped."

"Can't you talk to her, show her what folly it is?"

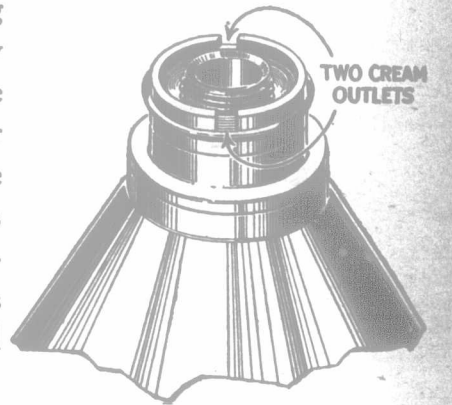
"Hardly," said Deborah, smiling. Already she had on her coat and hat and was turning to go. And her father scowled with annoyance. She was always going, he told himself, leaving him to handle her sister alone. He would like to go out himself in the evenings—yes, by George, this very night—it would act like a tonic on his mind. Just for a moment, standing there, he saw Cooper Union packed to the doors, he heard the ringing speeches, the cheers. But no, it was not to be thought of. With this silent war going on in his house he knew he must stay neutral. Watchful waiting was his course. If he went out with Deborah, Edith would be distinctly hurt, and sitting all evening here alone she would draw still



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S.-C. ANCONAS—EGGS FOR HATCHING, \$3 and \$4 for fifteen, from my best laying and exhibition strains. E. Brown, 502 Grosvenor St., London.

WHITE WYANDOTTES—HEAVY LAYING strains my speciality. Eggs \$3 per fifteen, \$5 per thirty. Frank Morrison, Jordan, Ont.

WANT TO HEAR FROM PARTY HAVING farm for sale. Give particulars and lowest price. John J. Black, Advocate St., Chippewa Falls, Wis.

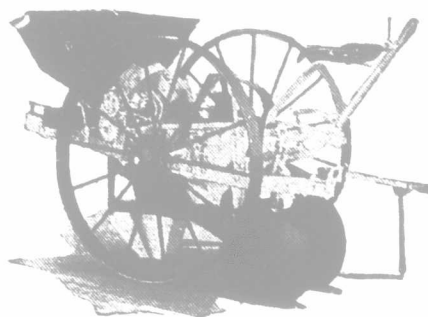
deeper into herself. And so it would be night after night, as it had been for many weeks. He would be cooped up at home while Deborah did the running about. In half the time it takes to tell it, Roger had worked himself in a state where he felt like a mighty badly used man.

"I wish you would speak to her," he said. "I wish you could manage to find time to be here more in the evenings. Edith worries so much and she's trying so hard. A little sympathy now and then—"

"But she doesn't seem to want any from me," said his daughter, a bit impatiently. "I know it's hard, of course it is. But what can I do? She won't let me help. And besides—there are other families, you know—thousands—really suffering—for the lack of all that we have here." She smiled and kissed him quickly. "Good-night, dad dear. I've got to run."

And the door closed behind her. (To be continued.)

Now is the Time to Buy a Hoover Visible Potato Planter



Do not plant by hand. It is slow work, expensive and uncertain. Plant your potatoes with the Hoover Visible Potato Planter—this year and every year. Farmers are getting better results and bigger profits by using the Hoover. And they are saving time, labor and money.

The Hoover is more accurate than hand planting. See this planter at your John Deere dealer's store. See the channel steel frame; the spring-pressure furrow openers and adjustable disc covers that are regulated by one lever; study the picking and dropping mechanism; see how you can adjust the machine for depth and spacing without effort on your part.

Ask about the fertilizer attachment that is easily put in place on the Hoover Visible Potato Planter without making changes on the frame of the machine. Make up your mind to get the most out of your potato crop this year. Buy a Hoover Visible Potato Planter now. Your John Deere dealer will help you with your problem.

John Deere Manufacturing Co. Limited
Welland, Ontario

Clover Seeds
until supplies are exhausted

I am offering clover seeds at the following prices:—

Red clover seed No. 1, Ontario grown, \$47.00 per bushel. Sweet clover seed, white blossom, No. 1, \$26.00 per bushel. Yellow blossom Canadian biennial, select strain. (Canadian Albotrea) No. 1, \$30.00 per bushel; No. 2, \$26.00 per bushel.

We recommend our select strain of biennial yellow blossom as it is finer in quality, possesses higher food qualities than other sweet clovers. It is more economical to sow this strain as one bushel is amply sufficient to seed down five acres.

Orders accompanied by cash will be filled as received until supplies are exhausted.

Prices f.o.b. Listowel.

J. W. SANGSTER, Listowel, Ont.

Markets

Continued from page 457.

Chicago.

Hogs.—Heavy, \$14.25 to \$15.10; medium, \$14.90 to \$15.50; light, \$15.10 to \$15.55; light light, \$14.50 to \$15.35; heavy packing sows, smooth, \$13.25 to \$14.75; packing sows, rough, \$12.50 to \$14.00; pigs, \$13.50 to \$14.75.

Cattle.—As compared with a week ago, best grades of beef steers and butcher stock, 75c. to \$1 higher; canners, 50c. higher; Bologna and heavy beef bulls, 25c. to 50c. lower; calves steers, 15c. to 25c.

higher; stockers and feeders, 25c. to 50c. higher.

Sheep.—Compared with a week ago, best heavy weight lambs, 25c. to 30c. lower; others 40c. to 75c. lower; yearlings, 25c. to 50c. lower; ewes steady to 25c. lower.

Victory Bonds.

Following were the values of Victory Bonds on the Toronto market, Saturday, March 6: Victory Bonds maturing 1922, 98 to 99; Victory Bonds maturing 1923, 98 to 99; Victory Bonds maturing 1927, 99 to 100; Victory Bonds maturing 1933, 99 to 100; Victory Bonds maturing 1937, 100 to 101.

Advertisements will be inserted under this heading, such as Farm Properties, Help and Situations Wanted and Pet Stock.

TERMS—Four cents per word each insertion. Each initial counts for one word and figures for two words. Names and addresses are counted. Cash must always accompany the order. No advertisement inserted for less than 60 cents.

FARM WANTED—O E HUNDRED TO ONE hundred and fifty acres. Must be a one property, stating best cash price and terms to W. C. Hastings, New Liskeard.

FARM, 105 ACRES, TOWNSHIP OF CLINTON, County Lincoln—70 acres cultivated, balance pasture and bush. Soil sandy loam. About 15 acres in fruit, 300 peach trees, 300 young cherries and plums, 3 acres of grapes, 50 apple trees, 50 pear trees, plums, raspberries and small fruits. Buildings—2 frame dwellings. Barn and loose box, pig pens, silo, chicken houses. Water supply good, spring in pasture, and another supplying house and barn—water can be got almost anywhere in the place. Farm is on lot above main road from Hamilton to Niagara. Trolley line stops 1/4 mile from house; 1 1/2 miles to village of Beamsville, 3 miles from Grimsby, 22 miles from Hamilton, good motor road, to close an estate. Immediate possession. Apply, Smith, Rae & Greer, Solicitors, Toronto.

FIFTY ACRES, KENT COUNTY, SEVEN miles from Chatham, clay loam, excellent tobacco land, frame house, two barns, extra good arbor well. Apply Geo. E. Jordan, Chatham, R. 3, Ont.

NEW YORK STATE FARMS—FROM \$10 TO \$100 per acre. All sizes and locations. Stock and tools included on many of them. Write for complete list. Mandeville Real Estate Agency, Inc. Dept. O, Olean, N.Y.

POSITION AS FARM FOREMAN—COM-PETENT all lines. Box Eighty-four, Simcoe, Ont.

WANTED—RELIABLE EXPERIENCED housekeeper. Good wages and comfortable home. Apply, stating experience and wages expected, to Post Office Box 672 London, Ontario.

SCOTCHMAN (MARRIED) WISHES SITU-ATION in Clydevale stud; experience in feeding and showing. Apply Alex. McKendrick, Hilldale Farm, R. R. No. 1, Ottawa.

WANTED—ASSISTANT HERDSMAN WANTED. Must be capable of feeding and developing cows on test. Large herd, pure-bred Holsteins. Middle aged single man preferred. Apply, stating experience, salary expected, and date available to Box No. 90, Farmer's Advocate, London, Ont.

WANTED—RELIABLE BOY BETWEEN 18 and 22, must be good milker and able to handle horse; good board. Apply, stating wages for 8 months, Box No. 92, Farmer's Advocate, London, Ont.

WANTED—COMPETENT HERDSMAN TO look after herd of Scotch Shorthorns with a chance to fit for fall shows. Reference required. State wages and full particulars in first letter. Box 94, Farmer's Advocate, London, Ont.

WANTED Crate Fed Chickens

Also Large Hens Alive or Dressed Write for price list.

WALLER'S 702 Spadina Ave. TORONTO

FOR SALE Barred Rock Cockerels

The O.A.C. bred-to-lay strain. Finely barred, single comb, rich yellow legs; sisters laid at 8 months. Price \$5 each. A. H. Crozier, Meadowvale, Ontario

Sale Dates.

- March 16, 1920.—London District Holstein Breeders' Club, London.
- March 17, 1920.—Oxford Holstein Breeders' Consignment Sale, Woodstock, Ontario.
- March 17, 1920.—Geo. A. Ritchie, Plainville, Ont.—Aberdeen-Angus.
- March 18, 1920.—Fred V. Heeney, Ingersoll, Ont.—Holsteins.
- March 23, 1920.—Gordon Peterson, R. R. No. 4, Elmira, Ont.—Holsteins.
- March 23, 24, 1920.—Western Ontario Shorthorn Show and Sale, London, Ont.
- March 24, 1920.—Perth Breeders' Holstein Club, Stratford, Ont.
- March 25, 1920.—F. A. Legge, Jefferson, Ont.—Holsteins.
- March 31, 1920.—Belleville District Holstein Club, Belleville, Ont.
- March 31, 1920.—Brant District Holstein Breeders' Club, Brantford, Ont.
- April 1, 1920.—Norfolk Holstein Club, Hagersville, Ont.
- April 7, 1920.—J. B. Hanmer, Norwich, Ont.—Holsteins.
- April 8, 9, 1920.—Canadian National Sale of Holsteins, Union Stock Yards, Toronto, Ontario.
- April 20, 1920.—Aberdeen-Angus cattle, Albany, New York.
- June 15, 16, 17 and 18.—Live-Stock Breeders' Association of the District of Beauharnois, Limited, Ormstown, Que.

Royal Purple Stock and Poultry Specifics and Foods

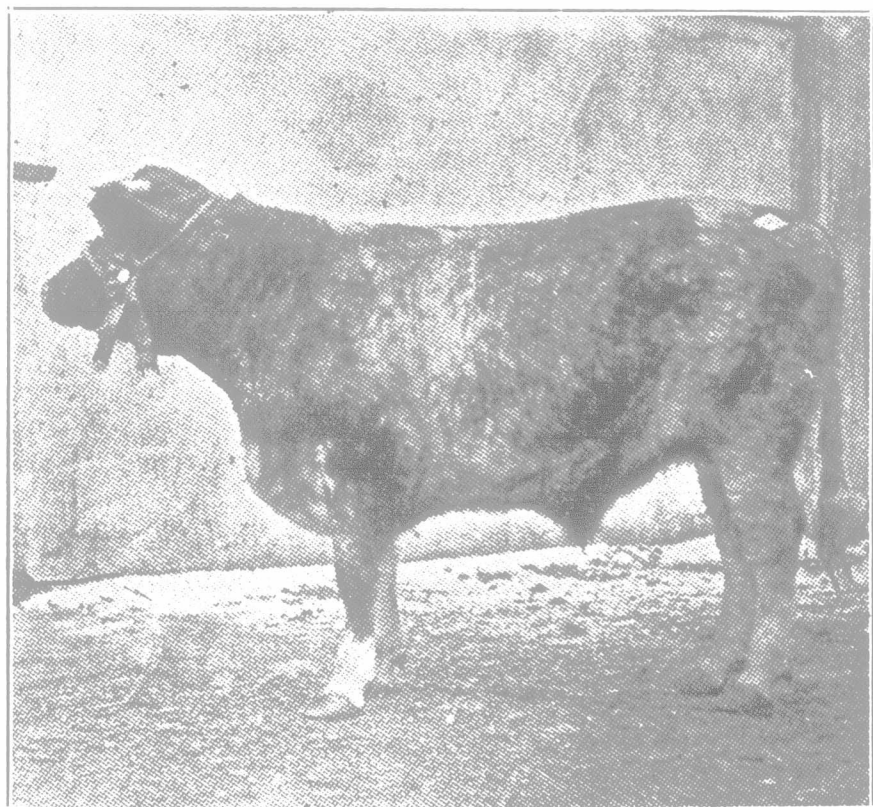
In the manufacture of all our Stock and Poultry Condition Powders and Remedies we eliminate the cheap filler which is used by many manufacturers to make up a large package, and give you pure material which you can adulterate yourself if you wish. Mr. Farmer, how does this appeal to you?

Royal Purple Stock Specific

is a pure unadulterated condition powder, it is not a dope. It can be used throughout the entire feeding season and will not do your animals one iota of harm, works entirely on their digestive organs, causes them to assimilate the foods properly and digest every particle of food value. Fifty-five to sixty per cent. of food value is a fair average of what the animal takes out of its food without this condition powder: it makes their coats sleek and causes them to take on a healthy appearance in a very short time.

What We Claim For It

Cows will give from three to five pounds more milk per day during the winter months. You can fatten pigs a month earlier, have larger and better pigs and save a month's time and feed. You can fatten horses ready for sale in four to six weeks. If you don't believe us try a 60c. package on the worst animal you have on your place and be convinced. How many times have you said to yourself, "No matter how much I feed my animals they do not seem to thrive". This, Mr. Farmer, is because your animals are not in a healthy thriving condition. Royal Purple Stock Specific will compel them to put on a thrifty appearance in a short time and yet it will cost you less than 15c. per month per animal to use it. Put up in 60c. packages, \$1.75 and \$6.00 tins. If you have a lot of stock buy the large tin. It contains sixteen 60c. packages.



PURE BRED STEER under 1 year, entered in Lot No. 3, Toronto Fat Stock Show, Union Stock Yards, Toronto, Ont., Dec. 11-12, 1919, and awarded 1st Prize. Also entered for Royal Purple Calf Meal Special, and awarded 1st Prize. Fed and Exhibited by Mr. Oril Williamson, R. R. No. 1, Jarvis, Ont. Sold for 33c. lb. by Auction. Weight, 1190 lbs.

Royal Purple Laying Meal

During the many years we have been making our high-class Stock and Poultry Specifics, we have had thousands of letters from Poultry raisers all over Canada, wanting to know what to feed their poultry. A hen is just like a factory. If you have lots of material in your factory, you can get out the finished product. The hen requires so much Protein, so much Fat, Ash Lime, etc., to make an egg and supply her bodily needs. Ordinary grains will give her a supply for herself and to make one egg every two to three days. For the accommodation of our customers, we have produced a Laying Meal which contains high-class meat meal, grains, etc., that will give her everything she requires for her bodily needs and produce an egg per day. If you cannot get this material from your dealer in your own town send us \$5.00 for a hundred-pound bag and we will ship it to you direct. This product certainly fills a long felt requirement for the poultry men and simplifies the matter of feeding.

MANUFACTURED BY

W. A. Jenkins Mfg. Co., Limited

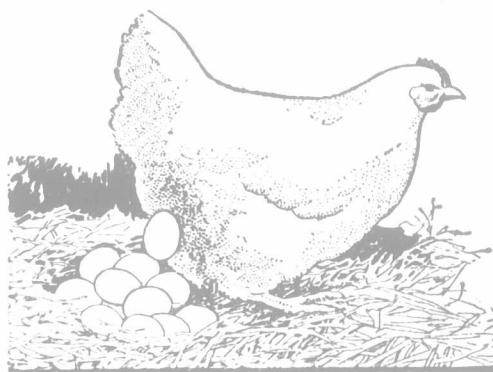
London, Ontario

Royal Purple Calf Meal

There is probably no mixed feed on the Canadian market that the farmers have been buncoed more on than Calf Meal. You cannot make a substitute for milk with less than 10% Fat or over 20% Protein. Calves are entirely different from grown animals. You must supply them with material as much like milk as possible. In our Royal Purple Calf Meal we have a product on which you can raise calves after they are eight days old just as well as though you used new milk. At the Toronto Fat Stock Show this year there were eight calves shown not over a year old that averaged over one thousand pounds each, that were fed on this meal. If you will write us for our new booklet we will send you the full particulars and photographs of all these calves. Mr. Farmer, when you want calf meal you see that it contains over 10% Fat. Unscrupulous dealers and manufacturers are making meals that do not contain more than 7% fat and a large percentage of protein. Many of these meals are no better than ordinary dairy feeds. Fat costs two and a half to three times as much as protein in any market but you must have it in calf meal to make a substitute for milk. Our Royal Purple Calf Meal is put up in 25, 50 and 100-lb. bags.

Royal Purple Poultry Specific

If your hens are not laying after the first of January it is because they are not housed properly and are in an unhealthy condition. There is no excuse for hens not laying if they are fed and housed properly. Our Royal Purple Poultry Specific, if used in the mash given them, will make them digest their food properly, make their digestive organs healthy and active and will produce the eggs for you as well in the winter as in the summer. The eggs are formed in batches from ten to fifteen, from the large egg down to the size of a pin head. If the hens are not healthy nature will lie dormant. As soon as our Poultry Specific is used nature becomes active. This is why so many people get eggs in a few days after using our Specific. If you do not get eggs it is your own fault. This Specific is put up in 30c. and 60c. packages, \$1.75 and \$6 tins.



Royal Purple Chick Feed

made from all kiln dried white grains. You can raise 95 to 98% of your young chicks with this food, put up in packages and bags.

We also manufacture the following valuable brands:

- Royal Purple Lice Killer in 30c. and 60c. tins.
- “ “ Cough Cure in 60c. tins.
- “ “ Sweat Liment in 60c. bottles.
- “ “ Disinfectant in 35c., 65c. and \$1.40 tins.
- “ “ Roup Cure in 30c. and 60c. tins.
- “ “ Worm Powder in 30c. and 60c. tins.

Every article we make is guaranteed to do exactly as represented.

For Sale by reliable dealers everywhere. If you cannot get any of the above articles from your dealer write us direct.

FREE—Write us and we will send you one of our new books that are now being published, giving you all the common diseases of stock and poultry, how to treat them, how to build a hen house, and wilderness of valuable information.

will be inserted under this as Farm Properties, Help and and Pet Stock. out cents per word each insertion. nts for one word and figures for times and addresses are counted. days accompany the order. No erted for less than 60 cents.

ED—O E HUNDRED TO ONE ty acres. Must be a one pre- est cash price and terms to , New Liskeard.

RES, TOWNSHIP OF CLIN- y Lincoln—70 acres cultivated, and bush. Soil sandy loam. fruit, 300 peach trees, 300 young ms, 3 acres of grapes, 60 apple es, plums, raspberries and small s—2 frame dwellings and small room for 12 cows, 3 horse stalls, pig pens, silo, chicken house, d, spring in pasture, and another and barn—water can be put in the place. Farm is on rd from Hamilton to Niagara, 4 mile from house, 1 1/2 miles to ville, 3 miles from Grimsby, 2 lilton, good motor road, to close- diate possession. Apply, Smith, icitors, Toronto.

, KENT COUNTY, SEVEN hatham, clay loam, excellent me house, two barns, extra road pply Geo. E. Jordan, Chatham

ATE FARMS—FROM \$10 TO All sizes and locations. Situated on many of them. Write for Mandeville Real Estate Agency, an, N.Y.

FARM FOREMAN—COM- lines. Box Eighty-four, Simcoe.

RELIABLE EXPERIENCED food wages and comfortable home. experience and wages expected, to 2 London, Ontario.

MARRIED) WISHES SITU- sale stud; experience in feeding. Apply Alex. McKendrick, Hill- No. 1, Ottawa.

STANT HERDSMAN WANT- capable of feeding and develop- Large herd, pure-bred Holsteins, man preferred. Apply, stating expected, and date available to er's Advocate, London, Ont.

IABLE BOY BETWEEN 15 good milker and able to handle l. Apply, stating wages for 3 92, Farmer's Advocate, London,

PETENT HERDSMAN TO of Scotch Shorthorns with a full show. Reference required. full particulars in first letter. Advocate, London, Ont.

Crate Fed Chickens Dressed

Also

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te for price list.

R'S 702 Spadina Ave. TORONTO

OR SALE

Rock Cockerels

to-lay strain. Finely barred, yellow legs; sisters laid at 6 5 each.

H. CROZIER Ontario

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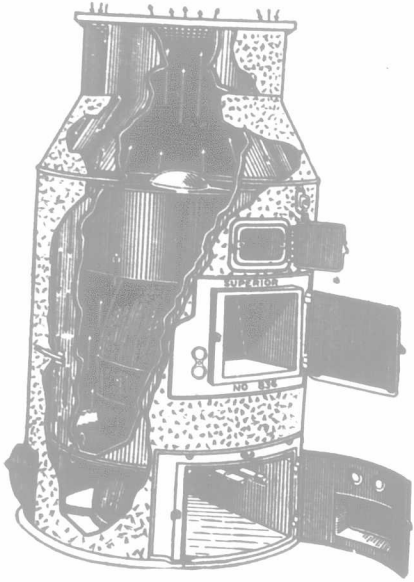
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17 and 18.—Live-Stock

ation of the District of

ited, Ormstown, Que.

The Pilot Superior Pipeless Furnace



This cutaway view of the Pilot Superior Furnace illustrates the manner in which the circulation of air takes place. The cool, or return air, enters the outer section of the register and flows down the channel which is formed between the outside casing and the double inner casing. As the air is heated it rises with increased velocity and leaves the centre portion of the register travelling at an average of 300 ft. per minute. The circulation takes place so rapidly and regularly, due to the scientific construction of the Pilot Superior, that the action becomes a combination of pumping warm air into the building and sucking the return air back into the furnace. This insures the circulation of the air to all parts of the buildings.

Handled by every wide-awake dealer, and manufactured by
The HALL ZRYD FOUNDRY COMPANY, Limited
HESPELER, - - ONTARIO
Write us for particulars

FARMERS

The Aspinwall Automatic Potato Planter will SAVE your TIME and the EXPENSE of a hired man. It is SIMPLE, DURABLE, EFFICIENT. Can be drawn by TEAM or TRACTOR. Attachments for peas, beans and fertilizer furnished when desired.

Attractive folders and complete catalog mailed on request.
Aspinwall Canadian Co. Limited
Dept. GUELPH, ONT. Limited
WORLD'S OLDEST and LARGEST MAKERS OF POTATO MACHINERY, CUTTERS, PLANTERS, SPRAYERS, DIGGERS and SORTERS.



Write for free book containing valuable data on potato growing.

FEEDS

Linseed Oil Cake Meal, Cotton Seed Meal, Gluten Feed (23% Protein) Shorts, Feeding Cane Molasses in barrels, Feed Corn and Corn Meal, Distillers Grains, Dairy Feeds, Hog Feeds, Poultry Feeds and supplies.

SEEDS

We sell high grade Ontario Grown Seed, Corn on cob and shelled. Also, Home Grown Alfalfa, Red Clover, Alsike, Timothy Seed, Marquis Wheat, Oats, Barley, Peas, Buckwheat. All kinds of field and garden seeds in packets and bulk.

Ask for prices.
Kelley Feed and Seed Co.,
476 Dundas St. E., TORONTO.

Sayings of Richard Cobden

BY RICHARD IRVING.

Richard Cobden was a great reforming force in Britain a generation ago. He fought for the principles which he knew to be sound, and not for the mere glory of appearing in the public eye. He proved this by his persistent refusal to accept titles and similar honors. He began his work by fighting for the repeal of the Corn Laws. He continued it to the extent of greatly influencing all forms of legislation for the better; suffrage, deprecation of war-like tendencies, financial reform, foreign policies, etc. He did a great deal to educate the masses in their desires for a fairer share of the results of their labors. He laid the foundation for the reform efforts of such statesmen as Gladstone, and exerted no small influence upon the ideas of such men, when their principles and ideas were in the process of formation. Some of his sayings are as true of to-day as they were in his day, and are worth preserving for the use of our leaders.

"No one can be a consistent enemy of monopoly, who does not tolerate an honest difference of opinion on every question."

"The newspaper reflects the morality, the intelligence, the tone of sentiment, of its public. If the latter is vicious, so is the former."

"Any man who has lived in public life, as I have, must know that it is quite useless to contradict any falsehood or calumny, because it comes up again next day, just as ripe as ever."

"My doctrine is that in proportion as physical force declines in the world, and moral power acquires the ascendant, women will gain in the scale."

"There is more healthy radicalism to be found scattered about our small towns and villages than in the larger boroughs. I mean that it is a more sturdy kind of democratic sentiment."

"If the majority in a democracy injure me and themselves at the same time by unsound legislation, I have at least the consolation of knowing that they are honest in their errors, and that a conviction of their mistake will for their own sakes lead to a change. It is far different when you are wronged by a self-interested minority."

