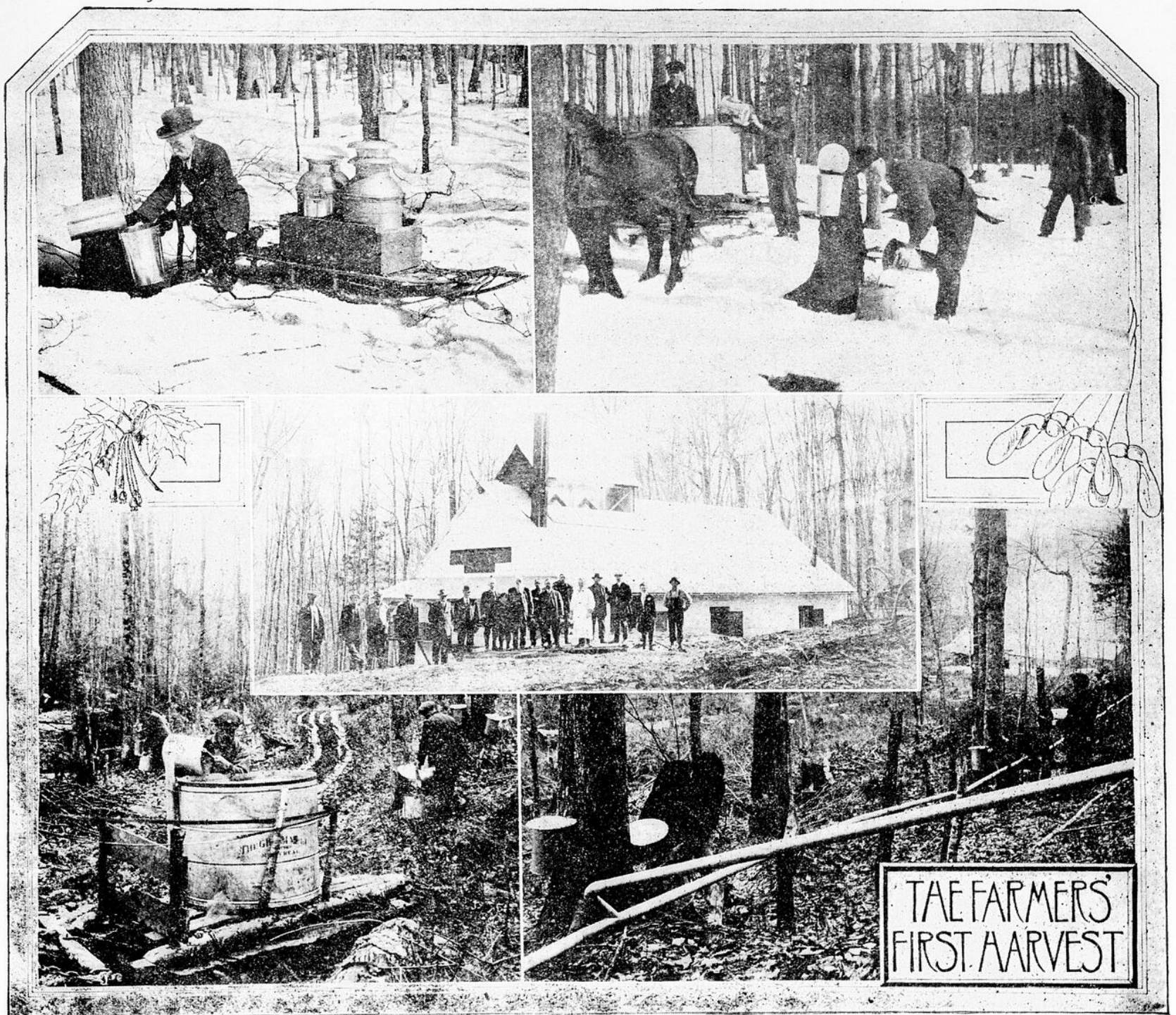


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Volume 31

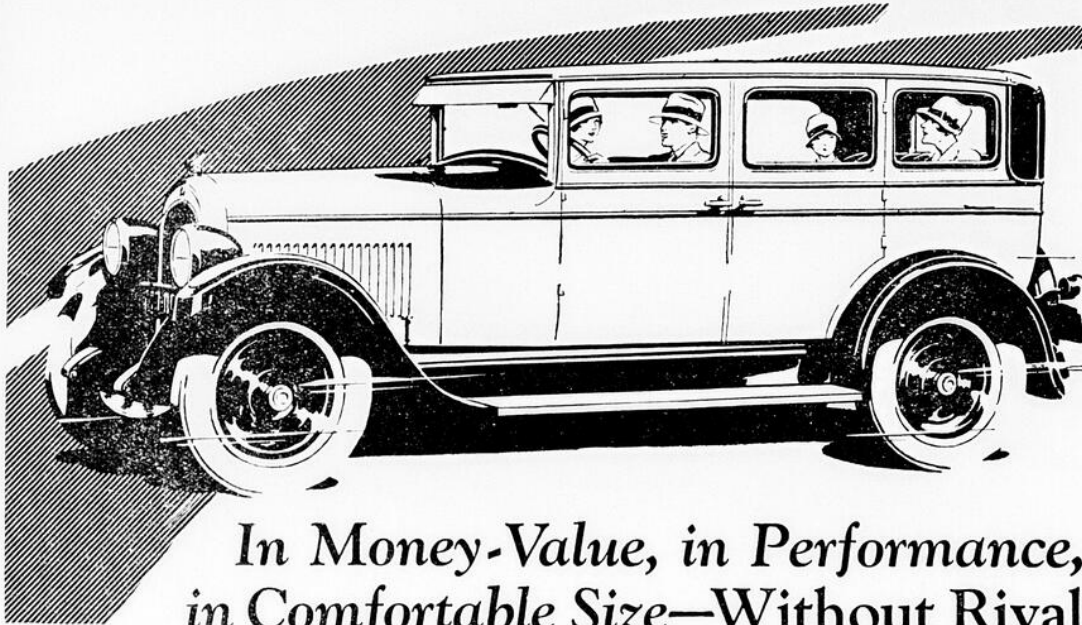
April 1st 1928

Number 10



PUBLISHED BY THE DEPARTMENT OF AGRICULTURE OF
THE PROVINCE OF QUEBEC.