"Popular enthusiasm cools, and the enemy being in power will be sharpening the sword with which to slay us as soon as we are off our guard."

"Diplomacy tells us that the dinner is prepared and eaten, and we (the people) have nothing to do but to digest the consequences."

"As population increases, so does the necessity increase of wisely husbanding the resources on which it depends for subsistence."

"The snobbishness of the moneyed classes in the great seats of commerce and manufacture is a fearful obstacle to any effectual change in the system."

"Education alone can insure good government."

"Party trammels, unless in favor of some well-defined and useful principle, would be irksome to me, and I should be restive and intractable to those who might expect me to run in their harness."

"Free trade is not an expedient; it is a principle, a doctrine, and a system."

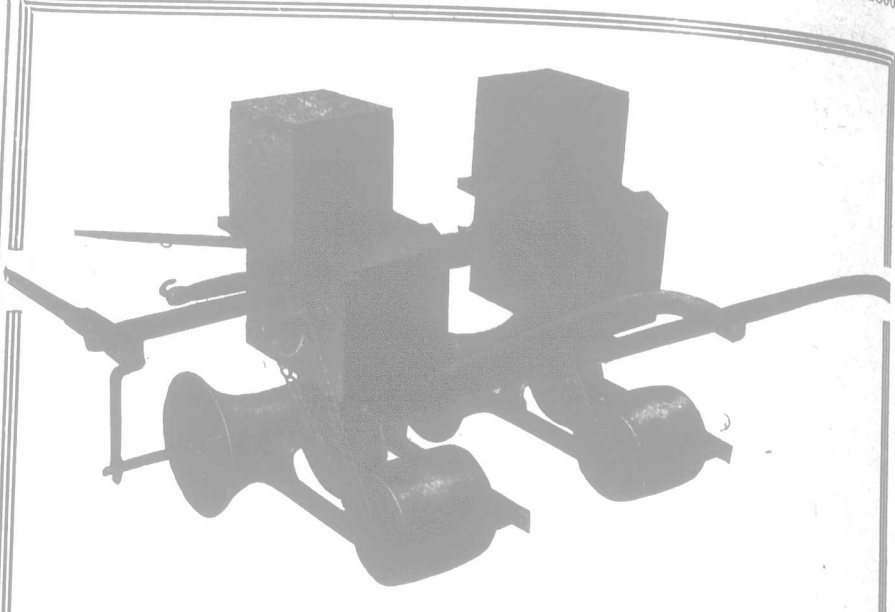
"I defy anybody to keep the ear of the public for seven years upon one question, without studying to amuse as well as instruct. People do not attend public meetings to be taught, but to be excited, flattered and pleased. If they are simply lectured, they may sit out the lesson for once, but they will not come again."

"Men are so engaged by the homely pressure of each day as it comes, and the natural solicitudes of common life are so insistent, that a bad institution or a monstrous piece of misgovernment is always endured in patience for many years after the remedy has been urged on public attention."

"We must choose between the party which governs upon an exclusive or monopoly principle, and the people who seek, though blindly perhaps, the good of the vast majority. If they be in error we must try to rectify them right, if rash, to moderate, but not to give up the struggle."

"There is no way of conveying a policy so far as it is based on the back of a complacent majority."

"I have seen many well-meaning people who have done more harm than good by their interference."



Hemme's Latest Seeder

This seeder saves a great deal of seed and labor by planting it where you want it only, in furrow made by steel disc, which turns and does not clog or trail seed; will sow rape, turnips, carrots, onions, cabbages, sugar-beets, mangels, cucumber, sugar cane, corn or any other kind of seed, dropping seed like this or This method of seeding saves a great deal of seed and labor, also spreading as much fertilizer as you wish around the seed.

It has paid for itself on two acres by increasing the crop. Take advantage of our special introducing price.
A. HEMME SONS & CO., Elmira, Ontario
Send TO-DAY for free information and special price

45 Head Third Annual Consignment Sale **45 Head**

At Stratford, Wed., March 24th

35 very choice young cows and heifers in milk or about to freshen. :: ::

Dairymen looking for sires will find this an opportunity worth while. Descendants of the best blood in HOLSTEIN BREEDING will be found in the catalogue. Enquiries should be made to Secretary.

ADAM C. PARK :: Listowel, Ontario
THOS. SMITH Auctioneer D. M. ARBOGAST Sales Manager

OUR OFFERING AT Woodstock, Ont., March 17, 1920

- No. 1 - PRINCE COLANTHA ECHO (42174)
A fine young bull 14 months old.
Sire—Prince Echo Sylvia, a 33-lb. grandson of May Echo Sylvia.
Dam—Queen Colantha Dewdrop; R.O.P. at 3 years, 19,457 lbs. milk, 860 lbs. butter, and R.O.M. at 4 years, 581 lbs. milk, 26.35 lbs. butter; freshening in 13 months.
- No. 2 PAULINE CALAMITY MERCENA (23322)
A fine, large cow by the same sire as Countess Mercena Beulah; R.O.M., 703.8 lbs. milk, 34 lbs. butter, and 27,210 lbs. milk, 1,200 lbs. butter in one year. Due to freshen in May to a son of Countess Mercena Beulah.
- No. 3 - CORNELIA PONTIAC SEGIS (48742)
A nice young cow; R.O.M. at 3½ years, 470.2 lbs. milk, 18.87 lbs. butter.

We also have some bull calves sired by Prince Mercena Echo for private sale.
A. E. CORNWELL & SON, Norwich, Ont.

might be, from not knowing how to go to work."
 "Nations have not yet learned to bear prosperity, liberty and peace. They will learn it in a higher state of civilization."

The Shorthorn in the Show-Ring.

During the year 1919 the Shorthorn has not been swamped in the show-ring. At the Canadian National Exhibition, Toronto, a grade Shorthorn steer secured the grand championship. At the Chicago International the Shorthorns carried off the grand championship for the best three steers. At Portland, Oregon, Shorthorns secured the grand championship, and also captured grand championship and first for three steers any breed at the Texas State fair. At the Provincial Winter Fair, Guelph, a grade Shorthorn steer was grand champion of the show, and at West Toronto a Shorthorn grade took first in the Boy's Calf Feeding Competition, and the grand championship for three steers went to the Shorthorn. It may also be added that the grand champion steer at West Toronto was out of a grade Shorthorn cow. A Shorthorn steer won first prize in the Boy's Calf Feeding Competition at Saskatoon, Regina, and Calgary Winter Fairs, while the grand championship at Saskatoon and Regina, together with the championship for best steer at Calgary went to a Shorthorn steer. At the Maritime Winter Fair, Amherst, N. S., a Shorthorn was grand champion, and the same thing happened at Birmingham, England. At the Smithfield Show, England, the grand championship was won by a cross between the Aberdeen-Angus and Shorthorn, and the reserve championship went to a pure-bred Shorthorn. Other show-ring honors have fallen to the Shorthorn during the past year, but sufficient has been said to show that the Shorthorn is capable of competing with other breeds in our important fat-stock shows. At the same time Shorthorn breeders value the ability to give large profits for feed consumed more highly than the ability to win championships.
 G. E. DAY.

Questions and Answers.
 Miscellaneous.

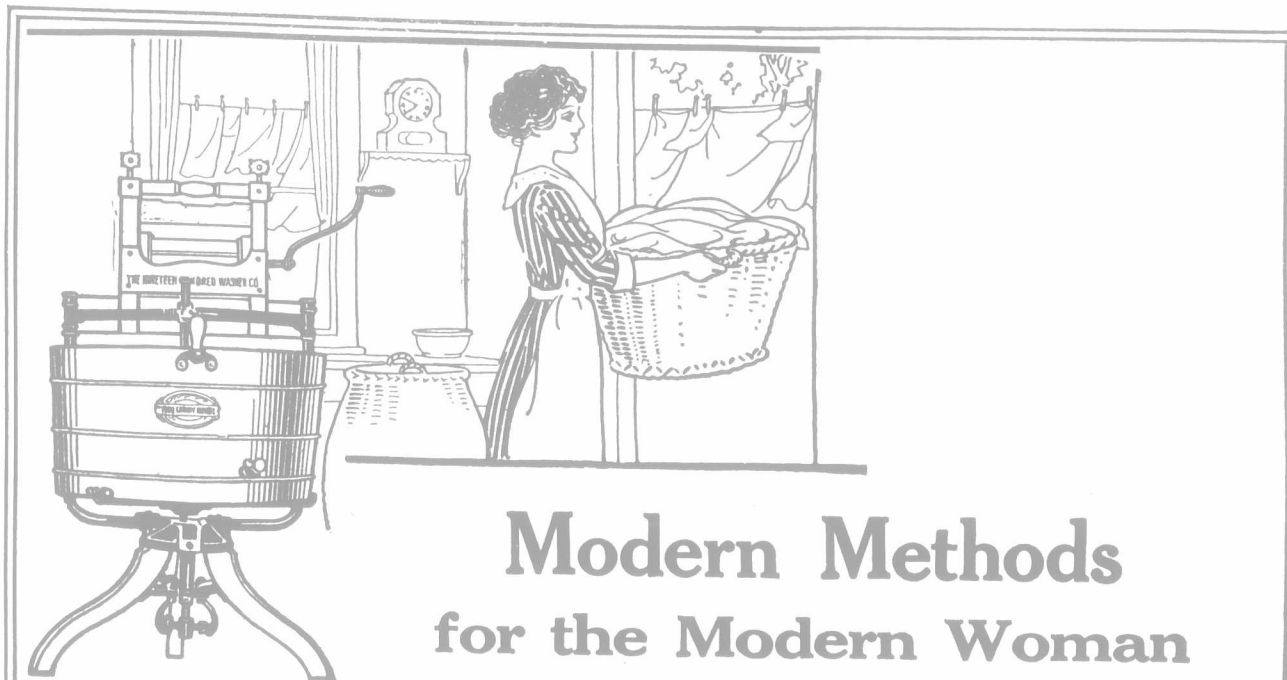
Indigestion.
 I have 3 pigs 3 months old. The last couple of weeks one of them will eat well and then lie down in bed and stay there. He is a little stiff and appears sore to the touch.

Ans.—His digestive organs are weak, and while his appetite is good, digestion is slow and somewhat painful. Mix equal parts of powdered gentian, ginger, nux vomica and bicarbonate of soda and give him a small teaspoonful 3 times daily. It will be wise to also give him a tablespoonful of raw linseed oil and repeat at any time that the bowels are not acting freely. Keep him in a separate compartment and feed on small quantities of milk, shorts, chopped oats with the hulls sifted out, and raw roots. Increase the quantity as digestion improves. See that he has dry, comfortable quarters with wooden floor, and that he gets daily exercise.

The late P. T. Barnum delighted to tell of his thousand and one amusing experiences, especially some that happened during his first tour of England with "the greatest show on earth." One of the best is a joke on the "champion humbugger" himself. Barnum on a leisure evening bought a ticket to an English music hall. Imagine his keen delight as he heard the usher, as he took the tickets of the people ahead, say: "Letter Hay, first row; letter Hee, fifth row; letter Hef, sixth row; letter High, ninth row;" and then in response to Barnum's inquiry "Where do I go?" he said: "You go to Hell, sir."

"I have only a small piece of garden land, but I find 'The Farmer's Advocate' very valuable. It is worth the price for the veterinary questions and answers alone."

WALLACE FOSTER,
 Wentworth Co., Ontario.



**Modern Methods
 for the Modern Woman**

Thrifty Housewives Approve this Means of Saving Time and Labor

SCIENCE offers you a skilled servant—the "1900" Gravity Washer. With one of these machines in your kitchen, you can face wash day with a smile. For it will make it possible to wash clothes more efficiently than human hands can do. You need a

"1900" GRAVITY WASHER

This machine will save you labor, worry, time, clothes and money. There are 5 important points about a Washing Machine

- 1. Does it Wash Clean?**
 With a vigorous motion the "Gravity" drives the soapy water clear through the fibres of the clothes until they are thoroughly clean.
- 2. Is it Easily Operated?**
 Because gravity plays so large a part in its action, our Washer requires the least amount of any machine on the market. Gravity does all the hard work.
- 3. Does it Wash with Speed?**
 The "1900" Gravity Washer takes just six minutes to wash a tub full of very dirty clothes.
- 4. Does it Save Wear and Tear?**
 Because the clothes are held still while the water and tub are in motion, there is absolutely no strain on linens, lawns, or laces washed the "Gravity" way. No frayed edges—no broken buttons.
- 5. Is the Tub Well Built?**
 The "1900" Gravity tub is made of Virginia White Cedar, which we know, from 20 years' experience, is positively the best wood for making washing machines. It is bound together with heavy galvanized steel wire hoops, which will not break, rust, or fall off. The tub is detachable—an important feature.

If you are interested, let us tell you more about it. There's a book about the "1900" Gravity Washer, which we will send to you if you will ask for it.

We make a full line of washers—machines that operate by Hand, Engine Power, Water Power and Electric Motor. And we have descriptive literature on each of them. So when you write, state which you are particularly interested in—and ask about our Free Trial Offer.

THE NINETEEN HUNDRED WASHER CO.
 354-A YONGE STREET, TORONTO

It puts the grain in the sack—does not waste it in the stack



Supplied by the best threshing machine manufacturers Demanded by the best farmers and threshermen

All the Grain Is Coming to You

The Grain-Saving Stacker Delivers It

Every kernel of the grain you have raised is yours. Then why let any of it go into the straw stack? You don't have to any more. The Grain-Saving Stacker returns to the separator and into the sack or wagon the grain that is blown to the

stack in the ordinary process. Demand the Grain-Saving Stacker on the machine for your next job. See that above trade-mark (in colors) is on each side. Write to any of the list below for full information about this sterling profit-saver.

LIST OF MANUFACTURERS

- | | |
|---|--|
| Canada | United States |
| Robt. Bell Engine & Thresher Co., Ltd., Sealoth, Ont. | Aultman & Taylor Machinery Co., Mansfield, Ohio |
| Dominion Thresher Co., Ltd., New Hamburg, Ont. | Avery Company, Peoria, Ill. |
| J. B. Dore & Fils., Ltd., Laprairie, Que. | A. D. Baker Company, Swanton, O. |
| Ernst Bros. Co., Ltd., Mt. Forest, Ont. | Banting Manufacturing Co., Toledo, Ohio |
| John Goodison Thresher Co., Ltd., Sarnia, Ont. | Batavia Machine Co., Batavia, N. Y. |
| Hergott Bros., Ltd., Mildmay, Ont. | Cape Mfg. Co., Cape Girardeau, Mo. |
| MacDonald Thresher Co., Ltd., Stratford, Ont. | J. I. Case Threshing Machine Co., Racine, Wis. |
| Sawyer-Massey Co., Ltd., Hamilton, Ont. | Clark Machine Co., St. Johnsville, N. Y. |
| Stewart Sheaf Loader Co., Ltd., Winnipeg, Man. | Ellis Keystone Agricultural Works, Pottstown, Pa. |
| Wallace Machine Works, Ltd., Sussex, N. B. | Emerson-Brantingham Co., Rockford, Ill. |
| Waterloo Manufacturing Co., Ltd., Waterloo, Ont. | Farmers Independent Thresher Co., Springfield, Ill. |
| R. Watt Machine Works, Ltd., Ridgeway, Ont. | A. B. Farquhar Co., York, Pa. |
| George White & Sons Co., Ltd., London, Ont. | Ferdinand Machine Works, Ferdinand, Ind. |
| | Frick Company, Waynesboro, Pa. |
| | Harrison Machine Works, Belleville, Ill. |
| | Huber Manufacturing Co., Marion, Ohio |
| | Illinois Thresher Co., Sycamore, Ill. |
| | Keck-Gonnerman Co., Mt. Vernon, Ind. |
| | Leader Tractor Manufacturing Co., Des Moines, Iowa |
| | Link Mfg. Co., Kansas City, Mo. |
| | Minneapolis Threshing Machine Co., Hopkins, Minn. |
| | Port Huron Engine & Thresher Co., Port Huron, Mich. |
| | The Russell & Co., Massillon, O. |
| | Russell Wind Stacker Co., Indianapolis, Ind. |
| | Sawyer-Massey Co., Ltd. (U. S. Agency), Moline, Ill. |
| | Southwest Mfg. Co., Oklahoma City, Okla. |
| | Swayne, Robinson & Company, Richmond, Ind. |
| | The Westinghouse Company, Schenectady, N. Y. |

The Grain-Saving Stacker Originated With the Indiana Manufacturing Company, Indianapolis, Ind., Who Also Originated the Wind Stacker.



SEPARATE SEALED TENDERS addressed to the undersigned, and endorsed "Tender for Gate Keeper's Lodge, Assistant M.O.'s Quarters, Nurses' Quarters, etc., Westminster Psychopathic Hospital, London, Ont.," as the case may be, will be received until

12 o'clock noon
 Thursday, March 25th, 1920

for the construction of a Gate Keeper's Lodge, Assistant Medical Officers' Quarters, Nurses' Quarters, and Heating Conduit to M.O.'s residence, Assistant M.O.'s Quarters, and Nurses' Quarters, Westminster Psychopathic Hospital, London, Ont.

Plans and Specifications can be seen and forms of tender obtained at the offices of the Chief Architect, Department of Public Works, Ottawa; the Superintendent of Westminster Psychopathic Hospital, London, Ont.; the Superintendent of Dominion Buildings, Postal Station "F," Toronto, Ont.; the Builders' Exchange, Montreal, P.Q., and the Overseer of Dominion Buildings, Central P.O., Montreal, P.Q.

Tenders will not be considered unless made on the forms supplied by the Department and in accordance with the conditions set forth therein.

Each tender must be accompanied by an accepted cheque on a chartered bank payable to the order of the Minister of Public Works, equal to 10 p. c. of the amount of the tender. War Loan Bonds of the Dominion will also be accepted as security, or war bonds and cheques if required to make up an odd amount.

By order,
 R. C. DESROCHERS,
 Secretary.

Department of Public Works,
 Ottawa, February 23, 1920.

**CORN
 CORN CORN**

"Buy only from Canada's Corn Center." 95% germination guaranteed. \$2.50 per bushel F.O.B. "Balley and White Cap." Bags free.

Morley Cascadden, (Essex Co.) Ruthven, Ont.



Making the Farm A Fit Place To Live

Fifty years ago farming was a hard, rough life—no mowers, no binders, no threshing machines, no cream separators. To-day every farm makes use of these modern devices, and many others. The milking problem until recently remained unsolved. It was the same daily drudge morning and night, but now this has been overcome.

The Macartney Machine Milker THE COW'S ADOPTED CHILD

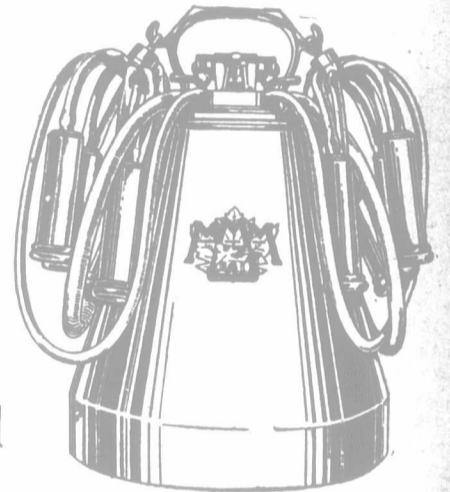
has solved a serious problem for thousands of farmers. Without labor or trouble it milks thoroughly and naturally. It is far better for the cows and they like it better than the old hand method. It increases the flow of milk and does the work in half the time.

The Macartney Milker is easy to operate. It is a perfected machine—not an experiment—and with ordinary care will last for years. The Macartney is so simple that it cannot get out of order if given ordinary attention.

Now Is The Time To Investigate

With the help of the Macartney thousands of farmers are making more money from their cows than they formerly did. Some day you, too, will buy a Macartney Milker because it will pay you well to do so. It will reduce your labour cost and increase your production of milk. Don't buy a Milker until you have learned about the Macartney exclusive features—such as the fool-proof pulsator and double acting teat cups with patented rubber inflation which last longer than any other.

Send the attached coupon to-day for some very interesting information—it involves no obligation.



The Macartney
Milking Machine
Co. Limited

316 Catherine Street
OTTAWA

Gentlemen—
Please send me full
particulars of the Macartney
Milker.

Name

Address

I have Cows.

Dept. "B"

The Macartney Milking Machine Co. Limited

316 CATHERINE STREET - OTTAWA

Gossip.

R. O. P. Shorthorns at Plaster Hill.

In turning over the pages of the livestock columns of this paper, there are but few names more familiar to the older readers than the Martindale Plaster Hill herd of dual-purpose Shorthorns, which has appeared almost continuously since 1890. Being one of the oldest Shorthorn herds in the Province, and enjoying at all times a good trade, there are many herds throughout the country which owe a great deal of their advancement to herd sires or breeding females, which have been purchases from this old established herd. To-day, as in the past, the herd is still enjoying popularity and the sixty head, as seen recently by a "Farmer's Advocate" representative, are again of the sort which has made them popular. The females bred so long for production, are, in nearly every case, also carrying sufficient fleshing to make them worthy representatives of the breed, and it is doubtful if there are over a score of pure Scotch herds in the country to-day which could bring forward a larger number of thick breeding cows than can be found in this herd at present. Many of these, too, have qualified in the R.O.P lists with nearly 9,000 lbs. of milk for the year, and others were still on test when we were at the stables. There were, for instance, three mature cows running, each of which after milking five months were still giving up to 40 lbs. per day, and one three-year-old had every promise of finishing her year with something better than 8,500 lbs. This was an exceptionally nice heifer of the Lavinia family, and another three-year-old heifer, a daughter of Burnfoot Chieftain, was finishing her year with 7,000 lbs. of milk and an average test of 4.8 per cent. Two other cows, one a seven-year-old Lady Jane cow, were just starting on test and both were running 50 lbs. per day. Before passing on to the herd sire, we might mention that the 13-year-old cow Bessie of Lowbanks, whose 11,636-lb. yearly record is the highest record in the herd, is still in the stables, and is due next month to the service of the present sire, Greenleaf Record. This bull is breeding exceptionally well, and the 1920 calves are



GET BIGGER PROFITS FROM YOUR VEGETABLES

Get the most out of your land. You can handle as many crop acres of heavy yielding land as of light yielding land. You owe it to yourself, to your land, to use a high grade commercial fertilizer. This shows why! It is an actual test.

Nothing applied—yield of 129.45 bushels of potatoes per acre.
High Grade Fertilizer applied—yield of 173.56 bushels of potatoes per acre.

FREEMAN'S 4-9-4 POTATO and GARDENER'S SPECIAL

has been increasing potato and other vegetable yields every year for 40 years. It is a general vegetable fertilizer especially compounded for potatoes, turnips, carrots, onions and sugar beets.

Expert agriculturists say that potato fertilizers should supply 3% to 5% ammonia, one-half of it coming from a readily available source of ammonia such as nitrate of soda or sulphate of ammonia, and the other half from blood or tankage; 6% to 8% available phosphoric acid and 3% to 5% potash. Freeman's 4-9-4 Potato and Gardener's Special is the ideal fertilizer; it is well balanced; it supplies 4% ammonia, 9% phosphoric acid and 4% potash.

Grow big crops of vegetables of superior quality—Use Freeman's 4-9-4 Potato and Gardener's Special.

Freeman's High-Grade Fertilizers have been in the lead for over 40 years. Different brands for different crops.

Send in the coupon to-day. We can help you solve your fertilizer problem.

W. A. Freeman Co.
Limited
Hamilton :: Ontario

W. A. Freeman Co. Ltd., Hamilton, Ont.
Please send me information regarding the use of fertilizers.
Nature of soil.....
High or low land.....
Crop wanted.....
Name.....
Address.....

When writing advertisers will you kindly mention The Farmer's Advocate.

nearly all sired by him. He is probably one of the most outstanding dual-purpose sires in Canada to-day, his sire, Cressida Hope, and his dam Greenleaf, having both been selected personally by Professor Barton, after visiting all the heaviest producing herds in England. In the present sales' list will be found several good young bulls of serviceable age, one being a nice roan twelve months' show calf, which is a son of Burnfoot Lady, the noted 10,500-lb. cow and the dam of such noted sires as Director, Dominator, etc. There is also a number of females, which, we were informed, are priced to sell, and altogether they make up one of the strongest offerings which we have ever seen at Plaster Hill.

Questions and Answers. Veterinary.

Bloody Faeces.

Cow calves on January 18th last. She cleaned all right and is doing well, has excellent appetite and is in fine condition, but passes blood with her faeces.

M. S.

Ans.—This is due to rupture of some of the small blood vessels of the mucous membrane of the intestines, probably due to the nature of the food consumed. Feed bran only for 18 to 24 hours, then give her 1½ pints of raw linseed oil, and feed on a little whole hay of good quality (clover preferred) bran, a little chopped oats and a little linseed meal. If blood continues to appear after her bowels have regained their normal condition give her 1 oz. of tincture of iron in a pint of cold water as a drench twice daily until blood ceases to appear. If there be a tendency to constipation at any time give her a pint of raw linseed oil.

A football player—name not given—had strayed into the Far West, and was instructing a group of eager cowboys in the rudiments of the game.

"Mind," he observed, "if you cannot kick the ball, kick an opponent." Now, let's get busy. Where's the ball?"

"Bother the ball," came the reply of a keen pupil; "let's get on with the game."

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Gossip.

A. A. Colwill, of Newcastle, writes that he has recently sold one of his choice Clydesdale fillies, but has another good one left in the stable which he can spare. Anyone requiring a good brood mare should communicate with Mr. Colwill. He is also offering a few young heifers, which have been bred to Primrose Duke. There are some splendid young bulls which are ready for service. These will be sold well worth the money to anyone desiring a herd header or foundation stock.

Maple Hall Farm Shorthorns.

Attention is called to D. Birrell & Son's change of advertisement in this issue. Messrs. Birrell have a splendid herd of Shorthorns at Claremont, and are offering five bulls ranging in age from eight to sixteen months; also, a particularly choice bull calf of the Crimson Flower family. There is a fifteen-months Duchess of Gloster bull with excellent lines and quality. A red Crimson Flower is sixteen months old, and is from a great milking family. There is a ten-months-old Butterfly bull that is of showing calibre; also a dark red Shepherd Rosemary that is right in every way. This is a splendid opportunity for breeders to secure herd headers from some of the best families of Shorthorns. Write D. Birrell & Son, Maple Hall Farm, Claremont, for fuller particulars regarding these richly-bred calves which they have for sale.

Some Good Dual-Purpose Families.

Dual-purpose Shorthorn breeders, who are more intimately connected with the trade, need very little introduction to the Grand River herd owned by Hugh Scott, of Caledonia, Ont. Mr. Scott's herd at present numbers nearly sixty head, and the chief sire in service is still Prince Lavendar, that good breeding son of the famous 16,596-lb. cow, Buttercup. This bull is probably one of the best individual sons of the noted sire, Senator Lavendar, and his get, which are now included in the present sales' offering, furnish every evidence that Prince Lavendar stands well up among Canada's best dual-purpose sires. It must be said, however, that the females with which he is being mated should also come in for considerable credit. Visiting the farm recently, the writer was more than pleased with the great size and individuality of these matrons, which were in every case, carrying a depth of fleshing that would warrant their every claim to being dual-purpose cattle. Grouping them in families, we might add that we have yet to see five better cows of one tribe than were represented in the Pansies. In weight, each of the five referred to are above 1,450 lbs., while the heaviest will nearly reach 1,700, and not one under private test has been below 8,000 lbs. in yearly milk production. There is also a good representative of a famous old Bates family in the ten-year-old cow, Julia Baroness. She has not only milked up to 70 lbs. per day, but she carries the correct Shorthorn type and her two daughters, now in the herd, have every promise of equaling the record of the dam. There is also an outstanding producer and individual in Violet May, a six-year-old Lady Jane cow, who has been one of the heaviest milking five-year-old cows in the lot, and this family more than comes to the front in a roan ten-year-old cow, which was milking 60 lbs. per day at the time of our visit. She is without doubt one of the best prospects for championship honors in the dual-purpose class that we have seen for some time, and her two months' bull calf by the herd sire, should be equally sought after by the best breeders of the Province. The Lavinia's also play an important role among the breeding matrons, there being six young cows and while the highest in milk is a 60-lb. per day cow, no other family in the herd is more appreciated by either Mr. Scott or his visitors than are these Lavinias. Added to these families there are several daughters of the noted sire Burnfoot Chieftain, and while all are young cows, they are not to be overlooked when sizing up the breeding herd. At present there are, aside from the 1920 calves, only two or three young bulls to offer, these are sired by the former herd sire, Commander, who was a son of Burnfoot Chieftain and Jean's Maisie, a 7,800-lb. three-year-old. All are from good record dams, and their individuality is pleasing in every case. Those looking for a herd sire should keep this herd in mind.

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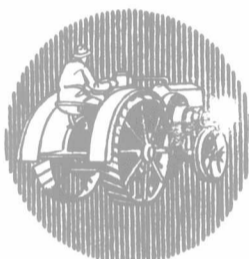
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Give them more power



To Control Excess Oil
A special ring for motors that pump oil. Use in top grooves of each piston. In the lower grooves use McQuay-Norris LEAK-PROOF Piston Rings for complete compression—power.

When your engine first shows signs of decreasing power, look to its piston rings. Make sure that none of the gas you buy is leaking past them. Make certain that all your gas is compressed and turned into power. Install the genuine McQuay-Norris LEAK-PROOF Piston Rings. They mean more power.

Their exclusive design insures equal action all around the cylinder wall. That's why they are the only piston rings of their kind. There's no such thing as a Leak-Proof type of piston ring. LEAK-PROOF is the trademarked name of these particular rings—with ten years of severe service back of it. Be sure you get the genuine.

They are made in every size and over-size to fit every make and model of gas engine. Your dealer has them or can get you proper sizes promptly from his jobber's complete stock.

Write for This Booklet →

which explains the best way to buy more power for your tractors, trucks and passenger cars—it's a complete piston ring hand book. Address Dept.



W. H. BANFIELD & SONS, LIMITED
124 Adelaide St., West, Toronto



TRACTORS HIRED

We are intending to put in a large acreage of flax next spring. Hundreds of acres must be plowed, cultivated and seeded just as early as possible.

WE NEED TRACTORS AND OPERATORS DURING APRIL AND MAY

As we own and operate a number of tractors and trucks we have a large garage and repair shop at our mill. Here is the proposition: We will pay the freight on your tractor to St. Mary's if you work for us. During the working season you will be supplied with portable Armstrong houses (like those supplied to officers in France) for living quarters. Oil, fuel and grease will be delivered to the field. Competent mechanics will make necessary repairs. The highest prices will be paid per acre for plowing, discing and seeding. We will supply second-shift operators to keep your tractor making money. Payment will be made by cheque every fortnight. We don't care how much money you make—the point is to get our big acreage seeded at the right time.

Here is a real chance to make money with your tractor without having to wait for your money.

If you want to work for us, write, and we will give you our prices, or, better still, come to St. Mary's and talk it over with us (we will pay you whatever the railroad fare costs).

A. L. McCREDIE, Flax Mill, ST. MARY'S, ONT.

REGISTERED O.A.C. No. 72 SEED OATS

These oats are inspected and sealed by the Canadian Seed Growers' Association. In 1917 and 1918 they took first place in Field Crop competition, producing 100 bus. to the acre. Price \$2.00 per bus. bags included. W. B. FERGUSON, STRATHROY, ONT.

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Canadian, Foreign, Booklets Free
EGERTON R. CASE, M.C.I.P.A. (Lond.)
10 Adelaide East. TORONTO

Sure Cure for HEAVES

113 Portland St., Dartmouth, N.S., Nov. 29, 1919
 "Will you please send F. W. Cooper, Montague, Halifax Co., N.S., a sample of your Heaves Cure. He has a horse with a slight dose of Heaves and I know your remedy will cure him as I have used it with good results when I was in the horse business."
 C. G. NORTON.

Our records show that a trial package of Capital Heaves Remedy was sent Mr. Norton, on July 28, 1917, and it was this trial package that made him a good friend of Capital Heaves Remedy and caused him to write the above letter.

FREE We send a full week's trial free for 5c to cover postage and wrapping. If you have a horse that coughs or heaves write Veterinary Supply House, 750 Cooper Street Ottawa, 10

THICK, SWOLLEN GLANDS

that make a horse wheeze, Roar, have Thick Wind or Choke-down, can be reduced with

ABSORBINE

also other Bunches or Swellings. No blister, no hair gone, and horse kept at work. Economical—only a few drops required at an application. \$2.50 per bottle delivered. Book 3 B free.

ABSORBINE, JR., the antiseptic liniment for man, kind, reduces Cysts, Wens, Painful, Swollen Veins and Ulcers. \$1.25 a bottle at dealers or delivered. Book "Evidente" free.

W. F. YOUNG, Inc., 258 Lyman Bldg., Montreal, Can.

BOOK ON DOG DISEASES, And How to Feed

Mailed free to any address by the Author.

H. Clay Glover Co. Inc. 118 West 31st Street, New York, U.S.A.

America's Pioneer Dog Remedies

FOR SALE THREE Clydesdale Stallions

rising 2, 3 and 4 years old. "Duskie Knight" (17969) the one rising 4, is a beautiful thick horse and is set on the right kind of feet and legs. He weighs 1,850 lbs. and won 1st at London, 2nd at Guelph in 1918, in the 2-year-old Imp. class, also 1st at Ottawa and 2nd at Guelph in 1919, in 3-year-old Imp. class. These colts have the best of breeding and will be priced to sell.

S. J. Prouse, - Ingersoll, Ont.

Messrs. A. J. Hickman & Co. Halse Grange, Brackley, England Exporters of all Breeds of Pedigree Live Stock

Send for an illustrated catalogue and see what you can do for you. Whether you want show or breeding stock, buy direct from England and save money.

Sundrum Clydesdales

For sale at the present time—choice selection of Clydesdales, including stallions, fillies and mares, safe in foal. All having size and quality, and priced to sell.

W. A. McNIVEN R.R. 4 Hamilton, Ont.

FOR SALE Registered Clydesdale Stallion

Earl of Stanley (18390)
 Foaled in 1916, sire and dam imported. Won first prize and sweetstakes at Clinton Spring Fair in 1919. Enrolled and inspected. For further particulars apply to

R. D. Murdoch, Brucefield P.O., Ont.

LOCHABER STOCK FARM

is offering a good 11-months-old Dual-purpose bull for sale. Priced to sell.

D. A. GRAHAM - Parkhill, Ontario

For Sale

A Registered Clydesdale Stallion rising 2 years old; in first-class condition; sire, Viscount Humphrey (17552), dam, May Sylvia (5104). For particulars, write REUBEN ROGERS, Stayner, Ont.

invitation to inspect this defect at close quarters. A third, I remember, was said to have "a bad touch." One tells whether a bull has a bad touch or not by taking a lump of his skin between the thumb and forefinger and then pinching and pulling it. That's what other people did.

Luncheon was the next move; it was an excellent repast, followed by speeches. The healths of Queen Victoria and the Prince of Wales were drunk amid tremendous cheering, and I was amazed to hear our Sovereign and his father spoken of as "the leading farmers of England," and to find that they bred cattle and bought and sold them. I wonder if King Edward ever pinched a bull's skin to see if it had a good touch; I quite think he may have done so.

The speeches were few, as the auctioneer, the late Mr. John T., and the company were anxious to get to business. A small "grand stand" with rough wooden seats faced the sale-ring, around which farm-wagons had been drawn up. The auctioneer stood up in front of the stand and made a preliminary speech, setting forth the merits of the cattle; he held up, too, for inspection a sand-glass, with which this firm sells, instead of using a hammer.

Towards the close of his opening address the auctioneer suddenly paused, drew back, and held up his hands in astonishment, as though he had only just noticed Lot 1. Lot 1 was a very old cow that had been standing patiently in the ring for some ten minutes. "There, gentlemen," he said. "Look at this typical female. What style! What breeding she shows! What a wealth of flesh she exhibits!"

"That will do, stockman," breaking off to address the attendant. "Don't stand in front of her; she's a deal better-looking than you are."

"Who will be rash enough to bid fifty guineas for Lot 1, for a start? Well, forty? Thirty, may I say?"

Here the auctioneer turned to the vendor, who was sitting behind him, and remarked so that everyone heard, "Sir, I am extremely sorry that you should be present at this sacrifice."

Eventually twenty guineas was offered. Slowly the biddings mounted up to thirty-five guineas, when, after heaving a dramatic sigh, the auctioneer announced that the sand-glass had run out and the purchaser of Lot 1 was informed "that he had obtained a great bargain," but "that he had better buy Lot 2 also, as his cow was "so very old that she would probably not live to arrive at her new home."

Cow after cow came in, trade was brisk. I was thoroughly enjoying the sale and became quite excited, especially when a red heifer was led into the ring. On her entry there were signs of suppressed excitement among the company.

"Who says two hundred guineas?" said Mr. T.

No one did, but half that sum was actually volunteered, and rapidly the biddings rose by five and ten guineas at a time up to one hundred and ninety-five guineas. Would she reach two hundred guineas? I jumped up from my seat to try and catch sight of the person who had been rash enough to offer within five guineas of that sum, when I heard called out from the rostrum, "Thank you, sir, two hundred guineas."

"Two hundred guineas, gentlemen, has been bid in a fresh place."

While I was craning my neck to see who could be the new bidder, I felt my coat-tails pulled and Tom whispered in my ears he pulled me down, "Sit down, you fool; he took your bid!"

"Took my bid? Who did?" I said.

"Why, the auctioneer, of course," Tom replied.

I was stricken dumb with fright, and all the time I could hear being repeated, "Two hundred guineas, two hundred guineas. Who says two hundred and ten?"

"Two hundred guineas—a mere trifle for such a heifer."

More than a year's salary, I thought.

An age seemed to pass, then came the fatal words: "For the third and last time, gentlemen, two hundred guineas. Quick! The glass runs."

I was desperate, my speech returned, and I started up to remonstrate. Before I could speak, however, the auctioneer said, "It is all right, you are in at two hundred guineas."

"I am not in," I commenced, when

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Winters are hard on stock, and the most trying time is when Spring approaches. After dreary months of inactivity, animals, like humans, need a good tonic to give them new life and vigor. Successful stock breeders depend on International Stock Food Tonic as Nature's substitute. It is the ideal Spring corrective, and is economical; providing

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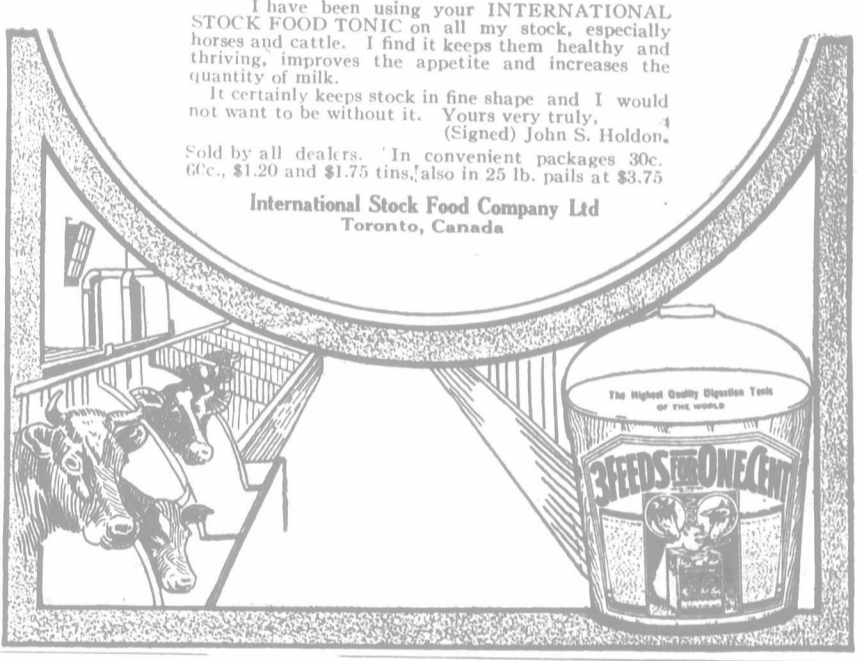
It is endorsed as invaluable by breeders all over Canada, and the following testimonial is typical of hundreds received.

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Dear Sirs:—
 I have been using your INTERNATIONAL STOCK FOOD TONIC on all my stock, especially horses and cattle. I find it keeps them healthy and thriving, improves the appetite and increases the quantity of milk.
 It certainly keeps stock in fine shape and I would not want to be without it. Yours very truly,
 (Signed) John S. Holden.

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No. 640, Team Harness, is especially designed for farm work such as ploughing, seeding and general hauling. Exceptionally good value at a very low price. Blind Bridles with side check; lines one inch; high top hames; traces, steel chain, leather covered; pads with hook and terrets; backstrap with trace carriers riveted on top. White metal or japanned mounts, less collars. **\$57.00**

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—Stallion, 1 year old April 21. Dam, Cumberland Robina Imp. [29249] (31561). Sire, Helsington Sportsman, No. [15164] (17294). A high quality colt at a moderate price. Also two young mares by Commodore and imp. dams.
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We have in our stables a select lot of Percheron and Belgian stallions and mares, running in age from 4 to 7 years. Our stallions weigh from 1,900 to 2,200 lbs., and mares from 1,700 to 2,000 lbs.

Use good breeding stock now and be ready to meet the demand which is sure to exist. All horses have been Government inspected, and we guarantee them to be satisfactory sure breeders; if they are not, you do not have to keep them.

We will sell on time to responsible parties.

Look up our winnings at the Western Fair, Guelph Winter Fair and Ottawa Winter Fair. These will give you some idea as to the class of horses we are offering.

Inspection Welcomed. Correspondence Solicited.

Those attending the Western Ontario Shorthorn Sale, March 23 and 24, should see our horses at the Exhibition Grounds.

G. R. Crouch, Vice-President La Fayette Stock Farm Company of Canada, Limited London, Canada

The Company is composed of J. Crouch, President; G. R. Crouch, Vice-President and Treasurer; R. G. Ivey, Secretary; Directors, Wm. Bernard and Jas. McCartney.



A GROUP OF PERCHERON BELGIANS

someone shouted out "Two hundred and ten."

"Only just in time, sir. Two hundred and ten guineas. Who will say twenty?" intoned Mr. T.

The relief was so great that I almost collapsed. Even then the auctioneer had no pity. Pointing the sand-glass straight at me he called out, "One more shot and you'll kill him."

He had nearly killed me if he only knew. The worst of all was that this heifer reached two hundred and seventy guineas before she was sold.

"It was very thoughtless of the other bidder to have kept me in suspense for an hour," I told Tom.

"An hour, man!" he replied. "Why, it was not two minutes."

This episode certainly spoiled my day's enjoyment. I dared not stir or even look up for some time after, when any bidding was going on; even then, at times, I felt that auctioneer's eye going right through me. Tom left my side after the females were sold and told me to look out for him just before the sale was finished. The bulls made even more than the cows; one reached five hundred guineas, another six hundred and fifty. Gradually I recovered from my shock and was enjoying the proceedings again, when I discovered that the last lot was being sold. This was a wretched little bull calf only a few weeks old; but from a starting bid of thirty guineas already his price had mounted up to eighty.

At that moment I caught sight of Tom and waved my catalogue to attract his attention. "Eighty-five guineas? Thank you," said the auctioneer, nodding at me.

I was not going to be caught again, so I shouted back, "I did not bid."

"What!" he replied, in a surprised voice. "Did not bid? Gentlemen, I appeal to you. Did the young man in the frock-coat hold up his catalogue or did he not?"

"Most certainly he did," replied several persons sitting near me. And all eyes were turned on me, and I felt I was regarded as a thief or a rogue.

Before I could explain there was another offer, of ninety guineas, and I breathed freely again. Then, at last I thought that the auctioneer realised that my involuntary actions had not been intended for bids. He looked at me with one of his most enticing smiles, and said in a beseeching tone: "Come away, man."

I did not quite know what was meant by "Come away, man," but I thought he was tendering me kind advice that my safest plan was to leave the sale-ring.

I thought so, too, and just as I rose to go I heard ninety-five guineas announced. I found Tom almost immediately, and at the same moment a young man

Nowadays It's Rope Harness

TIMES have changed! Leather prices are beyond reach for rough, tough, hard pulling on the farm or in the lumber woods. Don't throw away good money—save three-quarters the price by using

Griffith

Rope Trace Harness

Rope stands up like iron. It defies wear, doesn't break or rip, no stitches to come out; it is flexible and easier to handle. The outfit consists of Giant Rope Traces, horse power Hame Straps, Back Pads, Belly Bands, Billets, Yoke Ropes, Rope Lines, Open Bridles and Canvas Collars. The whole outfit costs only \$25. (West of Port William, \$27). Traces alone are \$6.00 the set of four. (\$6.50 West of Port William).

Griffith's Giant Yoke Ropes to replace leather pole straps, price complete with snaps and slides: Per pair \$1.40 (West of Port William \$1.60).

Ask your dealer for them. If he cannot supply you please write us direct giving us dealer's name.

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PREMIUM CLYDESDALES

Our Stud is headed by **BARON GARTLY**

winner of third place in open class at Glasgow, Scotland, and grand champion at both Toronto and Ottawa. Progeny have stood high in large classes at the latter two shows. High quality stallions for sale. Our new importation has just arrived including several noted premium winners. Intending purchasers should see our horses before buying.

BRANDON BROS., Forest, Ontario

FAIRVIEW CLYDESDALE CHAMPIONS

We have at present, several mares that have been champion winners at Toronto, Guelph, London and Ottawa. Look up our past winnings and call on us if you want something choice. We also have Shorthorn bulls and females of show individuality.

ROBERT DUFF & SON MYRTLE, ONT.

came up and asked me for my name and address. On enquiry I found that he was the auctioneer's clerk and that I was regarded as the purchaser of the wretched calf at ninety-five guineas.

Tom kindly offered to come with me to see his friend the auctioneer and try to put matters right. It was several minutes before we could speak to Mr. T., so great was the crush round him.

Just as we pushed our way in a miracle happened. A telegram was handed to Mr. T., and as he finished reading it he looked up, caught my eye and exclaimed: "The very man I want. Will you take a small profit on your calf?"

Tom nudged me and answered: "What, my friend part with his calf that he came all the way from London to buy?"

To cut a long story short, the telegram was shown to me. It was from a client of the firm's, whose wire authorizing them to give one hundred guineas for my calf had arrived a minute or two too late. Tom struck the bargain, and the auctioneer gave me a cheque for five pounds. Then Tom told the story of my first Shorthorn sale, and no one enjoyed the joke more than the auctioneer, who turned out to be one of the most jovial and kind-hearted of persons.

I only saw him once again. Several years after, I was walking through Hanover Square just as Mr. T. was getting into a hansom. The famous auctioneer recognized me in a moment and called out to me. I was careful, however, to pay no regard to his salutation, good fellow as he no doubt was. Why if I had made the slightest sign, he would have knocked down the cab, cabby and three-legged horse to me on the spot, I am certain.—W. In Country Life.

An English captain who had heard that United States troops were in France, but as yet had seen none in his sector, passed one night in an abandoned dug-out. Hearing movements within it, he at once thought of German spies, drew his pistol and levelled it at the entrance. "Who's in there?" he called. A flash of white teeth showed in the darkness and a soft voice answered. "Dis am de American army, suh."

The city editor of one of the Toronto papers received a bottle of whiskey from a friend for the holidays. He could not use the liquor, as he detected a strong odor of ether in the bottle. He gave the liquor to the janitor. The next morning he asked the man how he liked the liquor. "Just right," was the answer. "It was just exactly right. If it had been any better you wouldn't have given it to me and if it had been any worse I could not have drunk it."

Attention, Canadian Stallion Buyers!

BEFORE YOU BUY A **SHIRE, PERCHERON or BELGIAN STALLION**

Write us for full particulars, prices and SPECIAL INDUCEMENTS to ONTARIO and QUEBEC STALLION BUYERS, also for our Illustrated Catalogue. It will only cost you a postage stamp, and may SAVE YOU SEVERAL HUNDRED DOLLARS. Address:

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A Safe, Speedy, and Healing Ointment

The safest, Best BLISTER ever used. Takes the place of all liniments for mild or severe action. Removes all Bunches or Blemishes from Horses and Cattle. SUPERSEDES ALL CAUSTIC OINTMENTS.

Every bottle sold is warranted to give satisfaction. Price \$1.75 per bottle. Sold by druggists, or sent by express, charges paid, with full directions for its use. Send for descriptive circulars.

The Lawrence-Williams Co., Toronto, Ont.

Sunny Side Herefords

Herd headed by Brummel's Chance (Imp.) Champion at London and Guelph, 1919. We have for sale now a few choice bulls and heifers about a year old.

MRS. M. H. O'NEIL & SONS
R.R. No. 4 Denfield, Ont.
Phone Ilderton.

Aberdeen-Angus Cattle

Suffolk Down Sheep or Clydesdale Horses.

WRITE:
JAMES BOWMAN
Elm Park Guelph, Ont.

GLENGORE

Aberdeen - Angus

Do not miss the opportunity to secure some of the choice males and females of wonderful smoothness, quality and strain type that are being offered by GEO. DAVIS & SONS, R.R. No. 1, Erin, Ont. Herd sire a son of Black Abbott, Champion Angus bull of Canada. Write for particulars.

SUNNY ACRES

ABERDEEN-ANGUS

The present string of young bulls for sale includes some classy herd bull prospects, winners themselves and sired by champions. If interested in Angus write your wants. Visitors welcome.

G. C. CHANNON, Oakwood, Ontario
P. O. and phone. Railway connections:
Lindsay, C.P.R. and G.T.R.

Aberdeen - Angus

Meadowdale Farm
Forest, Ontario

Alonzo Mathews Manager
H. Fraleigh Proprietor

ALLOWAY LODGE STOCK FARM

Angus, Southdowns, Collies

Choice bred heifers. Bulls 8 to 15 months. Southdown ewes in lamb.
ROBT McEWEN, R. 4, London, Ont.

ANGUS BREEDERS—ATTENTION!
If you want a first-class Angus Bull to head your herd get Justice of Aberdeen, the 2nd prize senior calf at the Winter Fair, Guelph, 1919. Other stock for sale, male and female. J. W. Burt & Sons, Aberdeen Farm, Hillsburg, R. R. 1, Ont.

ABERDEEN-ANGUS CATTLE

Clydesdale Horses.
We offer good young stock for sale.
Jno. Underwood & Son, Grafton, Ontario

Tweedhill Aberdeen-Angus

Young bulls of serviceable age; excellent quality and breeding; prices very reasonable. Write
JAMES SHARP, TERRA COTTA, ONT.
Long distance phone, Erin

Balmedie Aberdeen-Angus
Nine extra good young bulls for sale. Also females all ages. Show-ring quality.
THOS. B. BROADFOOT, FERGUS, ONT.

Dual-Purpose Shorthorns

Herd headed by Royal Coquette, whose dam's record is 17,723 lbs. of milk and 636 lbs. of butter-fat. We have a ten-months-old red bull calf, sired by Royal Coquette, and out of Lady Laura, whose two nearest dams averaged 15,360 lbs. of milk and 536 lbs. of butter-fat in a year. Lady Laura weighed 1,550 lbs. and gave 13,060 lbs. of milk and 436 lbs. of fat in a year. We have a thirteen-months roan bull out of Springvale Lass 2nd, a cow with a record of 10,230 lbs. milk and 448 lbs. fat as a two-year-old, and a three-year-old record of 12,658 lbs. of milk and 503 lbs. of fat. This is a world's record for fat for both years. She commences her fourth lactation this month. There is another ten-months-old red calf out of Haldimand Pride, whose sister, dam and grandam are now in the R.O.P. test. There is a roan calf whose seven nearest dams averaged over 10,000 lbs. of milk, and another roan whose dam and grandam have creditable R.O.P. records. These are show calves. Anyone wishing to combine quality and records can purchase herd headers from me as cheaply as from anyone else.
John Walker, Nanticoke, R.R. 1.
Jarvis or Hagersville Station

Shorthorns

PURE SCOTCH
FOR SALE—2 richly bred bulls 17 and 18 months old. Sires and dams from imported stock.
Geo. Lightle, Amaranth Sta. Ont.

LABELS
Live-stock Labels for cattle, sheep and hogs. Manufactured by the Ketchum Manufacturing Co., Ltd., Box 501 Ottawa, Ont. Write for samples and prices.

Work of the British Army in Mesopotamia.

A difficult problem which had to be solved by the British authorities of the army of occupation in Mesopotamia was how a supply of clean and pure milk could be obtained for consumption by the troops. Suitable milch cattle were not found in large numbers, therefore tinned milk had to be imported from overseas to meet the demand of the troops, and the lack of transport added greatly to the difficulty of a continuous supply. The large numbers of sick among the members of the forces, owing to the climate during the hot months and the difficulty involved in transporting them to the Indian shores for treatment, made it imperative that a supply of pure and fresh milk should be established, so that the sick could be treated in Mesopotamia.

With this object in view dairy farms were opened at the following centres:—Basrah, Amara, Kut, Baghdad, Ramadia, Hillah, Mosul and Nasiriyeh. These were under the expert supervision of officers from India and Great Britain, and the milk was produced under hygienic conditions. Each farm was equipped with up-to-date dairy plant and machinery, and the whole production was issued to hospitals. Large numbers of cattle were brought from India, and the herds were made up of cows and buffaloes. The Scinde type of cow predominated. The average yield of milk from an Indian cow is very low, but the herds are rapidly being improved by crossing with Ayrshire blood. This type has been found to be the best for the country. It is proved that there are vast possibilities for the dairying industry in Mesopotamia.

The Department of Agriculture, which has since the armistice taken over the control of the dairy farms is showing great activity. It is teaching the people the advantages and prospects awaiting them in agriculture and dairying. The Arab Sheiks have already come forward to purchase the surplus stock of bulls and cows from the Government farms, and it is hoped that with careful breeding the present stock of cattle in the country will be greatly increased and improved. The Arabs are intelligent, and they are eager to move forward with the times.

The soil is in most parts most fertile, and vast stretches of land which have not been farmed for generations are being brought under cultivation, and the Department of Agriculture and Irrigation can be congratulated on their efforts to open up the possibilities of agricultural development by the establishment of demonstration farms, poultry farms, wheat and cotton farms, etc., also in the construction of new canals, irrigation channels, dams, reservoirs, and the reconstruction of similar works which have long fallen into disuse.

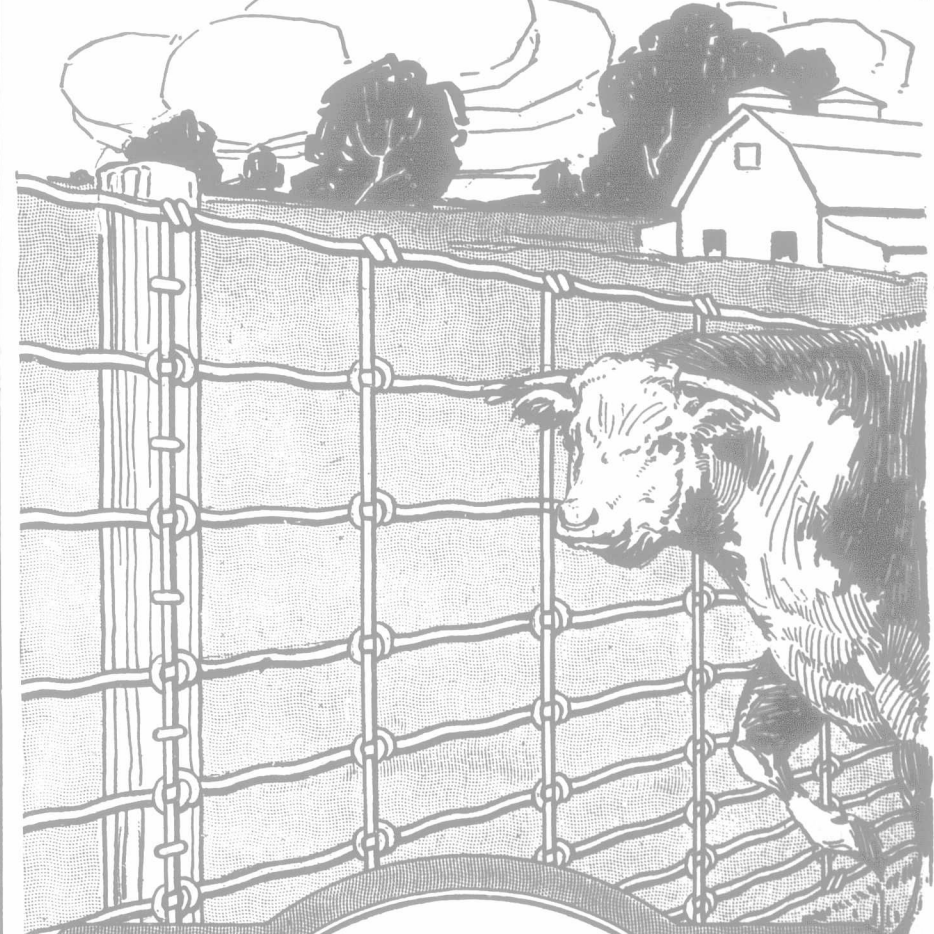
The waters of the Tigris and Euphrates are once again being utilized for irrigation purposes. Mesopotamia is again booming, dotted with meadows and pastures serving as grazing fields for live stock, and once more becoming the Garden of Eden.

Arabian lucerne on irrigation cuts from 18 to 25 tons per acre per annum. Indian cows give 5 per cent. butter-fat and buffalo cows from 7 to 10 per cent.

An indication of the growth of the Holstein-Friesian Association of America is indicated by the fact that the herd book has been published in three volumes this past year. The three volumes contain over 127,000 entries. A copy of this volume, which is Number 41, has been received at this office, and it contains a wealth of information of interest to Holstein breeders. Records of meetings, including the annual meeting, are contained in this last volume. The secretary informs us that there is only a limited number, and these may be had for the sum of four dollars. Breeders wishing to keep their set of herd books complete should order without delay.

"While we have suffered quite a loss recently through the windstorm that passed over this part of the country lately we feel that we could not do without 'The Farmer's Advocate', as we refer to it frequently regarding our farming operations, and many, very many, times receive valuable information."
OSBORNE SMUCK.
Wentworth Co., Ontario.

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The Fence that is making Canada Famous—
Always in place — Always pleases.

Absolute Security

When you go away for a day or turn in for the night, you are certain your stock is locked in—they can't get over, under or through the spaces—a perfect fence for hilly or uneven ground, through streams; protects poultry, ducks, geese, sheep and hogs. Can't sag or break down and will turn an unruly horse, or the strongest bull.

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CORRESPONDENCE and INSPECTION INVITED
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Buy Glenfoyle Shorthorns
9 bulls, all ages; 25 heifers and cows.
Herd bull 2,400-pound quality kind, which sire's dam and three nearest dam's milk records average over 9,000 pounds; also high-class yearling Clyde stallion. Come and see them.

SCOTCH-TOPPED SHORTHORNS
Three young bulls (red), for sale, thick sappy fellows; also 8 thick heifers, 2 years old, bred to a Scotch Clementina bull. These will be priced right. Come and see or address—
HENRY FISCHER
Stewart M. Graham - Lindsay, Ont. Bell Phone R. No. 2, Mitchell, Ont.

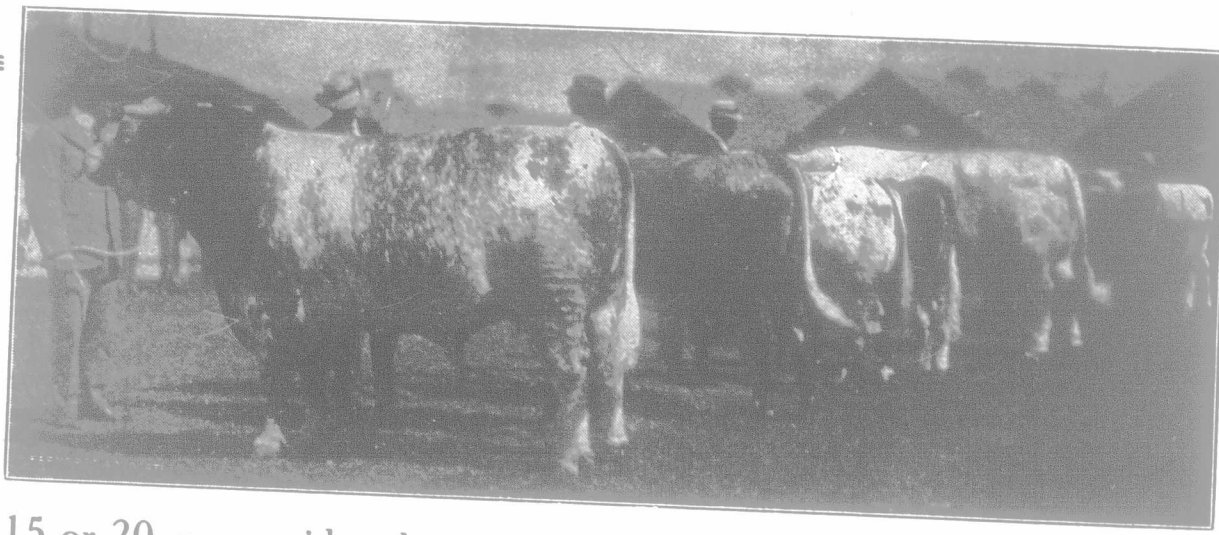
BLAIRGOWRIE SHORTHORNS
3 Imported bulls. 10 Imported females in calf or calf by side. 2 Scotch bred bulls. 5 Scotch bred cows with calves by side.
JNO. MILLER (Myrtle C.P.R. and G.T.R.) ASHBURN, ONT.

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Caustic
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A Safe, Speedy, and Painless Cure
Best BLISTER ever used. Takes
inflammations for mild or severe action.
Cures or Alleviates from Horns
PERSEDES ALL CAUSTIC
impossible to produce soap of blisters
is warranted to give satisfaction
bottle. Sold by druggists, or sent
free paid, with full directions for
descriptive circulars,
Williams Co., Toronto, Ont.

WESTERN ONTARIO Shorthorn Show and Sale

AT WESTERN FAIR GROUNDS, LONDON, ONTARIO
March 23rd and 24th 1920

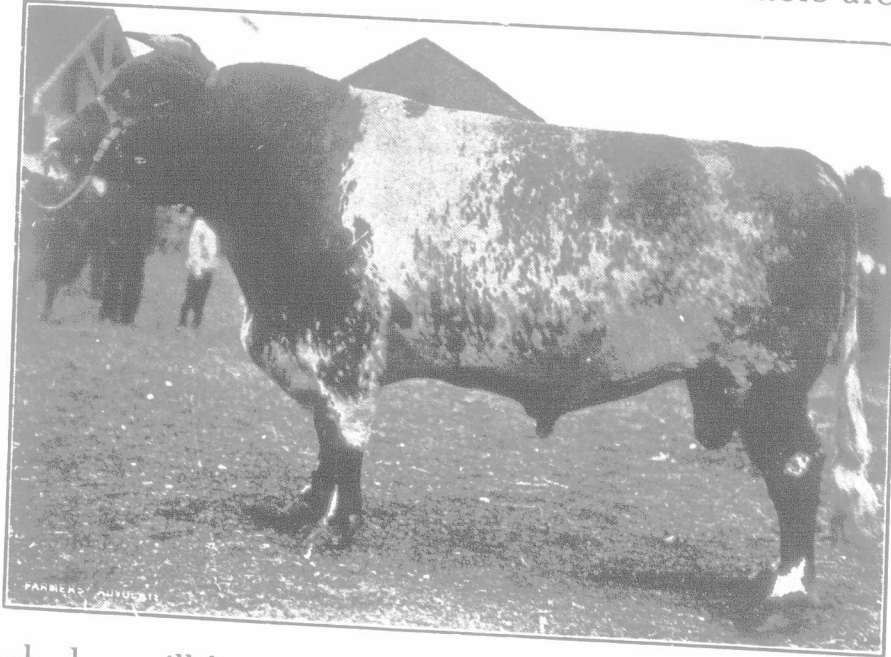
110
Cows



40
Bulls

There will be 15 or 20 cows with calves at foot, 30 cows and heifers well along in calf, and the remainder of the females younger heifers, mostly of breeding age. The bulls will all be of serviceable age, including the very best progeny of such famous sires as Escana Champion, Gainford Supreme, Collynie Landmark and other sires equally as popular. As a guarantee of the general high quality of the animals offered, the following names of contributors are given:

- Geo. Gier
- Wm. Waldie
- H. McGee
- Kyle Bros.
- R. & S. Nicholson
- R. S. Robson & Son
- Peter Stewart & Son
- F. McDonald & Son
- Harry Smith

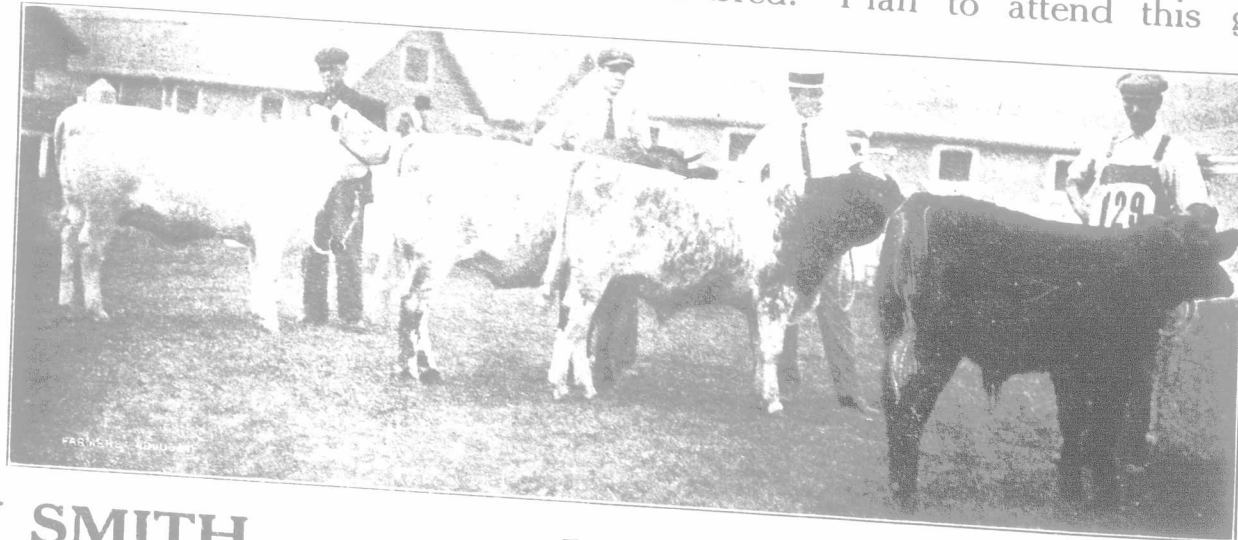


- F. W. Scott & Son
- John McLean & Son
- Geo Attridge
- E. Brien & Son
- Jos. White
- Percy De Kay
- J. T. Gibson
- Wallace Gibb

The animals sold each day will be shown in the forenoon and prizes awarded. The usual liberal guarantee will be given as to females bred. Plan to attend this great sale.

Cows
and Bulls
for all
Classes of
Buyers

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HARRY SMITH



Hay, Ontario, Sales Manager

PLASTER HILL STOCK FARM

The Home of Dual-Purpose Shorthorns

I have now a large number of cows running in the Record of Performance, and have a few bull calves for sale from these. Can also spare a limited number of females. Herd sires—Green Leaf Record 96115 and Commodore 130056. The two nearest dams of the latter average 12,112 lbs.

ROSS MARTINDALE - Caledonia, Ont.

Spruce Glen Shorthorns—When in want of Shorthorns visit our herd. We have 80 head to select from—Minas, Fames, Florences, Emilys, Red Roses and Elizas—good milkers; a few heifers for sale; also several young bulls of breeding age, thick, level, mellow fellows and bred just right.

JAMES McPHERSON & SONS, Dundalk, Ont.

Shorthorn Females—Shorthorn Bulls—We are now offering a number of choice heifers, good families and good individuals. Many are well forward in calf to our Roan Lady-bred sire, Meadow Lawn Laird. We also have bulls ready for service. Prices right. Satisfaction guaranteed.

J. K. CAMPBELL & SONS, Palmerston, Ont.

GLENGOW SCOTCH TOPPED SHORTHORNS

We have several thick, growthy bulls about a year old and sired by Prince Sultan; our present herd sire—a Roan Lady, by Lavender Sultan. The families represented are Golden Drop, Crimson Flower, Wedding Gift, Wimple and Kiblean Beautys. Also pricing females.

WM. SMITH, M.P., Columbus, Ont. Brooklin, G.T.R.; Myrtle C.P.R.; Oshawa, C.N.R.

PUSLINCH PLAINS SHORTHORNS

Five bulls for sale by Burnbrae Sultan =80325=.

A. G. AULD, - - - R. R. 2, - - - GUELPH, ONT.

Walnut Grove Scotch Shorthorns

We are offering choice young males and females from the best Scotch families and sired by Gainford Eclipse and Trout Creek Wonder Ind. If wanting something real good, write, or come and see us.

DUNCAN BROWN & SONS, Sheddon, Ont., P.M., M.C.R.

Shorthorn Bulls and Females—Herd headed by Ruby Marquis, a son of the great Gainford Marquis (imp.). Our calves now coming are all by this sire. We are also offering a few females in calf to him. Get our prices before buying elsewhere.

PRITCHARD BROS., - R. R. No. 1, - ELORA, ONT.

SHORTHORNS—CLYDESDALES

Just one bull left, 9 months old; sire, Lochiel (imp.); dam on the R.O.P.*Pure Scotch. Stallion colt, sired by Baron's Stamp. Fillies rising 2, 3, 4 and 5-year-old. Come, see, and be satisfied.

Brooklin G.T.R. and C.N.R. Myrtle C.P.R. WM. D. DYER, COLUMBUS, ONTARIO

DUAL-PURPOSE SHORTHORNS

Herd headed by Dominator 106224, whose two nearest dams average 12,112 pounds of milk in a year. Inspection of herd solicited.

WELWOOD FARM, - Farmer's Advocate, - London, Ont

20 Bulls—SPRUCE LAWN—100 Females—Clydesdales, Shorthorns, Yorkshires. Herd headed by Imported Golden Challenger 122384. A Rubyhill bred by Earl of Northbrook, by Ascott Challenger, bred by L. De Rothchild. Special bargains in farmer's bulls. Cows and heifers in calf, yearling and heifer calves. Yorkshires either sex. J. L. and T. W. McCamus, Cavan, C.P.R., Millbrook, G.T.R. and P.O., Ontario.

Spring Valley Shorthorns—Herd headed by Sea Gem's Pride 96365. We have a number of good bulls for sale, including the Champion Ivanhoe 122760, and his full brother also, an extra well bred Rosewood, and others. Write for particulars.

Telephone and telegraph by Ayr. KYLE BROS., Drumbo, Ont.

Preparing for the Breeding Season.

(Experimental Farms Note.)

By this time it should be fairly well decided what birds are to be used in the breeding pens.

In the main, dependence should be placed on hens, but it is always well to use some of the best pullets as by so doing a year's time is very often saved.

As none but the best pullets should have been carried over the second season there should be very little culling of the hens required. However there are always a few that have not kept in prime breeding condition, some may have put on too much fat—others may have shown a tendency to colds or other undesirable qualities. These should not be put into the breeding pens.

The hens intended for breeders should be carried through the winter in a normal condition without forcing or stimulation of any kind, so that they come to the breeding season full of vim and vigor.

To obtain and retain this condition, green feed should be plentifully supplied. Chopped clover, sprouted oats or mangels are all good.

The pullets used should be early hatched, vigorous and well matured. To these selected females should be mated either vigorous cock birds that have already been proven as breeders or strong, vigorous, well-matured cockerals that are not only the sons of high-producing hens but the brothers of pullets that have shown by their performance that they carry the quality for high production.

Do not make the matings too large. A good, vigorous cockerel of the general-purpose type on free range may successfully look after 15 or 20 or even more females but the same bird in confinement might "fall down" lamentably with more than half that number. Do not expect a cock to attend to the number of females that a cockerel would and if you are looking for early chickens, use cockerals at the head of the breeding pens as they

are much more reliable early in the season.

GEORGE ROBERTSON,

Assistant Dominion Poultry Husbandman.

John Miller, of Ashburn, whose advertisement of Shorthorns appears in another column of this issue, has many choice individuals in the stable. They are what Shorthorn breeders are looking for, as they are either imported or close to imported stock. Imported Newton Buttercup is a well-bred Butterfly, bred by Alex. Gordon, and has an imported bull calf by her side. Her breeding is all that could be desired. Lethenty Laura is a two-year-old heifer due to freshen shortly to Old Country service. A Cruickshank Dairymaid, due to freshen shortly, is a valuable cow for any person. There is also a Butterfly and a Golden Buttercup due to freshen this month to Scottish service. Home-bred females are equally good in breeding and individuality.

The bulls in the stable are. There is an imported Ury from a great dam which is backed by a choice line of sires. If in need of females or herd headers write John Miller, Ashburn, for fuller particulars.

The Ontario Department of Agriculture has recently published Bulletin 274, entitled "Sheep," written by Professor Wade Toole, of the Animal Husbandry Department, Guelph, and J. P. Sackville, the Associate-Professor at the College. This bulletin is a comprehensive work, dealing with every phase of the sheep industry and gives breeders valuable information about each breed of sheep, the care and management, feeds which have given best results, care during the lambing season, shearing, dipping, diseases, handling of wool, etc. This bulletin should be in the hands of every sheep breeder. If you have not already got a copy, write the Ontario Agricultural College, or the Ontario Department of Agriculture.

CLOVERDALE SHORTHORNS

Our herd of Scotch Shorthorns is headed by Cloverdale Marquis =115628=, an outstanding grandson of Gainford Marquis. Some of the best families are represented. Character and early maturity are our standards. We enter at London Show and Sale five choice yearling heifers and a bull. They are worth looking over. We offer (private treaty) a particularly well-bred Orange Blossom bull, roan, 1 year old, by Lancaster L.o.d. Champion and First aged bull Toronto, 1918. The dam of this young bull is Orange Princess 2nd, the highest-priced animal at the Watt-Gardhouse sale, May, 1918. Write your wants, or come and see. Visitors welcome and met at Exeter station if desired.

OESTREICHER BROS. :: Crediton, Ontario

Braeburn Scotch Shorthorns

150 Head 100 Breeding Females

Herd Headed by Nero of Cluny (Imp.)

I have at present twelve young bulls that are now nearing serviceable age. The majority are sired by my present imported herd sire, and we guarantee them as good individually as the get of any other sire in Canada. They are nearly all roans, and are priced to sell. Can also spare some breeding cows in calf to Nero of Cluny (Imp.).

CHARLES McINTYRE, Scotland, Ontario

Brantford 7 miles. Oakland 1 mile. L.E.N. Electric R.R. Cars every hour.

Shorthorn Bulls at Maple Hall—These five young bulls, from 5 to 18 months, are some of the best animals we ever raised—a roan Crimson Flower show bull calf (5 mos.); an extra good Duchess of Gloster (15 mos.); a red Crimson Flower (16 mos.), from a great milking family and a right good bull; a red Butterfly (10 mos.), a show bull; also a red Shepherd Rosemary (8 mos.). It will pay anyone looking for Shorthorn bulls to see these animals.

Claremont C.P.R. Greenburn C.N.R. D. BIRRELL & SON, Claremont, Ont.

SHORTHORNS

Our herd is headed by Blossom Boy 104424. Present offering: Three registered bull fit for service and five choice grade heifers two years old. Special prices for immediate sale.

M. O. JOHNSON, R.R. 1, Mossley, Ontario

Shorthorns—Males and females for sale—We are offering our herd sire, King Dora (imp.) 107291 =137372=, and a number of young cows with calves at foot by the above sire; also some young bulls and heifers.

Clyde mare, Lady Kinloch (imp.) 12248 in foal. SOCKETT BROS., Rockwood, Ont.

Scotch Shorthorn Bulls and Females—I have a nice offering of Scotch-bred females and one or two young bulls still on hand. The pedigrees are choice, the individuality is good—and the prices are right. If you want one Shorthorn female or a carload, come to Markdale.

THOS. MERCER, Markdale, Ont.

Imported Scotch Shorthorns For Sale—three imported bulls, one yearling, one two-year-old and our three-year-old herd sire, also a choice two-year-old Orange Blossom of our own breeding and three well bred bull calves about year old. Would consider exchanging an imported bull for Scotch females.

R. M. MITCHELL, - R. R. No. 1, - FREEMAN, ONT.

Newcastle Herd of Shorthorns and Tamworths for sale—Several young bulls ready for service; several heifers bred to Primrose Duke =10754=, and several young things of nice quality and breeding. Two young cows with heifer calves at foot, all of a good milking strain. A choice lot of Tamworths of both sex, and various ages, from noted prize-winning stock. Pair of registered Clydesdale fillies rising 3.

Long distance Phone. A. A. COLWILL, R.R. No. 2, Newcastle, Ont.

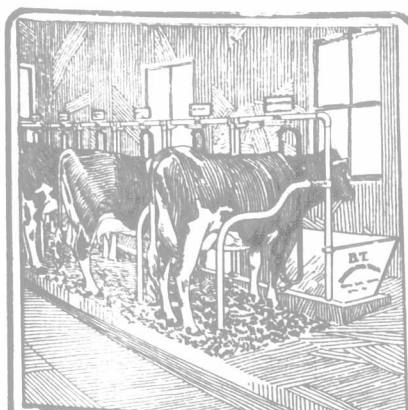
Cedar Dale Scotch Shorthorns—Pleasing Cattle and Pleasing Pedigrees—Senior Sire, Excel-sior by Gainford Marquis (imp.). Junior sire, Matchless Duke by Gainford Matchless, the \$12,000 son of Gainford Marquis (imp.). I have a number of choice bred heifers, and must sell a few to make room. Also have a couple of Scotch-bred bulls. Prices right at all times.

FRED. J. CURRY, Markdale, Ont.

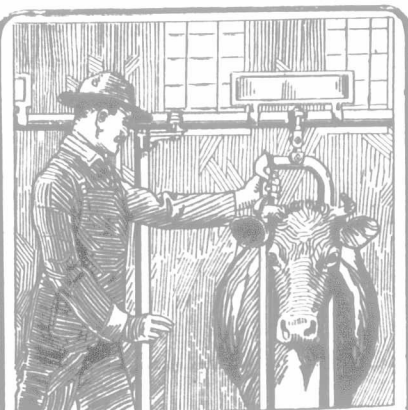
SPECIAL OFFERING AT PINEHURST STOCK FARM

We are now offering three splendid dual-purpose cows, one a daughter of "Jean's Lassie," one a granddaughter of "Mimosa" imp., and the other is O.A.C. Princess Darlington. These are all good milkers and choice breeders. We have one choice 10-months-old roan bull from a three-year-old R.O.P. heifer which milked up to 55 lbs. in a day; also two younger ones coming along, all are priced for quick sale as we are short of feed. We will be pleased to have you visit us at any time and inspect our stock.

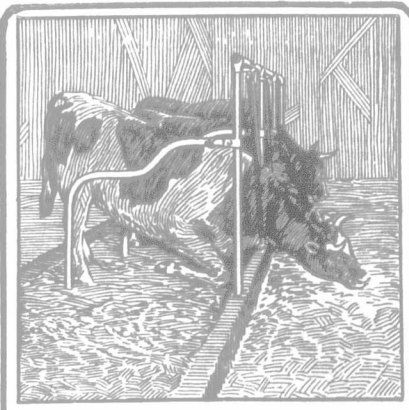
G. W. CARTER, R. R. 4 Ilderton, Ont.



1. The BT Stanchion meets every possible requirement of a satisfactory cow tie. It will hold the strongest animals. The lock is absolutely secure. It ties them so that they cannot move forwards or sideways when standing up. All droppings must go in the gutter, not on the cattle stand.



2. Even if you have gloves or heavy mittens on—you can open the BT Stanchion with one hand. The BT Stanchion is mounted on a heavy swivel, which allows the stanchion to turn to right or left. For this reason the cow can turn her head in comfort.



3. At the bottom, the BT Stanchion is held by a clevice which allows the bottom of the stanchion to swing forward as the animal rises. This prevents bruised shoulders. Send in the Coupon below and get full particulars of the BT Stanchion. It will pay you.



Send this coupon for the 352-page Barn Book. Tells how to plan and build the barn, how to ventilate, how to frame, how to save steps, labor, time and feed. This book saves you hundreds of dollars in building.

BEATTY BROS. LIMITED
K482 Hill St., Fergus, Ont.

I intend to build about.....
I intend to remodel about.....
I keep.....Cows
My name is.....
My Post Office is.....
R. R. No.Prov.....
Nearest Railway Station.....
If you live in Maritime Provinces, please give Lot and Concession. If you live in Western Provinces, please give Section, Township and Range.....

Sale
40 Bulls

in calf, and the
all be of service-
pion, Gainford
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& Son
ite
De Kay
bson
e Gibb
The usual
reat sale.

Cows
and Bulls
for all
Classes of
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Cream Wanted

Ship your cream to us. We pay all express charges. We supply cans. We remit daily. We guarantee highest market price.

ONTARIO CREAMERIES Limited
LONDON ONTARIO

Maple Shade SHORTHORNS

A dozen young bulls imported and my own breeding at moderate prices.

W. A. DRYDEN
Brooklin - - Ontario

IMPORTED DUAL-PURPOSE Shorthorns

If you require a bull bred on the English system for milk and beef, we can sell you one of choice breeding, and in every way a good individual—one which will add value to your herd. We have a fine selection of young bulls at present, also English Large Black pigs.

CALL OR WRITE.
LYNNORE STOCK FARM
F. W. COCKSHUTT, Brantford Ont.

Lump Jaw

The only reliable treatment for Lump Jaw in Cattle.
Fleming's Lump Jaw Cure
Price \$2.50 a bottle. Sold under a positive guarantee since 1906. Your money back if it fails. Write for Fleming's Vest-Pocket Veterinary Adviser 96 pages and illustrated. It is free. Fleming's Chemical Horn Stop. A small quantity applied when calves are young will prevent growth of Horns. A 50c tube sent postpaid is enough for 25 calves.

FLEMING BROS., Chemists,
75 Church St., Toronto, Ont.

Mardella Dual-Purpose Shorthorns

8 choice young bulls; 30 females, cows and heifers. All of good size, type and breeding. Herd headed by The Duke; dam gave 13,599 lbs. milk, 474 lbs. butter-fat. He is one of the greatest living combinations of beef, milk and Shorthorn character. All priced to sell. Write, call or phone.

THOMAS GRAHAM, Port Perry, R.R.3, Ont.

Shorthorns Clydesdales Berkshires

Two Scotch bulls—Sailor King 135992, Red Sailor 130806. One Clyde mare in foal, two fillies. Three boars fit for service; also young pigs about three months old.

JOSEPH BREWSTER
R.R. No. 1 Seaforth, Ontario

DUAL-PURPOSE SHORTHORNS

Present offering: Six young bulls, Reds and Roans, also a number of females. They have size, quality and breeding from good milking dams. Prices moderate. Satisfaction guaranteed.

CHAS. GRAHAM - Port Perry, Ontario

Evergreen Hill Farm—R.O.P. Shorthorns

Present offering: Two 12-month bulls by the R.O.P. bull St. Clare =84578=, also a few heifers and heifer calves.

S. W. JACKSON, Woodstock, Ont.

Scotch Shorthorns—Herd headed by Master Marquis =123326=, by Gainford Marquis. Stock of either sex for sale. Also Oxford Down ewes.

GEO. D. FLETCHER, Erin, R.R. 1, Ont.

DUAL-PURPOSE SHORTHORNS

Herd headed by Darlington Major Maude 101212, son of Darlington Major 91279—114994. For sale: a number of young bulls and females. Choice reds and roans. **R. H. & WALTER S. SCOTT,** Tillsonburg, Ont. Box 231

Shorthorns—I have four choice roan heifers, excellent milking strain, three will calve in May; all are bred to Transformer =129468=. Also one promising young bull. Prices right.

Oliver McCulloch, R.R.N o. 2, Oshawa, Ont.

Questions and Answers.

Miscellaneous.

Selling Clover Seed.

Is it lawful to sell uncleaned red clover seed to one's neighbor?

Ans.—The above question was answered in a recent issue of our paper, but our attention has been drawn to it by one of our subscribers. When a man sells ungraded clover seed to a neighbor for seeding purposes, he is taking the risk of selling seed which will not grade No. 3 or in other words be termed "Rejected" in an official analysis. In doing so, Section 8 of the Seed Control Act has been violated. Thus, one should be very careful not to sell seed that is in danger of being put in the rejected class.

Trespassing.

A street runs north and south. A is riding northward on a bicycle on the sidewalk, on the left side of the street. B drives a car from the right side of their street up into a driveway on another man's property. He stops one or two feet from the sidewalk and turns his head to the right. A thinks he is going to speak to some men, and consequently does not slow up. B suddenly backs the car, damaging the bicycle. Is there any law which states which side of the street a bicyclist should ride on? Can A collect damages from B? T. P.

Ans.—A bicyclist is supposed to turn to the right the same as with any other vehicle. In most municipalities he is not supposed to ride on the sidewalk. As A was transgressing himself, he is not in a favorable position to collect damages from B.

Miscellaneous.

1. If I write a novel what must I do to get it published?
2. How is an author paid for the work?
3. Is it possible to graduate for a civil engineer in two years?
4. Where is the subject taught?
5. Is civil engineering taught in technical schools? C. M.

Ans.—1. The manuscript must be submitted to the publishers for their consideration. Sufficient money should be enclosed for the return of the manuscript should it not be accepted.

2. It depends on the quality of the work. Some authors sell their copy outright, while others arrange for a royalty.

3. We understand it is a four-year course.

4. This subject is taken up at the School of Practical Science.

5. We believe that it is.

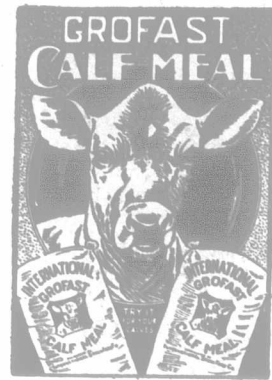
Egg-Eating.

How can hens be broken off the habit of eating eggs. The flock is in good condition. I am feeding them on middlings, buckwheat, wheat, corn, oats and barley. They get all the meat they desire. During the past few days they have been laying a few soft-shelled eggs. They were without oyster shell for a couple of weeks. How can a trap-nest be built? W. R.

Ans.—Egg eating is a habit which if once contracted is very hard to break the hens of. Filling an egg shell with red pepper is claimed by some to break the habit. The trouble has likely been started, due to the hens getting a taste of the egg owing to some soft-shelled ones being broken. Having the nests in a dark place has been found to be a good method of preventing the habit of egg eating. A trap-nest is not practicable unless someone can be around the flock most of the time to release the hens. A box with an 8-inch square opening may be used, having two compartments. As the hen enters the second compartment, her body pushes on the trap which closes the front opening.

The annual auction sale of Clydesdales, Percherons, Shires and Belgians, to be held at the Union Stock Yards, Toronto, was cancelled for this year, owing to the fact that breeders have not consigned sufficient animals to warrant the holding of the sale. This sale has given breeders an opportunity of disposing of their surplus pure-bred stock by auction.

BETTER THAN NEW MILK



International Grofast Calf Meal supplies the young calf with all the elements necessary for quick growth—and keeps them sleek, thrifty and lusty.

Grofast Calf Meal will raise your calves just as well as new milk and at one-third of the cost. It is endorsed by successful farmers and breeders throughout the Dominion.

Bold in 25, 50 and 100 pound bags
For guaranteed results demand Grofast and refuse substitutes

Dealers everywhere sell Grofast Calf Meal
Or write us

International Stock Food Co., Ltd. Toronto, Canada

See my Three Shorthorn Bulls and Three Heifers

That will be at the London, Ontario, Shorthorn Show and Sale, March 23rd and 24th. Anyone wanting a herd or show bull should see these bulls before buying.

J. T. Gibson - Denfield, Ont.

Burnbrae Shorthorns

Eighty-three years without change we have been breeding Scotch Shorthorns. The foundations of many of the best herds in America were laid from our farms.

I am in a position to furnish you now with the BEST in FORM and in BREEDING that can be found any place. Twenty-five young bulls, from small calves to fifteen months old. Sixty-three cows and heifers, every one of them bred right, not a plain looking one in the lot. Every animal that I have sold in two years has been satisfactory; the most of them sold by letter. I can satisfy you with the best in what you want at a price that will give you a chance, and I will pay the freight to your station. A Grand Champion and the son of a Grand Champion at head of the herd.

Post Office, Telegraph, Telephone and Station is Stouffville, Ont.

ROBERT MILLER :: Stouffville, Ont.

Shorthorn Bulls for Sale at Bargains for Quick Sale

Having purchased the \$3,100 bull, **Augusta Emblem**, at the Dryden-Miller sale, I am offering my 4-year-old herd bull, **imp. Marigold King** (108395), sire **British Consul**, dam **Marigold Ruby**, for sale at the low price of \$500. Marigold King is a red, and has type to burn, he is a sure sire and a good producer, as my young stock will prove in the near future. I also offer the red 15-month **Missie bull**, **Lord Beaverbrook** 132565, sired by Marigold King, dam Dymont's Missie 131299, at the low price of \$700. He is a grandson of **Missie 166th** (imported) 34299, and his pedigree contains such great bulls as **Missie Champion**, **Captain Ingleswood**, **Scottish Archer**, **Athabasca**, etc. **Lord Beaverbrook** is a winner and a show bull alone is worth more than the price asked. I also have 2 young red bulls, 8 months old, a **Missie** and a **Ruth**, that I am offering at exceptionally low prices. Here is quality at bargain prices, and I advise you to act quickly, as these bulls have to be sold at once, and the prices quoted are away below the value of the animals offered. Farm 10 minutes' drive from Barrie station. Apply to

HAROLD M. DYMENT :: Barrie, Ontario

The Salem Herd of Scotch Shorthorns

HERD HEADED BY GAINFORD MARQUIS, CANADA'S PREMIER SIRE

Write us about the get of Gainford Marquis. They have won more at Toronto and other large exhibitions than those of any other sire. We still have a few sons to offer, as well as females bred to Canada's greatest sire.

J. A. WATT, Elora, Ontario

A NEW IMPORTATION OF FORTY SCOTCH SHORTHORNS

arrived home Dec. 17th. From our herd of 125 head we can offer a large selection in choicely-bred bulls and females. Anyone in need of foundation stock may find it to their advantage to look over our offering before making any purchases.

J. A. & H. M. PETTIT, Freeman, Ontario
Burlington Jct., G.T.R., only half mile from farm.

GRAND RIVER DUAL-PURPOSE SHORTHORNS

Herd headed by Prince Lavender whose dam gave 16,596 lbs. of milk as a four-year-old. A real choice red bull, 11 months old, for sale now—his dam is a splendid milker. Also have a few good bull calves coming on.

HUGH A. SCOTT, CALEDONIA, ONT.

Irvin Scotch Shorthorns

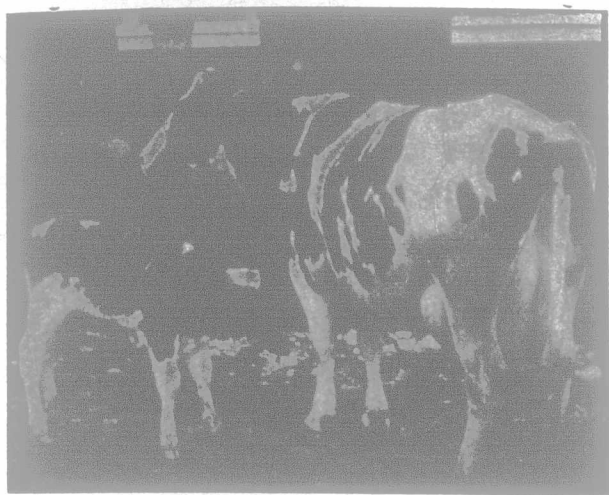
—Herd Sire Marquis Supreme—by Gainford Marquis (imp.). We have at present three young bulls of serviceable age and one younger, all sired by our herd sire and from Scotch bred dams. Good individuals and the best of pedigrees. Also pricing a few females.

J. WATT & SON, ELORA, ONT.

London District Holstein Breeders

Hold their Annual Spring Sale at
WESTERN FAIR GROUNDS

Tuesday, March 16th, 1920



FIFTY-FIVE HEAD OF CHOICE

Pure-bred Holstein Cattle

Consisting of new milkers, springers and heifers, and a number of young bulls ready for service. A number of the cows are bred to high-class sires.

H. C. HOLTBY
President, Glanworth, Ont.

J. McMILLAN
Secretary, Glanworth, Ont.

Brant District Holstein Breeders' SEMI-ANNUAL SPRING SALE

Fifty Females **60--HEAD--60** Ten Young Bulls

At the old Commercial Stables, City of

Brantford, Ontario

Wed., March 31st, 1920

12.30 o'clock p.m. sharp

We have catalogued for this sale 50 choice females and ten well-bred young bulls. The entire offering in females are fresh cows or due about sale time. Several are equally as good or better than the \$855 cow which topped our last sale.

The young bulls are all well grown and of the herd sire sort—the records of their dams running up to 20,000 lbs. of milk in R. O. P.

If you want Holsteins—Come to Brantford and get the best.

For catalogues, address—

N. P. SAGER, Secretary, St. George, Ont.
WILBER LEMON, President
ALMAS & THOMAS, Auctioneers

Questions and Answers. Miscellaneous.

Unthrifty Pigs.

I had a bunch of hogs last fall that did not seem to do well. They appeared to have a disease that affected their skin. They became scurfy and dry in the hair. The ration consisted of shorts, bran, mixed meal and a little ground flax, with water and milk. I sprayed the pens with a disinfectant and the pigs appeared better each time I did it. When the weather became cold I had to confine them to the pen, and I lost several of them. One veterinarian pronounced the disease mange, and said it was not contagious; another one said it was a form of indigestion. I cleaned the pens thoroughly, and whitewashed them, adding a little carbolic acid to the wash, then I sprinkled dry lime on the floor. From that time on they began to improve and are now doing remarkably well. I am feeding the same grain ration with alfalfa added. My experience in feeding small pigs is that the feed should be mixed sloppy before feeding.

Note.—The thorough cleaning and whitewashing of the pens is a practice

HOLSTEIN BULLS FROM 30-lb. DAMS

If you want 30-lb. bulls—good individuals—and priced right—you should see my present offering. I also have lower priced bulls and am offering females bred to Ormsby Jane Burke. Correspondence solicited. R. M. HOLTBY, Manchester G.T.R.; Myrtle C.P.R.; PORT PERRY, Ont.

CLOVERLEA HOLSTEIN FRIESIANS

We are offering this week two choice bulls, one ready for service, from a 25-lb. dam. Priced right for a quick sale. For price and particulars, apply to GRIESBACH BROS., R. R. No. 1, COLLINGWOOD, ONTARIO.

Minster Farm Holstein Herd Sires—We have three sons of our former herd sire, Pride King Sylvia Artis. One is from an 18,262-lb. 3-yr.-old heifer; one from an 18,886-lb. cow, and the other from a 14,762-lb. 2-yr.-old. The dam of their sire has 19,500 lbs.—figure up their averages. All are show calves and priced right. RICHARD HONEY & SONS (G.T.R. station, Hastings) DARTFORD, ONT.

Evergreen Stock Farm Registered Holsteins

Our motto: Choice individuals—the profitable producing kind. Nothing for sale now, but get in line early for your next herd sire. A. E. HULET, Oxford Co., G.T.R. NORWICH, ONTARIO

CHOICE HOLSTEIN FEMALES!!

I could spare ten or twelve two and three-year heifers, daughters of Baron Colantha Fayne and Louis Prilly Rouble Hartog. All are bred to freshen early to our 34-lb. sire. Also have a few young bulls, one from a 29.95-lb. cow that has milked 105 lbs. per day. Don't delay, this offering is priced right. T. W. McQUEEN, Tillsonburg, Ont.

PIONEER FARM HOLSTEINS

My present sales' list includes only bull calves born after Jan. 1st, 1919. These are priced right. WALBURN RIVERS & SONS, R.R. No. 2, Ingersoll, Ontario

ROWAN RIVER STOCK FARM

At present we have 3 bulls of serviceable age, sired by a 31-lb. sire from R. O. M. and R. O. P. dams. Younger ones sired by a grandson of May Echo Sylvia; his two nearest dams average 832 lbs. milk, 33½ lbs. butter for 7 days. Priced to sell. PETER B. FICK, PORT ROWAN, ONT.

MONTROSE HOLSTEIN - FRIESIAN FARMS (The Home of 20,000-lb. Cows)

Present offering (at right prices), four young bulls out of R.O.P. cows with records of 20,000 lbs. milk and over. See this herd and our young bulls in particular before buying elsewhere. Visitors always welcome.

R. J. GRAHAM, - Montrose House Farms - BELLEVILLE, ONTARIO

Raymondale Holstein-Friesians

A herd sire of our breeding will improve your herd. We have sons of our present sire, Pontiac Korndyke of Het Loo (sire of \$12,750 Het Loo Pieterje), and also sons of our former sire, Avondale Pontiac Echo. Several of these are of serviceable age, and all are from good record dams. Quality considered, our prices are lower than anywhere else on the continent. Their youngsters should not remain long. Write to-day.

RAYMONDALE FARM, Vaudreuil, Que. D. RAYMOND, Owner, Queen's Hotel, Montreal

Hamilton House Holstein Herd Sires

Our highest record bull for sale at present is a 4 months calf from Lulu Darkness 30.33 lbs. and sired by a son of Lulu Keyes 36.56 lbs. His two nearest dams therefore average 33.44 lbs. and both have over 100 lbs. of milk per day. We have several older bulls by the same sire and from two and three-year-old heifers with records up to 27.24 lbs. All are priced to sell.

D. B. TRACY, Hamilton House, COBOURG, ONT.

Hospital for Insane, Hamilton

Holsteins, yes! All bulls of serviceable age are sold, but several of six months and younger, from one of the best sons of King Segis Alcartra Spofford, and our best dams will be sold at reasonable prices. APPLY TO SUPERINTENDENT

HOLSTEIN HERD AVERAGES 18,812 LBS. MILK

A herd of 13 pure-bred Holsteins last year averaged 18,812 lbs. milk and 638.57 lbs. fat. Do you realize the money there is in such cows? It is estimated that the average annual yield of all cows in this country is under 4,000 lbs. These 13 cows produce as much milk as 92 cows of the 4,000-lb. class.

Why feed, milk and shelter any more cows than you need to produce the milk you require? If interested in HOLSTEIN CATTLE send for booklets—they contain much valuable information. HOLSTEIN-FRIESIAN ASSOCIATION OF CANADA W. A. CLEMONS, Secretary, ST. GEORGE, ONT

"Premier" Holstein Bulls Ready for Service—I have several young bulls from dams with 7-day records up to 32.66 lbs. of butter, 755.9 lbs. of milk, with 110 lbs. of milk in one day—over 3,000 lbs. in 30 days. All are sired by present herd sire, which is a brother to May Echo Sylvia. Step lively if you want these calves. H. H. BAILEY, Oak Park Farm, Paris, Ont.

SUNNYBROOK FARM HOLSTEINS

We are offering for quick sale one 24-lb. bull and one 26-lb. bull ready for service. Both are sired by a 33-lb. son of the great King Segis. JOSEPH KILGOUR, NORTH TORONTO, ONT

Bulls advertised in Christmas Number are both sold

We are offering a bull calf sired by Hill Crest Rauwerd Vale, out of a 23-lb. jr. 4-year-old dam. Price \$300. Bull calf by same sire, out of a two-year-old heifer. Price \$100. W. FRED FALLIS, R. R. 3, MILLBROOK, ONT.

HOLSTEINS - WORLD'S BEST STRAINS

Bulls all ages for sale. Yearlings fit for immediate service, all sired by my grand herd bull ECHO SEGIS FAYNE, by BRATHER to World's 50-lb. 7-day cow. Prices very reasonable. SUNNYSIDE STOCK FARM, STANSTEAD, QUE.

30-lb. Bull for sale—Lord Lyons Hengerveld, his 5 nearest dams average 30.94 lbs. of butter in 7 days. Sire, King Lyons Hengerveld whose 5 nearest dams average 31.31. Dam Madoline Dolly Dekol, a 25-lb. daughter of Baroness Madoline R.O.M. 34.48. R.O.P. Butter in 1 year 1,043.75. Individually as good as his breeding; coming 8 years old in April; must sell to avoid in-breeding. Priced right, if interested write at once. We also have a few young bulls left. Jacob Mogk & Son, R.R.1, Tavistock, Ont. Innerkip Phone 1 on 34

Summer Hill Holsteins—We have the best bunch of Holstein bulls ever offered at our farm. Their dams have records up to over 34 lbs. of butter in 7 days. All are sired by a bull with a 34-lb. dam. One is a full brother to the Grand Champion bull at Toronto this year. Prices reasonable. D. C. FLATT & SON, R.R. No. 2, Hamilton, Ont.

Cedar Dale Farm—The Home of Lakeview Johanna LeStrange, the \$15,000 sire—He is the son of the 38.06-lb. cow, Lakeview LeStrange, and is our chief sire in service. We are offering a few females bred to him and also have a few bull calves sired by him at right prices. Other older bulls, sired by our former herd sire, Prince Segis Walker, son of King Segis Walker. A. J. TAMBLYN, Cedar Dale Holsteins - (G.N.R. station one mile) - Orono, Ontario

which should be followed in all piggeries. If it were more scrupulously done, the result in feeding winter pigs would possibly be more successful. A sort of mange or eczema frequently breaks out on unthrifty pigs, which may be the cause of unthriftiness and in many cases stunts them. The adding of alfalfa to the ration should also have something to do with the improvement in the pigs.—EDITOR.

Warts.

I have noticed several enquires for a recipe for removing warts on cattle. I have used the following, with success: One dram of arsenic and two drams of lard mixed. Heat the lard until thoroughly melted, put in the arsenic, and stir until the lard is cool. Put a little on the wart every three or four days and it will soon disappear. E. E. H.

Note.—We have had no experience with the above remedy, but pass it on for what it is worth. We do know that caustic, or butter of antimony, will remove a wart with one, or, at most, two applications. Warts with constricted necks may be cut off by a silk thread, and small warts have been removed by several applications of castor oil.—Ed.

FOUNDED 1880
NEW MILK
Grafast Calf Meal supplies calf with all the elements necessary for quick growth—and keeps them healthy and lusty.
Calf Meal will raise your calves on a new milk and at one-third of the cost. It is endorsed by successful farmers throughout the Dominion.
25, 50 and 100 pound bags
Proved results demand Grafast and refuse substitutes
Everywhere sell Grafast Calf Meal Or write us
Ltd. Toronto, Canada

Shorthorn Bulls
Heifers
Ontario, Shorthorn
and 24th. Anyone
should see these bulls
Denfield, Ont.

Shorthorns
have been breeding Scotch
of the best herds in America
with the BEST in FORM
place. Twenty-five young
old. Sixty-three cows and
plain looking one in the
two years has been satisfac-
I can satisfy you with the
I'll give you a chance, and I
Grand Champion and the son
Station is Stouffville, Ont.
Stouffville, Ont.

Bargains for Quick Sale
at the Dryden-Miller sale.
old King (108395), sire British
price of \$500. Marigold King is
a good producer, as my young
red 15-month Missie bull, Lord
Dymont's Missie 131299, at the
166th (imported) 34299, and his
champion, Captain Ingelwood,
brook is a winner and a show bull
ain to the purchaser, his breeding
have 2 young red bulls, 8 months
exceptionally low prices. Here is
quickly, as these bulls have to be
the value of the animals offered.
Barrie, Ontario

Scotch Shorthorns
CANADA'S PREMIER SIRE
sires. They have won more
than those of any other
to offer, as well
greatest sire.
Elora, Ontario

ROSE SHORTHORNS
6,596 lbs. of milk as a four-year-old
, for sale now—his dam
ave a few good
on.
CALEDONIA, ONT.
—Herd Sire Marquis de
premier—by Galford Mar-
quis (imp.). We have at
sires, all sired by our herd sire and from
ees. Also pricing a few females.
ELORA, ONT.

**75
HEAD**

NORFOLK
HOLSTEIN
BREEDERS'

**75
HEAD**

ANNUAL SALE
HAGERSVILLE, ONT.

Thursday, April 1st, 1920
11 a.m. sharp. Hot lunch at noon

In offering this consignment of

**60 REGISTERED
HOLSTEINS**

we feel that it represents the most uniform, best bred, select allotment this club have ever submitted to the buying public. Sires such as King Segis Pontiac Konigen, Avondale Pontiac Echo, (son of May Echo Sylvia) also King Pontiac Susie and King Segis Alcartra Joseph, two long distance bulls of first rank, and other sires equally good, **have left and are leaving** their mighty impressions in the form of choice individuality and outstanding production. Everything over six months sold subject to tuberculin test.

Write for catalogue to

W. H. CHERRY, Sales Manager

J. ALEC WALLACE
Sec.-Treas.

JACK DEMING
Auctioneer

Important Dispersion Sale

**Thirty-five
Pure-bred
Holsteins**

The entire high-testing Glenroe Holstein Herd, selling at the farm, one and a half miles east of

**Thirty-five
Pure-bred
Holsteins**

INGERSOLL, ONTARIO
Lot 16, Concession 1, West Oford

Thursday, March 18th, 1920

**35 HIGH-TESTING
HOLSTEINS**
All bred on the farm

The Glenroe herd is one of the select small herds of Oxford County—with two exceptions, every animal bred on the farm. The females are all young and have never been forced. The records, although not large, were each made under strictly commercial conditions, and only one was made at full age. There is not a two-year-old, three-year-old or a four-year-old but what should increase their record materially at this freshening. If you like to make your selections from a breeders' herd, you should attend this sale. There will be no reserve.

Sale begins at 1.30 p.m. Lunch served at noon.
Convoynances will meet passengers off of noon trains at the Atlantic House, Ingersoll.

Write for catalogue. **MOORE & DEAN, Auctioneers.**

Fred. V. Heeney, GLENROE FARM Ingersoll, Ontario
(This sale follows the Oxford County Holstein Club Sale at Woodstock, March 17.)

Questions and Answers.
Miscellaneous.

Itchy Legs.

Last fall the legs of my horses swelled and broke out in a rash. The hair came off and the legs were very itchy. One veterinarian pronounced it mud fever. I bathed them with sugar of lead and they seemed to heal up, but last week they broke out again. I am using the team every day. Will the snow hurt them.

Ans.—This trouble was brought about owing to the horses working in mud last fall. The legs become feverish, inflammation sets in, and then they break out in sores. Purge with 8 drams aloes and 2 drams ginger, if the mares are not in foal. It may be necessary to poultice the legs for a few days, and then apply a solution of corrosive sublimate, 30 grains to a pint of water. This should be heated

to about 105 degrees Fahrenheit, and rubbed well into the skin twice daily until the itchiness ceases. Using the sugar of lead is a very good treatment. The legs should not be allowed to get wet if you wish them to heal rapidly, and when they do get wet they should be rubbed dry.

Dipping Tank.

Where can a person get a dipping tank for sheep? Which would be the better, wood or galvanized, and what would the cost be?

Ans.—A satisfactory tank may be built of ordinary tongue-and-grooved lumber. Ordinary lumber may be used and have the inside lined with galvanized iron. Where large flocks are handled, it may pay to construct a cement vat. The tank should be set in the ground so that the top would be about 2 feet above the ground surface. For ordinary use a tank 8 feet long at the top and 3 feet

at the bottom, with a width of 2 feet on top sloping to 1 foot at the bottom, and a depth of 4 feet, would prove satisfactory. The difference in length between top and bottom is due to one end having a slope on which cleats are fastened to allow the sheep to walk out of the vat. The cost depends on the kind of material used. The all-wood vat would serve the purpose, but would be more permanent if lined with galvanized iron.

Miscellaneous.

1. Where can I get some good merchandise to handle?
2. If a woman owns property, does she have to break the roads in the winter when she cannot secure someone to take her place?
3. Can a person learn the veterinary profession through a correspondence school?

Ans.—1. If you make it known that you are in a position to handle merchan-

dise, undoubtedly wholesale firms whose goods were not handled in your locality would get in touch with you.

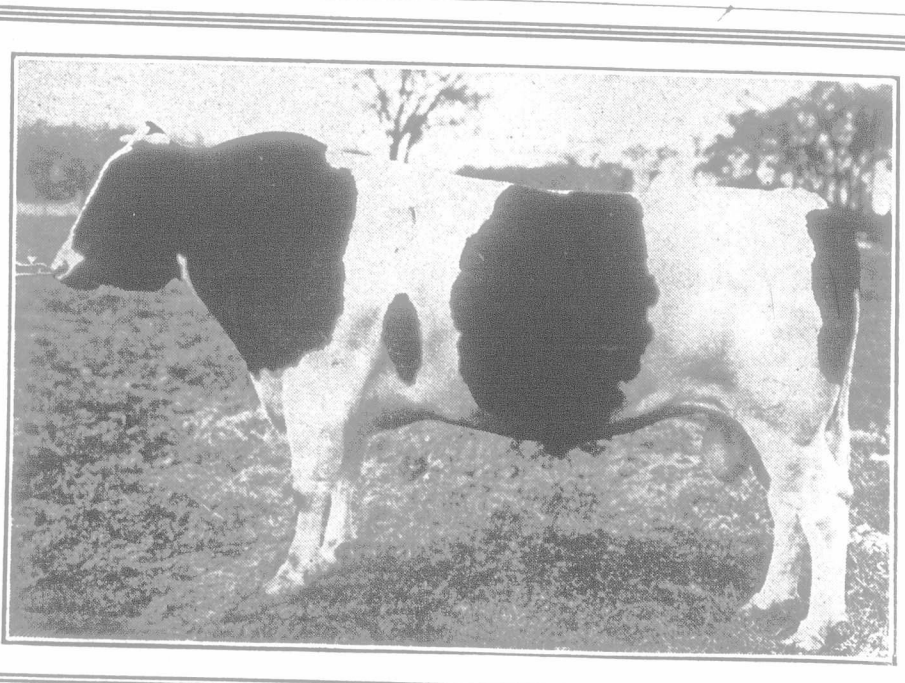
2. It depends on the local municipal regulations. Usually one or two of the ratepayers break the road, and they are allowed time on their statute labor.

3. There are correspondence schools teaching veterinary science, but a veterinary college is the only proper place to secure an education to make one a qualified veterinarian.

Concrete Wall.

How much cement and gravel will be needed for a wall 42 by 35 feet, 8 inches thick and 8 feet high, the usual windows and doors to be deducted.

Ans.—It will require approximately 32 cubic yards of gravel and 28 barrels of cement, provided the material is mixed in the proportion of one to eight.



OXFORD COUNTY HOLSTEINS

**80
HEAD**

ANNUAL SPRING SALE

Sixty-Four Females - Sixteen Young Bulls

**80
HEAD**

WOODSTOCK, ONT.

Wednesday, March 17th, 1920

Listing the greatest number of fresh cows we have ever offered
MORE HIGHER RECORD BULLS
Eighty Breeding Cattle Consigned by Oxford's Leading Breeders

We have catalogued for this sale 64 choice females and 16 of the best young bulls of the year. Among the former are 16,000-lb. three-year-olds; three-year-olds that have produced 707 lbs. of butter in the year; 25-lb. cows in calf to 30-lb. bulls; 20-lb. cows in numbers and dozens that on private have milked up to and beyond 60 lbs. per day. In young bulls we have 16, all of the herd sire sort, with the records of their dams running up to 30 lbs of butter in 7 days—a choice lot of youngsters, well grown and well bred.

The Place to Buy the Best is where they Breed the Best
COME TO WOODSTOCK

For catalogues address:

GEO. C. CURRIE, Secretary
Ingersoll, Ont

ANDREW DUNN, President
Auctioneers:
MOORE, DEAN & PULLIN

MARCH 11, 1920

Questions and Answers.
Miscellaneous.

Daguerreotype. Hair Etc.

I had a picture and when I used a cloth to wipe it the features were obliterated. What can I do to have it restored? What would the gold frame it was in be worth? What would combings be worth?

Ans.—Nothing can be done to restore the daguerreotype. Ask a jeweller in regard to the gold; we have no means of knowing how much it would be worth. You will have to apply to the nearest hair store to you for information re combings. In almost every town there is a place where "switches" are made up.

Seeding to Clover.

My son purchased a farm last fall, but does not get possession until March, 1921. He has the liberty of plowing this fall. Can the present tenant stop him from seeding with clover this spring?

E. A.

Ans.—The tenant might forbid him, on the ground of trespassing, unless there was an agreement to the effect that clover might be sown. However, there are very few men who would be averse to the purchaser going on the farm and sowing the clover for the next year's crop.

Share Farming.

A works B's land. B pays the taxes and A does the roadwork, furnishes all the machinery, horses and labor. How should the crop be divided? In the past, A has paid for the threshing and given B one-third of all the crops, but expenses have increased during the last few years. What share of the crop should the land draw?

B. F.

Ans.—It depends considerably upon the kind of farming engaged in, and the productivity of the land. In many cases the land draws 40 per cent. of the returns. If A receives two-thirds of the crop for his work and investment on machinery and horses, we would consider that he was receiving a good share.

Scratches.

1. What can I do to prevent the hair from falling off my horse's legs? He rubs them with his feet and bites them.
2. How many barrels of cement will it take to put a wall under a barn 30 by 46 by 7 1/2 feet, 15 inches thick? There will be a number of windows and doors.

W. J. C.

Ans.—1. Purge with 8 drams aloes and 2 drams ginger. It may be necessary to poultice the legs for a few days, and then apply a solution of corrosive sublimate, 30 grains to a pint of water. This should be heated to about 105 degrees Fahrenheit, and rubbed well into the skin twice daily until itching ceases. Using sugar of lead is a very good treatment. The legs should not be allowed to get wet if you wish them to heal rapidly, and when they do get wet they should be rubbed dry.

2. The wall will require approximately 50 cubic yards of gravel and 41 barrels of cement, if mixed in the proportion of one to eight.

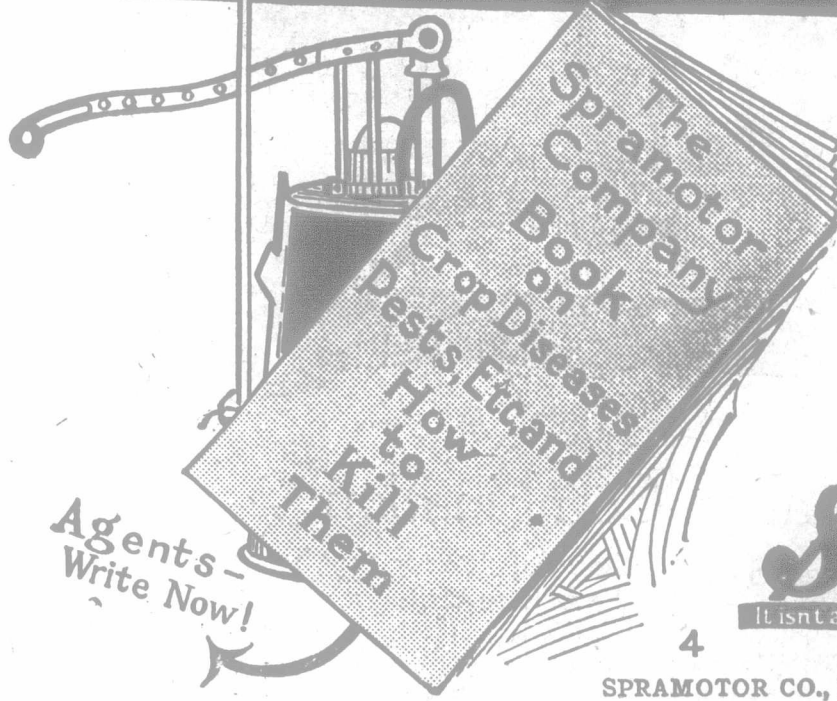
Electricity on the Farm.

We wish to generate our own electricity on the farm. Would a small dynamo be sufficient for lighting, or would it require a fairly large one? What horsepower engine would we need to run the dynamo? Would it be better to buy the engine and dynamo as one unit, or as single machines? Considering the expense with coal-oil lamps, and the expense of a machine and dynamo, which would be the cheaper in the end?

D. M. W.

Ans.—The size of the dynamo would depend on the amount of electricity used. It would be better to have a fairly large machine, rather than overload a small one. A four or five-horsepower engine would run a dynamo and could be used for other purposes. The engine and dynamo as one unit is very convenient, but, of course, the engine could not be used for other purposes. The farm lighting systems installed by various companies are giving satisfaction. The coal-oil lamp would no doubt be the cheaper light, but one must consider the efficiency of the light and the extra safety of electricity over the open lamp.

This Book FREE
to Responsible Farmers
and Fruit Growers



Agents—
Write Now!

Spramotor
It isn't a SPRAMOTOR unless we made it!

SPRAMOTOR CO., 18 King St., London, Canada

Do You Know All
About Spraying?

DO YOU know, for instance, that a crop of potatoes can be improved from a total loss to 400 bushels per acre, at a cost of \$1. to \$3.

Do you know that Mustard can be killed in the growing grain at 60 cents an acre?

That fruit crops can be improved 80 per cent?

That buildings can be whitewashed painted or fireproofed for half the former cost, and made sanitary and free from disease for practically nothing?

The Spramotor doubles and trebles the profits of users. We make many styles and sizes from \$7. to \$400.—a machine for every need.

In its 25 years on the market, the Spramotor has captured over 100 Gold Medals and First Awards, including the Canadian Government's spraying contest.

Choice Ayrshire Bulls

One bull, 15 months old; dam's average test, 4.7 butter-fat; price, \$150.
One bull, 16 months old; dam's average test, 4.8 butter-fat; price, \$175.
One bull, 14 months old; dam's average test, 5.8 butter-fat; price, \$175.
Also male calves, two and three months old—same dams.

Thomas A. Low, Elm Valley Stock Farm, Renfrew, Ont.

Craigielea Ayrshire Herd Sires

Two young bulls specially priced and special individuals.
No. 1, a 15 months calf by Lady's Milkman, he by a son of Fairview Milkman and out of Milkmaid 7th, 16,696 lbs. of milk, 729 lbs. of fat (one time Canadian Champion). The dam of this calf is Rose of Montrose an 8,831-lb. R. O. P. two-year old.
No. 2 a year old calf by Fairview Milkman and dam White Lady of Craigielea 2nd, 11,700 lbs. of milk, 458 lbs. of fat in one year, and one of our very best R. O. P. breeding cows.
We also have calves younger and can spare a few females, safely bred. Give us a call.

H. C. HAMMILL (Locust Hill, C.P.R. Markham, G.T.R.) MARKHAM, ONT.

WESTSIDE AYRSHIRES AND YORKSHIRES

I have one young bull, 10 months old, from high testing dam and would sell my herd bull, 3 years old—St. Nicholas of Orkney—57087—, whose dam gave 11,140 lbs. milk, 394 lbs. fat as a 3-year-old, and whose sire's dam is the famous Milkmaid of Orkney—39834—, with 3-year-old record of 14,060 lbs. milk, 534 lbs. fat. Write DAVID A. ASHWORTH, Denfield, Ont. (Middlesex Co.).

SPRINGBANK R. O. P. AYRSHIRES

Our Ayrshires win in the show ring and they fill the pail. We hold more present R. O. P. champion records than any other herd in Canada. Present offering, 9 young bulls seven months and under, all from high record dams.

A. S. Turner & Son, Railway Station, Hamilton Ryckman's Corners, Ont.

Homestead Farm R.O.P. Ayrshires

At the head of our herd at present we have a grandson of the great Jean Armour. He is being used on the daughters of our former sire, Garlaugh Prince Fortune (imp.). Young cows freshen this fall and winter.

McVICAR BROS., 'phone 2253 Harrietsville, Belmont, R.R. No. 1, Ont.

Glenhurst Ayrshires

headed by Mansfield Mains Sir Douglas Hague No. 16163 imp. have been noted for their depth and size, good tests and smoothness of conformation. If you are looking for a combination of size, type and production—plus high butterfat—write me or visit the farm. Males and females of all ages for sale.

JAMES BENNING, Summertown Sta., G. T. R. Williamstown, C.P.R. Bell Telephone 78-3 Cornwall

BRAMPTON JERSEYS

The Largest Jersey Herd in the British Empire

At Toronto Exhibition, 1919, we won twenty-five of twenty-seven first prizes. We now have for sale first-prize young bulls from R. O. P. dams, as well as females of all ages.

B. H. BULL & SONS - Brampton, Ontario

Laurentian Producing Jerseys

The oldest bull we have at present is a year old youngster, sired by our herd sire, Broadview Bright Villa, No. 5630, and from Brampton Astoria, one of the best imported cows in the herd. We also have others younger of similar breeding, as well as a few bred heifers for sale.

FREDERICK G. TODD, Owner, 801 New Birks Bldg., Montreal, P.Q. Farm at Morin Heights - F. J. WATSON, Manager

CANADA'S MOST BEAUTIFUL JERSEY HERD

The Woodview Farm Herd headed by Imported Champion Rower, winner of first prize with five of his daughters on the Island of Jersey, 1914, second in 1916, and again first in 1917. We are now offering for sale some very choice bull calves, ready for service, sired by imported bulls and from Record of Performance imported prize-winning cows. Also some cows and heifers. Prices right. We work our show cows and show our work cows.

JNO. PRINGLE, Prop.

For Sale—Edgeley Golden Jolly

son of Queen 2nd—1st prize in 2-year-old in milk at Guelph in 1919. His sire is Edgeley Bright Prince, a son of Sunbeam of Edgeley. We have him priced right for quick sale.

JAS. BAGG & SONS, EDGELEY, ONT. (Woodbridge C.P.R., Concord G.T.R.)

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Sleeping Cars on Night Trains and Parlor Cars on principal Day Trains.

Full information from any Grand Trunk Ticket Agents or C. E. Horning, District Passenger Agent, Toronto.



Bugs, Fleas, Flies, Roaches, Mosquitoes, etc. all killed by KEATING'S

MUSK WRITE FOR PRICE LIST AND TAGS

E. T. CARTER & Co. RATS

CITY VIEW AYRSHIRES

Three bulls ready for service. One two-year-old heifer, bred. Bull calves, all have several direct crosses of R.O.P. blood.

James Begg & Son, St. Thomas, Ont.

Conversion Sale

High-test-Holstein at the half

Thirty-five Pure-bred Holsteins

ONTARIO

West Oford

18th, 1920

TESTING

STEINS

on the farm

Select small herds ofceptions, every animalles are all young and records, although not rictly commercial conle at full age. There ar-old or a four-year-eir record materially to make your seleou should attend this

unch served at noon.

ff of noon trains at the ersoll.

E & DEAN, Auctioneers.

Ingersoll, Ontario

ty Holstein Club Sale ch 17.)

undoubtedly wholesale firms were not handled in your locality get in touch with you.

It depends on the local municipal tions. Usually one or two of the yers break the road, and they and time on their statute labor.

There are correspondence schools veterinary science, but a vetercollege is the only proper place to an education to make one a ed veterinarian.

Concrete Wall.

much cement and gravel will ed for a wall 42 by 35 feet, 3 thick and 8 feet high, the usual ws and doors to be deducted.

J. B. F.

It will require approximately ic yards of gravel and 28 barrels of , provided the material is mixed proportion of one to eight.

HOLSTEINS

G SALE

80 HEAD

n Young Bulls

NT.

17th, 1920

s we have ever offered

BULLS

ord's Leading Breeders

s of the best young bulls of the year, lds that have produced 707 lbs. of cows in numbers and dozens that on young bulls we have 16, all of the 30 lbs of butter in 7 days—a choice

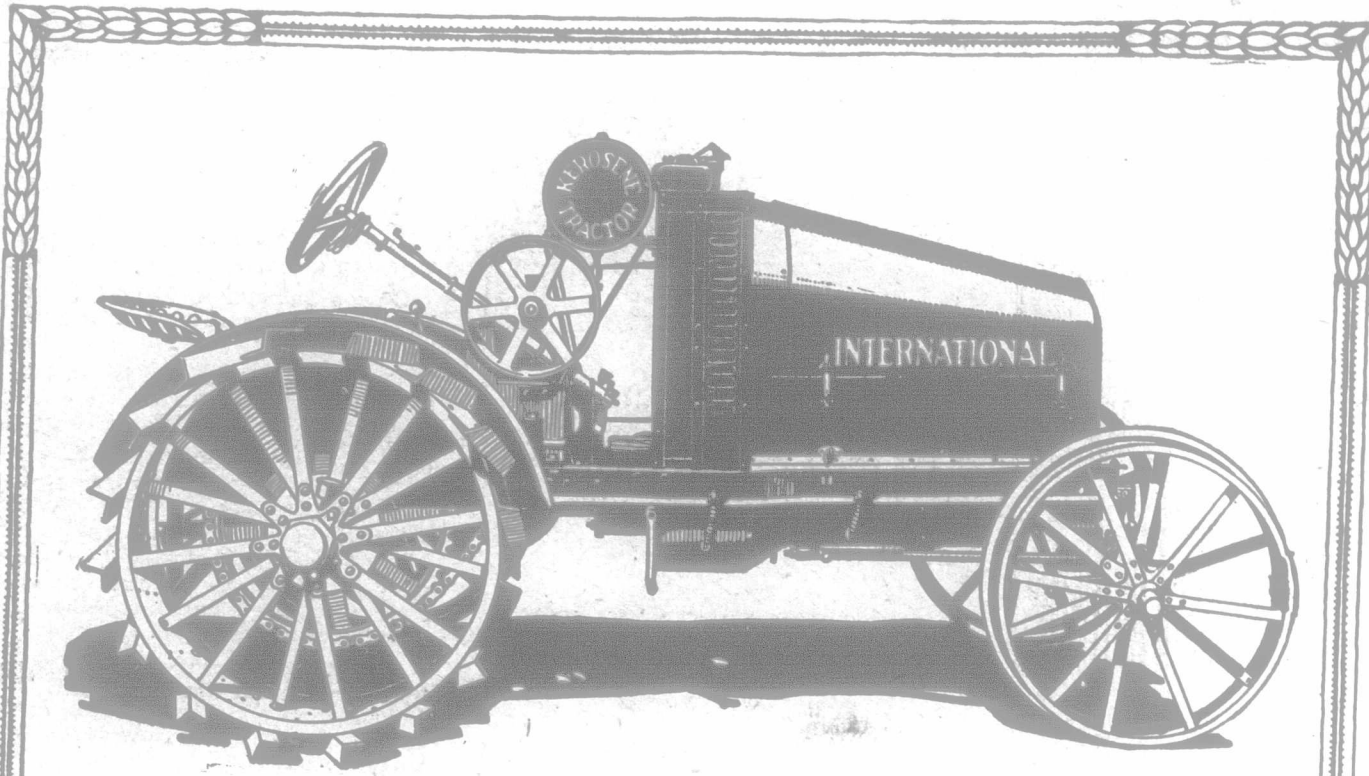
hey Breed the Best

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NDREW DUNN, President

Auctioneers:

MOORE, DEAN & PULLIN



A Quality Combination

THE International 8-16 Kerosene Tractor is a tractor of character and personality. The first note of appeal is the graceful, trim design, the general compactness and the good balance of the tractor, with just the right distribution of weight on the front trucks and drive wheels. The next thing that strikes you is the absence of exposed working parts; everything is enclosed as protection against the grinding action of dust and dirt.

And you are impressed by the flexible range of the drawbar, making it possible to pull a harrow, plow, binder or wagon with equal advantage and by the convenient pulley so placed

that the tractor can be backed into the belt in a hurry, with no chance for the belt to drag on the ground or rub against any part of the tractor. Coming down now to more technical but nevertheless very important details—there is the throttle governor that regulates the fuel to the load; removable cylinder sleeves in the engine so that if a cylinder should become scored through the use of poor lubricating oil, for instance, a new lining can be put in at once, renewing the cylinder; centralized auto-type control, making this tractor as easy to handle as an automobile.

These are only a few of the desirable characteristics of the **International 8-16 Kerosene Tractor**. The catalog that we have ready to mail you will give you the rest. Or, see your International agent and examine his sample 8-16 for yourself.

INTERNATIONAL HARVESTER COMPANY
OF CANADA, Ltd.

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Maple Shade Farm

Imported Shropshire ewes served by best imported rams, very desirable for foundation flocks.

W. A. DRYDEN
Brooklin - - - Ontario

Shropshire Yearling Ewes bred to Bibby's 84 (imp.) ram and two Clydesdale stallions.

YORKSHIRES

Pigs of different ages, both sexes, from large litters.

WELWOOD FARM
Farmer's Advocate, London, Ontario

Berkshires—Boars ready for service and boar pigs, rich in the blood of Lord Premier's Successor 161500, Grand Champion 1914, Champion Sire of 1915, 1916, 1917. His descendants have won Grand Champion honors at the largest and strongest shows of 1919. The Champion Berkshire barrows of 1918 International were double grandsons of Lord Premier's Successor. We have shipped many Berkshires to Canada with satisfaction to customers. Prices on request.
HOOD FARM, INC., Lowell, Mass.

Berkshires—At the great Smithfield Show, London, England, in December, the Berkshires won the Grand Championship for fairs, and made the remarkable showing in the four classes sixteen pigs being pure-bred except one. We have over eighty head of splendid stock. Come and see
J. B. PEARSON, Manager.

Invergie Tamworths—Sows carrying second litters for March farrow, a few choice 200-lb. boars, gilts bred for April farrow; a splendid lot, either sex, 3 to 5 months old. Wee lads and lassies just weaned.
L. Hadden, Box 264, Sunderland, Ont.

ELMHURST LARGE ENGLISH BERKSHIRES
From our recent importation of sows, together with the stock boar, Sudden Torredor, we can supply select breeding stock all ages. Satisfaction and safe delivery guaranteed.
H. M. VANDERLIP, Breeder and Importer. R. R. 1, BRANTFORD, ONTARIO
Langford Station on Brantford and Hamilton Radial.

Sunnyside Chester Whites and Dorsets—In bred from our champions. In Dorset ram and ewe lambs, by our Toronto and Ottawa champions, and out of Toronto, London and Guelph winners.
W. E. Wright & Son, Glanworth, Ont.

TAMWORTHS
Young sows bred for May and June farrow, and boars for sale. Write or phone.
JOHN W. TODD - - - Corinth, Ontario

Big Type Chester Whites—We cleaned up at to Exhibitions, 1919. Now offering pigs from our 805-lb. sows, and sows bred to our 1,005-lb. boar
JOHN ANNESSER, Tilbury, Ont.

Meadow Brook Registered Yorkshires
Ten choice young boars fit for service, from prize-winning stock. Prices reasonable for quick sale.
G. W. MINERS, R.R. No. 3, Exeter, Ontario

Prospect Hill Berkshires—Young stock, either sex, for sale, from our imported headed by our stock boar, Ringleader. Terms and prices right.
JOHN WEIR & SON, R.R. 1, Paris, Ont.

When writing advertisers will you kindly mention The Farmer's Advocate.

Questions and Answers. Miscellaneous.

Mail Carrier.

Is a rural mail carrier allowed to carry and deliver along his route any article of any kind except the mail?
Ans.—We understand that he is not.

Scaly Legs.

What is a cure for scaly legs in fowl?
Ans.—Soften the scales by soaking in warm soapy water, then remove them so far as possible by the use of a nail brush. Apply sulphur ointment, or kerosene and kerosene.

Polled Herefords.

Our neighbor purchased a bull which he says is a Polled Hereford. I would like to know if there is such a breed of cattle.
J. J. M.

Ans.—Yes, there are a number of large herds of this breed, and prices across the line are high.

Material for Wall.

How many barrels of cement and how many cords of gravel will it take for a barn 36 by 70 feet, 8 feet high and 12 inches thick? Also, for a root cellar under the driveway, 11 by 16 feet.
R. W.

Ans.—It will require approximately 16 cords of gravel and 65 barrels of cement.

Lightning Protection.

Which is the better from every standpoint as protection against lightning, steel shingles alone, or wood shingles with lightning rods?
G. G.

Ans.—A building with a metal roof should have conductor wires from each corner to the ground; with lightning rods, protection will be afforded, but they, too, must be grounded.

Material for Wall.

How many cubic yards of gravel and barrels of cement will be required to build a wall under a barn 36 by 80 by 9 feet, the wall to be 12 inches thick? Should the wall be reinforced?
A. A.

Ans.—It will require approximately 80 cubic yards of gravel and 68 barrels of cement. It might be advisable to use wire or angle iron to reinforce the wall.

Price of Seeds.

What is the price of alfalfa seed at present? How many pounds are there to a bushel? Where is the best market?
A. S.

Ans.—Alfalfa is quoted at various prices, according to the quality. Number 1 Canadian seed is quoted by some firms at 70 cents a pound. There are 60 pounds to the bushel. The seed firms handle considerable of this seed.

Willing Property.

A father has three sons, and one has remained on the farm all his life. The father wishes to leave all his property to this son. Can the other sons break the will and secure their share?
E. A. C.

Ans.—If the father makes a will, which is duly witnessed, the other boys are not in a position to have it annulled unless they can prove that their father was not responsible for his actions at the time the will was made.

Sliding Hay Rack.

How much material is required to make a sliding hay rack?
W. K.

Ans.—For a 16-foot rack, one would require two 2 by 8 sills 16 feet long. It would be necessary to have four cross pieces 8 feet long, then it would require sufficient inch and a half lumber to cover the bottom, and six pieces 5 inches wide and 16 feet long for the sides. A track could be made on which to run the sliding table. The table would require three 2 by 4's and about 64 feet of inch lumber. A very convenient way is to have the cross pieces about 3 inches below the top of the sills, and then the sills are used for a track for the sliding part of the rack. Two iron axles the width of the wagon and four flange pulleys would be needed. It would be necessary to put uprights to form a ladder in the front of the sliding portion, and it is not absolutely necessary to have any ladder at the back. A combined sliding hay rack, stock rack and wagon box is on the market.

Questions and Answers. Miscellaneous.

Mail Carrier. Rural mail carrier allowed to carry driver along his route any article except the mail? A. E. We understand that he is not.

Scaly Legs. Is a cure for scaly legs in loss? A. S. Soften the scales by soaking in soapy water, then remove them as possible by the use of a nail. Apply sulphur ointment, or kerosene.

Polled Herefords. Neighbor purchased a bull which is a Polled Hereford. I would know if there is such a breed? J. J. M.

Yes, there are a number of large this breed, and prices across are high.

Material for Wall. Many barrels of cement and hundreds of gravel will it take for a wall by 70 feet, 8 feet high and 12 inch? Also, for a root cellar driveway, 11 by 16 feet. R. W.

It will require approximately of gravel and 65 barrels of

Lightning Protection. Is the better from every standpoint protection against lightning, gables alone, or wood shingle siding rods? G. G.

A building with a metal rod and conductor wires from each end of the ground; with lightning rods will be afforded, but they, too, rounded.

Material for Wall. Any cubic yards of gravel and cement will be required to fill under a barn 30 by 80 by 9 wall to be 12 inches thick? Will be reinforced? A. A.

It will require approximately hundreds of gravel and 68 barrels of cement. It might be advisable to use iron to reinforce the wall.

Price of Seeds. What is the price of alfalfa seed at How many pounds are there? Where is the best market? A. S.

Alfalfa is quoted at various prices according to the quality. Number of seed is quoted by some firms as a pound. There are 60 in the bushel. The seed firm considerable of this seed.

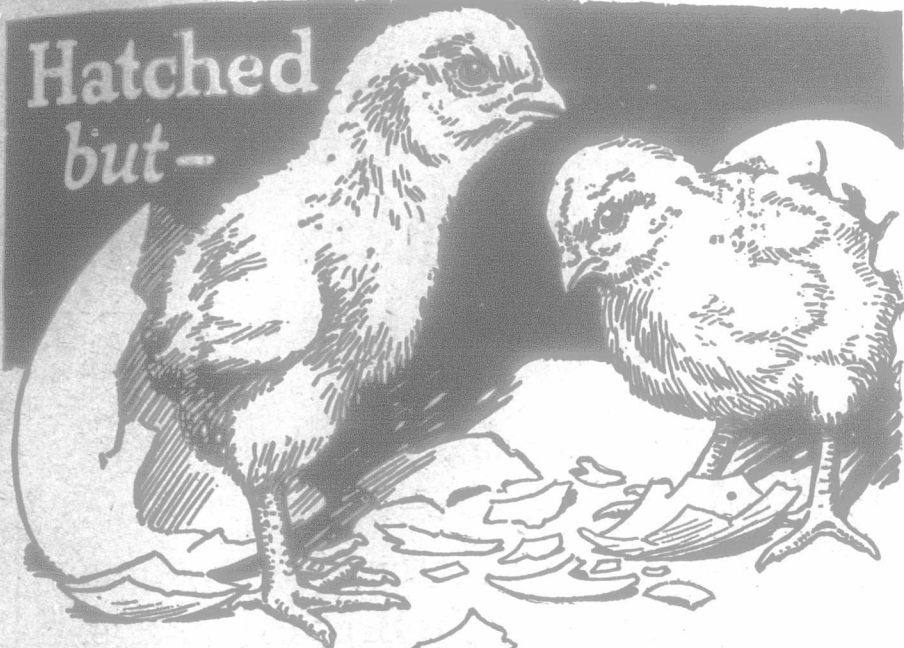
Willing Property. A man has three sons, and one has the farm all his life. He wishes to leave all his property to the other sons. Can the other sons break secure their share? E. A. C.

The father makes a will, duly witnessed, the other boys position to have it annulled can prove that their father responsible for his actions at the was made.

Sliding Hay Rack. What material is required to make a rack? W. K.

A 16-foot rack, one would 2 by 8 sills 16 feet long, necessary to have four cross long, then it would require and a half lumber to cover and six pieces 5 inches wide long for the sides. A track on which to run the sliding table would require three about 64 feet of inch lumber. Convenient way is to have the about 3 inches below the sills, and then the sills are rack for the sliding part of two iron axles the with in and four flange pulleys. It would be necessary to form a ladder in the sliding portion, and it is not necessary to have any ladder.

A combined sliding hay rack and wagon box is on the



How Many Will You Raise?

The loss in little chicks that die the first few weeks after hatching amounts to millions of dollars each year. Everybody must cut down the losses and increase production to the limit this season. How many chicks do you lose from Gapes? Diarrhoea? Indigestion? Leg Weakness? Weakness from Rapid Growth of Feathers? Prepare them to withstand little chick ailments by feeding

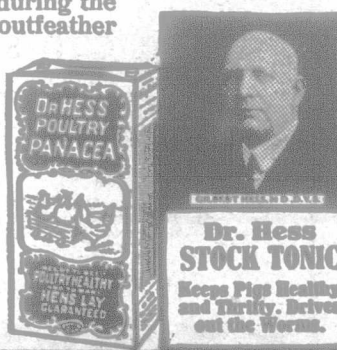
Dr. Hess Poultry Pan-a-ce-a

Remember that disease takes the weaklings—not the strong and healthy. And remember that indigestion is at the bottom of many little chick ailments.

Pan-a-ce-a prevents and cures gapes. Pan-a-ce-a regulates the bowels. Pan-a-ce-a prevents and cures leg weakness. Pan-a-ce-a produces appetite; it promotes digestion.

And remember good digestion is most essential during the rapid growth of feathers. A Pan-a-ce-a chick will outfeather a non-Pan-a-ce-a chick every time.

Your dealer is authorized to supply you with enough Pan-a-ce-a for your whole flock, with the understanding that it is to prevent and cure Gapes, Indigestion, Diarrhoea, Leg Weakness; that you are to see marked results during the growth of feathers; otherwise, he will refund every cent you have paid. 35c, 85c and \$1.75 packages. 25-lb. pail, \$3.50; 100-lb. drum, \$14.00.



DR. HESS & CLARK, Ashland, O.

Dr. Hess Instant Louse Killer Kills Lice

Order Your Spring Fertilizers Early

Indications point to a big increased demand for fertilizers this Spring. Early ordering of supplies is necessary because of the shortage in railroad cars and raw materials. Make sure of your supply by ordering now.



Gunns SHUR-GAIN Fertilizers

bumper yields. At present prices for all farm products, SHUR-GAIN will prove doubly profitable.

Dont Delay—Order your SHUR-GAIN Now.

GUNNS LIMITED

West Toronto :: :: Ontario Representatives wanted in unallotted territory.

Choice Marquis Seed Wheat This wheat won first prize in the Standing Field Competition, first at Toronto Exhibition and first at Guelph. Price \$3 per bus. f.o.b. Bags free. ROBT. WATSON, Woodbridge, Ont.

PATENT SOLICITORS Fetherstonhaugh & Co. The old-established firm. Patent everywhere. Head Office: Royal Bank Buildings, Toronto. Ottawa Office: 5 Elgin Street. Offices throughout Canada. Booklet free.

Rural Education.

EDITOR "THE FARMER'S ADVOCATE": Of all the questions of the day concerning Provincial affairs the readjustment of our rural school system is perhaps the first in importance. That it needs reconstruction and extension is no longer in doubt. The constant influx of the best of country blood into the urban centres is in itself sufficient proof of faulty educational training. This exodus from the rural districts in itself is not the danger signal. It is the fact that of the great numbers who are attracted to the city, a comparatively small number are entering industrial life in any capacity other than untrained labor. No system of education can ever hope to entirely prevent rural emigration, nor should that be the aim of any school or teacher. So long as we have cities, so long as we have masses of people living and working under conditions prevalent in urban centres we must have blood to keep business going. Without the invigorating influence of country youth and ambition commercial life as it is would cease to exist. On the other hand there are many who are leaving the country because they are ignorant of city conditions, and have never been trained to see the opportunities open to them in the country. It is the rightful privilege of every child to know just what lies open to him in any industry or profession and what steps to take to advance him in whatever line he hopes to undertake. At present there exists in rural districts no facilities to impart this knowledge.

The establishment of a system of consolidated schools is at present the most popular means of improving rural conditions in this respect. So far consolidation has not made much progress. Without doubt there are many districts that inside of ten years will have established consolidated schools. In many other districts this system will never be advisable. Where there already exists a good school, well equipped and functioning as it should, it will be difficult to establish consolidation as it is proposed. There must, however, be some advanced schools in these districts to take up the work after the entrance standing is secured.

In parts of the State of North Dakota there are established advanced schools of the type of our technical schools. Here children may come from the surrounding district and take practically any subjects they wish. Everything of usefulness is taught from domestic science to automobile repairing. It is practically a training ground for all lines of work either professional, commercial or industrial. It combines the best elements of our collegiates, business colleges, technical schools, and agricultural colleges. Agriculture is taught to all scholars when possible because it is realized that even if the child is ultimately to enter some other line of endeavor than farming it is to his advantage to know something about the basic industry that must, after all, be the indirect means of keeping him employed and fed. The child entering such a school soon finds out what he is fitted for, or at least what he desires to do and immediately can enter on a course that will train him for his chosen work without losing the years of valuable youth so often spent in indecision because there has been no opportunity for proper training.

Surely from the standpoint of the production of national wealth of a financial nature, it would pay the state to maintain such schools. If a large majority of those entering the cities were trained men and women and those who remained on the land efficient farmers the production of national wealth would be materially increased and the balance between country and city would be adjusted. There can never be a better understanding between consumer and producer until both are able to understand each other's position.

The establishment of two schools such as I have mentioned, in each county would provide for training in advance of public school work and at the same time would obviate the apparent difficulties in the way of establishing consolidated schools in every district. The necessity for a better class of public schools would still exist but in most cases that need can be met as easily in each school district itself as by the consolidation of districts perhaps not naturally adapted for it.

CHARLES M. FLATT.

Wentworth Co., Ont.

Our Golden Jubilee. In 1869 the Late C. M. Taylor of Waterloo, Ont., was instrumental in successfully promoting the Mutual Life Assurance Company of Canada. Organization was completed and the company began business in 1870. For fifty years the Mutual has steadily kept in view its first aim of furnishing the largest amount of life insurance at the lowest possible cost. We are celebrating our Golden Jubilee with a feeling of pride in the financial strength of the Company with its assets of over \$26,000,000 and more than \$100,000,000 of assurances in force, a success attained on the intrinsic merits of the Mutual System. "Be a Mutualist" Mutual Life of Canada Waterloo-Ontario.

EVER-BEARING STRAWBERRIES, Etc. Progressive, American, Superb, Ever-bearing Strawberries; Senator Dunlap, Glen Mary, Parsons Beauty, Dr. Burrill, and nearly 30 other standard varieties. Raspberries, Blackberries, Currants, Gooseberries, Grapes, Asparagus, Rhubarb, Seed Potatoes, Corn, etc. Send for our illustrated catalogue H. L. McCONNELL & SON, Port Burwell, Ontario

DEAFNESS ITS CAUSES AND TREATMENT Write for free booklet and particulars of free trial order offer of Mear's 96-tone Model Ear Phone. The Mear Company of Canada, Reg. Dept. A 188a Peel Street, Montreal

Strawberry Plants The best strains of standard varieties: Williams' Improved, Senator Dunlap, Glen Mary, Arnot, Parsons' Beauty, Stephens' Champion, Sample, etc.; \$5 per 1,000 or \$1 per 100. Superb and Progressive, everbearing varieties, \$10 per 1,000 or \$1.50 per 100. WM. WALKER 11 Port Burwell, Ontario

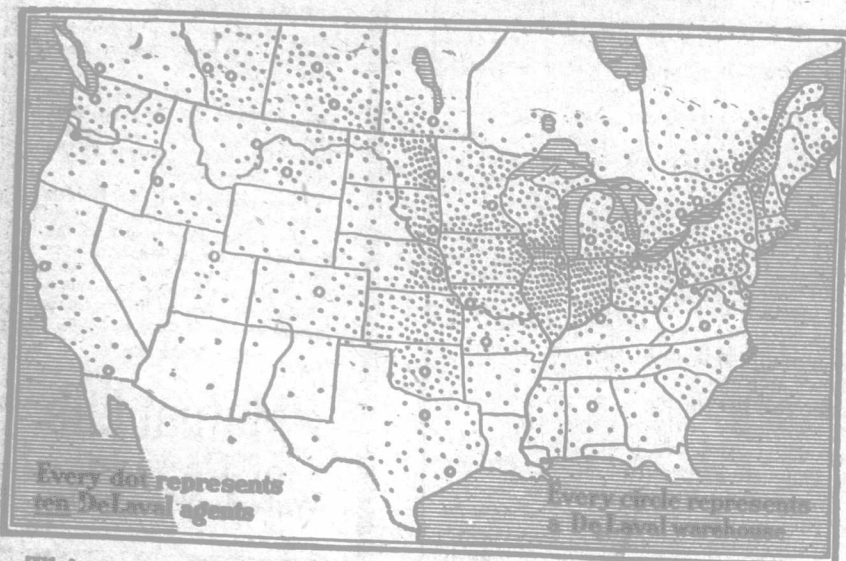
Get Longer, Better Wool Shear with a machine and leave no second cuts nor scar the sheep. Use a Stewart No. 9, Ball Bearing Shearing Machine. Gets 15% more wool easily and quickly. Removes the fibre completely, making it longer and better selling. Leaves a smooth, even stubble for next year's growth. Machine soon pays for itself. Get one from your dealer—the only machine that always satisfies. Write for catalogue. CHICAGO FLEXIBLE SHAFT COMPANY, Dept. B 161, 12th St. and Central Avenue, Chicago, Ill.

THE PROPER CARE OF ANIMALS. Animals properly cared for will give much better returns on your investment than neglected ones. And no one thing in their proper care shows better results in thrift and returns than the regular use of Herbageum and at a cost of only five-sixths of a cent a day for each horse, cow or pig. It enables one to use a greater amount of roughage, thus saving expensive feeds, and without loss in returns.

It keeps animals free from vermin so that lice killers and sheep dips are unnecessary. It is the best thing known for calves, and a 4-lb. package will make one ton of skim or separated milk equal to new whole milk for calves. The bone, flesh, muscle and nerve qualities are in the skim-milk, and the Herbageum ensures its assimilation. Do not waste money on Calf Meals, simply add to 400 lbs. of ground oats or any good meal or mixture of meals, 4 lbs. of Herbageum and 1 lb. of fine salt. Mix well, stir about two cupfuls in a gallon of scalding water and feed warm.

If you cannot buy Herbageum where you deal, The Beaver Mfg. Co., Ltd., of Galt, Ont., will send to any Post Office in Canada a 4-lb. package by registered parcel post for \$1.40, or will deliver freight prepaid at your station 50 lbs. for \$12.00, or 100 lbs. for \$23.00. In all cases cash with order.—Adv't.

De Laval Service covers the continent



Every dot represents ten De Laval agents

Every circle represents a De Laval warehouse

This map shows how completely the service of the De Laval organization reaches every community

Every separator user realizes the importance of having his separator in use every day. Delays waiting for parts, with a separator out of use, mean great inconvenience and loss of product.

Every dot on the map represents ten De Laval agents, and every De Laval agent is individually trained to assist his customers in setting up and operating their machines, to furnish and put in place repair parts, and to insure prompt service and satisfaction to De Laval users.

Not only is the De Laval Cream Separator superior in all points of separator efficiency, but every user of a De Laval is assured of prompt and competent service for all years to come.

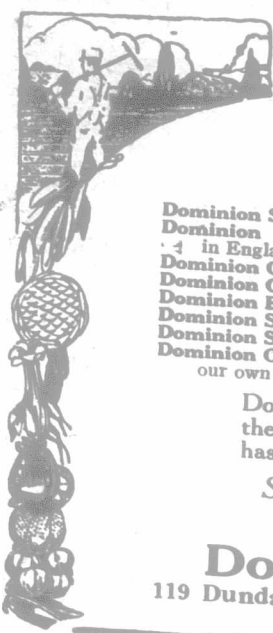
It is therefore not surprising that there are more De Laval Separators in use than all other makes combined. Now is a good time to begin saving time and product by securing a De Laval.

The nearest De Laval agent will be glad to demonstrate a De Laval. If you do not know his name, write to nearest De Laval office.

THE DE LAVAL COMPANY, Limited

MONTREAL PETERBORO WINNIPEG VANCOUVER

50,000 Branches and Local Agencies the World Over



You Can Bank on DOMINION SEEDS For the Field or Garden

- Dominion Seed Corn—Grown in Kent and Essex.
- Dominion Beet, Mangel and Canadian Gem Turnip Seeds—Perfect in England.
- Dominion Carrot and Celery Seeds and Dominion Bulbs—Perfect in France.
- Dominion Cabbage and Cauliflower Seeds—Perfect in Denmark.
- Dominion Beans, Radish and Cabbage Seeds—Perfect in Japan.
- Dominion Sweet Corn, Pea, Bean and Onion Seeds—Grown in United States.
- Dominion Shrubs and Rose Bushes—Perfect in Holland.
- Dominion Onion and Tomato Seeds—Very fertile. Grown and perfected at our own Glen Maple Trial Grounds, London.

Dominion Seeds Limited have grown and imported the best varieties for years. Ask your neighbor. He has likely used them and secured maximum crops.

Sow Dominion Seeds—They Yield More.

Send for our 1920 Catalogue.

Dominion Seeds Limited

119 Dundas Street

London, Ontario

Satisfied Readers.

Readers of The Farmer's Advocate and Home Magazine frequently express themselves in regard to the paper when writing to this office. We thank everyone for their kind words which are greatly appreciated. Criticism, too, is welcome for we desire to serve our subscribers efficiently and when we are not doing so we like to hear about it. Following are a few comments taken at random from letters received:

"Enclosed find subscription to your valuable paper for another year. I notice that you are holding the farmer's cause up to the level where it belongs.

I hope your efforts will be successful in leading the people to a higher plane, and that agriculturists will receive a just reward for their labors."

ERNEST PARKINSON,
Wellington Co., Ont.

"I am well pleased with 'The Farmer's Advocate'. I have taken it for ten years now and think it the best farm paper yet."

GEO. H. GERRIE,
Wellington Co., Ont.

"Without your paper a man can't compete with the average, up-to-date farmer of to-day."

T. A. MUIR,
York Co., Ontario.

At Last! Canadian Process makes safer, quieter brakes

ANOTHER annoying feature of motoring is done away with by this new process, Canadian-made Brake-Linings.

Ford cars can be made "quiet on the brake." LION Brake-Linings are impregnated with a special frictioning compound to prolong the wear, to avoid "running smooth," to prevent chattering.

Insist on having these linings in your Ford. Your Garage man can supply you.

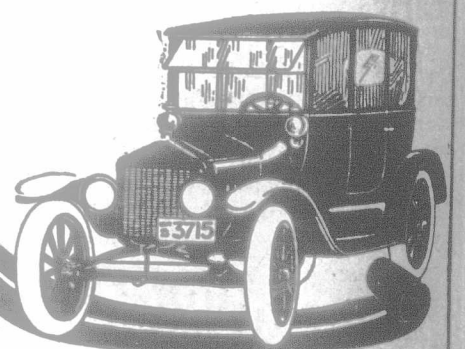
Hamilton Cotton Co., Limited, Hamilton

At all Garages and Dealers

LION Brake-Linings for FORD CARS

MADE IN CANADA

Look for the RED LINE



"I think 'The Farmer's Advocate' is the best farm journal in Canada, and am always glad to get it."

FREDERIC E. MATHESON,
Kings Co., P. E. I.

Gossip.

The Western Ontario Consignment Sale.

All interested in high-quality stock, especially Shorthorns, should keep in mind that the semi-annual consignment

sale of the Western Ontario breeders will be held in London on March 23 and 24. The animals consigned to the sale will be shown previous to being sold. This will be an event of unusual interest. There are 150 lots, 110 of which are females, representing the most fashionable families in Shorthorns, and with the breeding they carry excellent type, quality and character. See the advertisement in another column of this issue, and watch for fuller particulars as to the breeding, in our issue on March 18. A catalogue giving the pedigree of each animal consigned may be secured from Harry Smith, Hay, Ontario.

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Gossip.

The Glenroe Stock Farm sale of Holsteins, advertised for March 18, at Ingersoll, will begin at 1.30 p.m. sharp.

Brandon Bros. Import Premium Horses.

Brandon Bros., Forest, Ontario, recently imported from Scotland two noted premium Clydesdale stallions which constitute a strong addition to their already splendid stud.

Brandon Bros.' stud has been headed by Baron Gartley, but in it are a number of young horses worthy of special attention.

Encouraging Words.

Every mail brings words of commendation and encouragement to the staff of The Farmer's Advocate and Home Magazine.

"You will find that I am one of your oldest subscribers, and I am well pleased with 'The Farmer's Advocate.' I think it is a good investment for anyone."

"I wish your paper every success and a prosperous New Year. I have been unable to send any new names as all my neighbors take 'The Farmer's Advocate'."

"The Farmer's Advocate" is all that any farmer can desire for either farm or household.

"The Farmer's Advocate" is the best agricultural paper going. I would not like to be without it."

"The Farmer's Advocate" is the best agricultural paper going. I would not like to be without it."

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"The Farmer's Advocate" is the best agricultural paper going. I would not like to be without it."

NEW ISSUE

Chase Tractors Corporation, Limited

8% Cumulative Preferred Stock Preferred as to Assets and Dividends

Dividends payable quarterly, April 1, July 1, October 1, January 1, Cumulative from April 1, 1920

CAPITALIZATION

Table with 3 columns: Stock Type, Authorized, Issued. Rows: 8% Cumulative Preference Stock, Common Stock.

DIRECTORS

R. J. CLUFF, ESQ., President. Pres. Galt Brass Co., Limited

T. P. BIRCHALL, ESQ., Vice-President. Pres. Canadian Industrial Bond Corp., Limited. Pres. Loew's Theatres

W. D. ROSS, ESQ., Vice-Pres. Nova Scotia Steel & Coal Co. Dir. Bank of Nova Scotia. Dir. Whalen Pulp & Paper Mills, Limited

R. M. WOLVIN, ESQ., Vice-Pres. Halifax Shipyards, Limited. Dir. Dominion Steel Corp., Limited

W. J. CLUFF, ESQ., Vice-President. Pres. National Electro Products, Limited. Pres. Canada Pipe & Steel Co., Limited

HON. N. CURRY, Senator. Chairman Board of Directors, Canadian Car and Foundry Co., Limited. Dir. Bank of Nova Scotia

J. W. NORCROSS, ESQ., Pres. Canada Steamship Lines, Limited. Director Vickers, Limited. Director Dominion Steel Corporation

The following information is summarized from a letter written by the President, Mr. R. J. Cluff:

BUSINESS

This Corporation has taken over the world's patents, rights and goodwill of the tractor manufacturing business of the Chase Motor Truck Company at Syracuse, N.Y.

DIRECTORS

The Directors are well-known Canadian business men with outstanding reputations for directing big enterprises of this nature.

EXPORT TRADE

Canada is in an excellent position to secure the tractor business of Great Britain, Africa, India and Australia, as closer economic arrangements, in addition to sentiment, are working towards a preferential treatment of all nations within the British Empire.

ASSETS

This Preferred Stock is a first claim on the entire assets and earnings. Net assets without any allowance for goodwill, patent rights, etc., according to Balance Sheet of October 31st, 1919, amounted to \$377,635.32 as security for \$750,000 Preferred Stock.

EARNINGS

Based on actual manufacturing costs at Syracuse and an output of only 1,000 tractors yearly, earnings will be sufficient, after paying Preferred Dividends and all charges, to provide a surplus equivalent to over 11% on Common Stock.

After a most exacting investigation, we offer you this stock at

\$100 per Share, yielding 8%

With a bonus of 40% of Common Stock

(Four Common Shares with every ten Shares Preferred)

Dividends payable at par in New York

Write for Prospectus to:

GRAHAM, SANSON & CO. INVESTMENT BANKERS

Members Toronto Stock Exchange 85 Bay Street :: Toronto

L. M. GREEN & CO. INVESTMENT BANKERS

Members Toronto Stock Exchange Union Bank Building :: Toronto



Here is a photographic reproduction of a rain blurred windshield—the driver's side has been rubbed with Clear Vision Cloth—it stays clear 24 hours.

We Want Agents at \$60 a Week

Greatest automobile accessory ever invented. Just out. Patented. Nothing like it. A scientific and chemical marvel that puzzles the world.

No Experience Necessary—200% Profit. Make as much money next week as these men are making now. J. C. Allen, of Ontario, says: "I sold eighteen cloths this afternoon."

Canadian Auto Accessories Co. Ltd., 682 Plaza Bldg., Ottawa, Ont.

When writing advertisers will you please mention "The Farmer's Advocate"

Canadian... safer, rakes

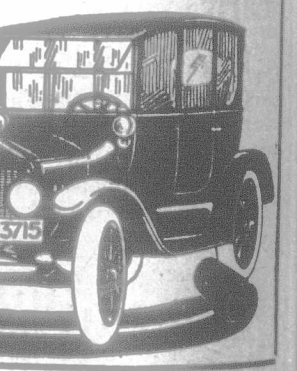
noying feat... is done new process, rake-Linings.

made "quiet... Brake-compound... to prevent

these linings... Garage

nd Dealers

e-Linings... CARS Look for the RED LINE



Western Ontario breeders... animals consigned to the... shown previous to being sold... an event of unusual interest... 150 lots, 110 of which are... representing the most fashionable... Shorthorns, and with the... they carry excellent type... character. See the advertise... another column of this issue... for fuller particulars as to the... our issue on March 18. A... giving the pedigree of each... signed may be secured from... Hay, Ontario.



Have Your Cleaning Done by Experts!

Clothing, household draperies, linen and delicate fabrics can be cleaned and made to look as fresh and bright as when first bought.

Cleaning and Dyeing Is Properly Done at Parker's

It makes no difference where you live; parcels can be sent in by mail or express. The same care and attention is given the work as though you lived in town.

We will be pleased to advise you on any question regarding Cleaning or Dyeing. WRITE US:

Parker's Dye Works Limited
Cleaners & Dyers
791 Yonge St. Toronto

Sixty-one Years' Unexcelled Reputation.

McCormick's Jersey Cream Sodas

Sold fresh everywhere. In sealed packages.

Factory at LONDON, Canada.

Branches at Montreal, Ottawa, Hamilton, Kingston, Winnipeg, Calgary, Port Arthur, St. John, N.B.



Born With Club Feet

"He gets about as well as any of the boys," says father in letter below. John Bauguss was 11 years old when brought to the McLain Sanitarium. Although deformity was extreme, result shown by photos was accomplished in 8 months. No Plaster Paris casts were used.

Father writes: My son John was born with club feet. I tried other doctors but without success. Being advised to take him to the L. C. McLain Orthopedic Sanitarium, which I did. After being treated a few months his feet are perfectly straight. He gets about as well as any of the other boys. G. M. Bauguss, Mooringsport, La.

For further details write Mr. Bauguss or the Sanitarium.

For Crippled Children

The McLain Sanitarium is a thoroughly-equipped private institution devoted exclusively to the treatment of Club Feet, Infantile Paralysis, Spinal Disease and Deformities, Wry Neck, Hip Disease, Diseases of the Joints, especially as found in children and young adults. Our book, "Deformities and Paralysis," also "Book of References," sent free.

The L. C. McLain Orthopedic Sanitarium
9498 Aubert Ave. St. Louis, Mo.



Our School Department.

The Story About Honey.

BY MORLEY PETTIT.

This is a story of flowers, sunshine and bees, rain and good rich earth, and of the sweetest thing that children ever eat.

When warm and moist, rich earth grows healthy flowers, which produce sweet nectar. Bees fly in the sunshine, gather nectar from the flowers and carry it home to make honey. So that is what flowers, sunshine and bees, rain and rich earth have to do with the honey boys and girls like so much.

Some flowers do not secrete nectar, and many that do are so rare as to be of little value to bees. There are a few, however, of which the bees are very fond, and I am going to tell you about some of these and how they are affected by sunshine, rain and soil.

In the early spring, as soon as bees can fly, they begin to hunt for nectar. About the first they find is in the "pussies" of the willows down by the creek or in the swamp. There are so many kinds of willows that no one has been able to name them all. They keep on blooming all through the spring, and bees get a great deal of nectar from them.

Soon after the earliest willows, and before they have any leaves at all, the maples show their red-brown glow of blossoms, and if it is warm enough, the bees are as busy as can be carrying home their nectar. Next come the fruit blossoms—cherries, peaches, pears, plums, and all the rest, till last of all the apple orchards turn one glorious mass of pink and white. Now it all depends on the sunshine whether the bees get nectar, and whether the trees set fruit. For if it is cool and cloudy bees cannot fly, and if they do not visit the flowers to scatter the life-bearing pollen, there is no fruit. So you see the bees are not the only ones who need the sun.

After the fruit blossoms come the beautiful dandelions, which spread a mat of gold over lawns and meadows, making one think King Midas must have touched everything with his "golden touch." These also need the sun for they go to sleep at night and only open their bright eyes when the sun appears.

Now if there is warm sunshine and frequent showers bees gather nectar from all of these, but the boys and girls do not get the honey. Let me tell you a secret. In each hive the mother queen is daily laying hundreds of eggs. The nurse bees keep them warm, and from each egg after the third day a baby bee appears. It doesn't look much like a bee though. It is just a tiny white grub called a larva. These baby bees are great eaters, and the nurses are kept as busy as can be feeding them. All the nectar brought in during the spring is used in preparing this food, which is something like milk and something like jelly. Each larva lives in its own little cell in the comb, feeding and growing faster than any boy you ever saw. When it is six days old the nurses help it cover itself up, and for twelve days while it is hidden from sight wonderful changes take place until it becomes no longer a helpless worm, but a busy bee with bright eyes and gauzy wings and active legs and a sting, and energy enough to chase you off the place if you don't watch out. These workers which are hatching by hundreds—yes, thousands—daily in every hive usually eat all the nectar brought in during spring; but when the main harvest of summer comes they make up for it by storing the kind of honey we want most.

By the first of June the beekeeper is watching out for the first white clover blossom. When he sees one he knows that in about ten days the main "honey flow," as he calls it, will begin. There are three common kinds of clover, the big red heads, the little white Dutch and the pink alsike. Red clover keeps most of its nectar for the bumble bees, because its flower tubes are so deep that the honey bee cannot reach the bottom with its tongue.

The White Dutch and alsike clovers are by far the best honey plants in most parts of Ontario, and the nectar they produce will depend on the kind of soil in which they grow. They do best in heavy clay with lots of lime and good drainage.

They also like lots of rain while they are growing, and as much heat as possible while they are producing nectar. They are called two-year plants, because they grow and get strong the first year, then blossom and give nectar the second. If they have plenty of rain the first year while they are growing, they seem to store up a great deal of the material from which honey is made. Then bright sunshine and hot days and nights at the right time help the blossoms to give large quantities of the sweet liquid which bees gather and make into honey.

Perhaps it will help you to understand this if you remember the kind of summers we had in 1915 and 1916. The former year it rained and rained, so that the farmers had the hardest time to save their crops. But while it was raining so hard and people were afraid the whole country would be ruined, the new clover was growing big and strong all over the fields and down the lane and along the roadsides. Then the next spring it started and rained again, and it rained and rained until lots of spring seeding was not done at all; but all the time those same clover plants were growing bigger and stronger and storing up material for making nectar, and in June great big blossoms came out all over them everywhere.

Then what did it do but turn dry and so hot that you could hardly do anything but look for a shady place, and then you could not possibly keep cool. But how those bees did work! They were out in the morning as soon as they could see, and at it until dark at night. They even worked nearly all night evaporating the nectar and making it into honey, and the roar in the hives of many thousands of wings fanning to ripen the honey was like distant thunder.

Some years the basswood trees with their creamy white blossoms give nectar after the middle of July; but if it is hot and dry then they are spoiled. The same may be said of buckwheat and other fall flowers. You will see then that sunshine, rain and good rich earth have much to do with flowers, bees and honey. In the next story we shall tell you how the honey is really made.

To be continued.

Teacher's Salaries.

This subject is the live question of to-day and, as this journal is a farmers' paper, I am writing this short article for it to set the ball a-rolling.

Are our teachers paid a good, honest, living wage to-day? Some of our country masters and mistresses still are receiving the minimum \$600 with no prospects of a raise. Some boards of trustees rather than raise \$100 will simply take chances on a change. However, many boards realizing the "high cost of living" have come forward like "men" and offered liberal increases. They believe in the adage "Live and let live."

Which is worth more to our community, a member of parliament (either Dominion or Provincial) or a teacher? Be honest now in your decision.

I claim a teacher does more honest and devoted work for any community than any member ever elected. But, look now at the financial reward. An M.P. gets \$2,500 plus extras, and an M.P.P. gets \$1,500 plus extras, while your teacher receives the sum of \$600, \$700 or in rare cases \$800. Is that a square deal? Besides the teacher has no extras coming in, but many going out. Cases are on record where teachers (even ladies) have to pay one dollar a day for board.

Compare the teachers with the laboring man working by the year. Some married ones receive \$500, free house and garden, horse and cow kept (and perhaps a porker and some hens). What does that amount to? Besides, such men are at no outlay for their education, nor have they any insurance, taxes, etc., to pay.

I wish to see the question discussed pro and con. The teachers are agitating all over the country for better pay. One dollar of their money to-day is worth no more than thirty-five to forty-five cents of pre-war days.

Write your thoughts, ratepayers and teachers, on this vital question.

A TEACHER.



Electricity - the greatest improvement you can put on your farm

DELCO-LIGHT means three big things to the modern farmer. It means the convenience, safety and comfort of brilliant light everywhere. It means the time-saving, money-saving convenience of electric power. But it also means the greatest improvement you can put on your farm—adds far more than its cost to the value of your farm.

W. R. S. McCracken will tell you this. He offered his farm near Glencoe, Ont., for sale at \$11,000. After installing Delco-Light and other comforts and conveniences that Delco-Light makes possible he sold his place for \$17,000—more than half as much again. O. H. Pettman of

Ostrander calls Delco-Light "the most satisfactory investment I ever made—I would not do without it for double its cost." Duncan Marshall, Minister of Agriculture, Edmonton says: "Altogether I consider my purchase of a Delco-Light plant one of the best improvements I have on my farm."

Having brilliant light everywhere—in the house, barn, outbuildings, yard, drive-way—at the touch of a button—is a convenience no farmer can appreciate until he has seen it. And Delco-Light power pays for itself by giving more time for money-making work. It pumps the water, runs the milking machine, cream separator, churn, fanning mill—every piece of light machinery with a crank to turn. It brings such city comforts as electric iron, washing machine, toaster, heater.

J. H. Wheatley, J.P., Blyth, Ont., writes: "We get more comfort from it than anything we ever bought, and would sooner do without the car than Delco-Light." C. H. Fisher, Niagara Falls, says: "My whole household is surely taking great comfort from it."

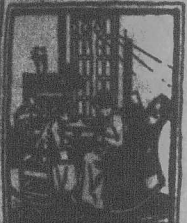
A boy can run Delco-Light. It is the complete electric plant—the standard for simplicity of design, efficiency and economy. Direct-connected—no belts to slip, replace or adjust. No complicated carburetor. Air-cooled—no water to carry, freeze or boil away. Ball bearings reduce friction to minimum. Thick plate, long-lived batteries expressly designed for Delco-Light. Self-cranking—stops automatically. Only one place to oil.

Write to-day for the full Delco-Light story—booklets describing the plant and what it will do for you.

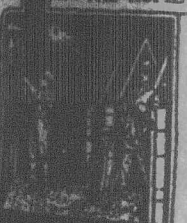
Delco-Light Company, Dayton, Ohio.

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BRIGHT LIGHT IN THE HOME



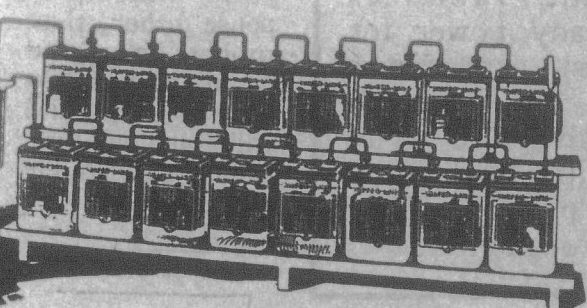
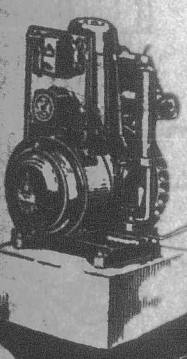
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He has elected to sell the Sharples only after a careful study of all cream separators. He has proved to his own satisfaction that the Sharples "does" skim clean at any speed." He will gladly demonstrate that fact to you.

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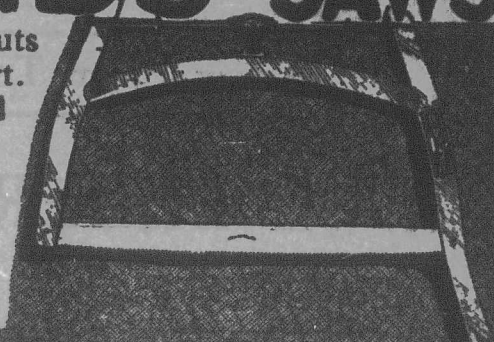
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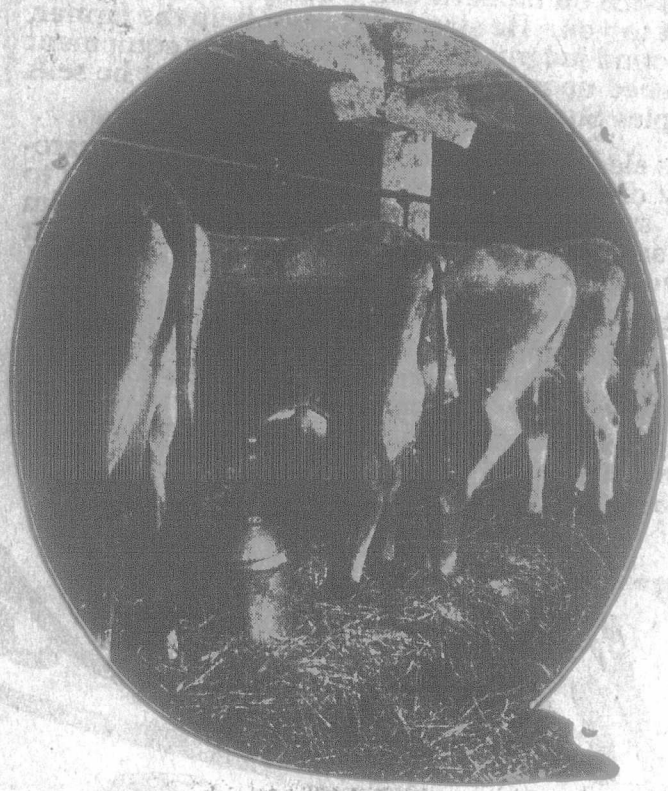


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Your experience of farm machines has taught you to look for the milker that does 100% good work with fewest parts, and consequently requiring the least amount of attention.

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Write for free Lister booklet giving full particulars.

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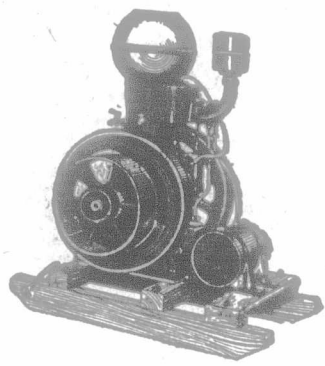
is British built. "We have ours five and a half years, and it is just as good as the day we got it," writes an enthusiastic user, "and it has not cost us one cent for repairs." Simple mechanism, easy to clean, all revolving parts run in oil, enclosed gearings make the Premier accident proof, easy running and easy to clean.



Write for particulars.

The Lister Engine

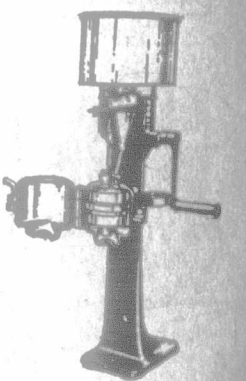
is standard hopper-cooled, throttle governed, oiled automatically, and has high tension magneto. Simplest engine yet invented,



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