NEW CHRYSLER "52"



*In Money-Value, in Performance,
in Comfortable Size—Without Rival*

\$870

- Coupe - - - - \$870
- Roadster (with rumble seat) 870
- Touring - - - 870
- Two-door Sedan 880
- Four-door Sedan 930
- DeLuxe Coupe - 930
(with rumble seat)
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All prices f. o. b. Windsor, Ontario, including standard factory equipment (freight and taxes extra)

The smart New Chrysler "52" at the phenomenal new lower prices—with quality unchanged—is more than ever the greatest value in the low-priced field.

Full-sized bodies of exceptional fineness, roomier by far than any other car of comparable price. Long, flexible car springs and extra-large balloon tires, giving you all the comfort of a large, high-priced car.

It has power, speed and pick-up characteristic of all

Chryslers. And, above everything, it gives you a smoothness of operation and ease of handling and riding, that enables you to use its fleetness and dash with real comfort.

The smart New Chrysler "52" is everything that Chrysler quality has come to mean among motor cars. Study it in intimate detail. Ride in it. Drive it. Then see how its new lower prices put it far beyond comparison with any other car in this group.

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"INTERNATIONAL"—Made in Canada by Canadians

Every International preparation that is shipped from our factory is one hundred per cent. Canadian manufacture and is the work of Canadians.

Supporting each and every International preparation is a sound organization, one that is favourably known throughout Canada for its service, knowledge and the extremely high quality of the products it manufactures.

The responsibility connected with the making of these preparations is in the hands of skilled professional men, veterinarians, chemists, etc., executives with a life-long training and a vast experience in the exclusive manufacture of live stock medicinal and mineral preparations, who have an intimate knowledge of live stock needs and requirements.

Year by year the sales of International preparations steadily increase as Canadian live stock raisers recognize that these preparations are regular stand-bys, dependable in quality and purity, and what is more important—that through their use they obtain maximum satisfaction and good results.

International Stock Food Co. LIMITED
TORONTO CANADA

Nitrate of Soda

Try This Experiment

TAKE a row of potatoes. Or a row of strawberries. Or a row of apple trees. Cultivate the soil and feed it Nitrate of Soda according to the directions, we will furnish.

Keep count of the crop and compare it with what you get where no Nitrate of Soda was used.

We are content to stand by the comparison. You'll never truly realize the wonderful effect of Chilean Nitrate of Soda on growth until you try it for yourself. Write for our free booklet, "What—When—How—to Use Fertilizers."

Chilean Nitrate of Soda Educational Bureau

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What? When?
How?
To Use
Fertilizers

Your HORSES are what you make them

Your horses cannot work every day this spring if they are not in good condition—do what you can now to get them in shape. Are you ready to clip them?

After winter idleness horses are "soft" and if the long hair is not clipped, excessive sweating soon weakens and slows them up. At night the sweat-soaked long hair becomes icy cold—shivering horses can't get proper rest. Imagine working on a warm spring day in a fur coat and going to bed in sweat-soaked clothes.

Even if given extra feed, unclipped horses are unable to keep up as well as clipped horses.

Clipped Horses Sweat Less

No long hairs to hold sweat, dust, etc.—they soon dry off and grooming them is an easy job compared with the unclipped horse. They rest better, feel better and do more work on less feed.

It Pays to Clip Horses

Get a Stewart No. 1 Clipping Machine now—it will be a big help in keeping your horses on the job this spring. Guaranteed satisfactory or money refunded. Stewart Machines sold over 15 years ago are still in use. At your dealers \$14.50 (Western Canada \$15.00) or send us \$2.00 and pay balance on arrival, freight prepaid.

Flexible Shaft Co., Ltd.
353 Carlaw Ave.
Toronto 8



Clipped Horses Do More Work



Improvements

1. Beautiful gold and black colors.
2. Completely enclosed gears.
3. Improved regulating cover.
4. New turnable supply can.
5. Easier turning.
6. Oil window.
7. Floating bowl.

De Laval

Golden Anniversary Series

New! Beautiful! Easy Running!
Efficient! Durable!

ALL who have had an opportunity of seeing and trying the new 1928 50th Anniversary "Golden Series" De Laval Separators unhesitatingly pronounce them the finest separators that have ever been made.

They are finished in gold and black colors, which are beautiful, durable and practical. All gears on these 50th Anniversary De Laval's are completely enclosed and protected, insuring maximum durability.

A new type of regulating cover and float affords a flow of milk from the supply can of the separator in a smooth even stream, without spattering.

You will appreciate the turnable supply can, which permits bowl and covers to be removed or put in place without lifting the supply can from its position.

The "Golden Series" are also easy to start and turn, and require less power to operate, for the work they do, than any other separator now made.

By looking through the oil window on the "Golden Series" you can see at a glance just how much oil your separator has, and what condition it is in.


And of course the "Golden Series" De Laval's have the wonderful floating bowl—the finest ever made. It is self-balancing, runs smoothly without vibration, with the least power, and delivers a smooth, rich cream.

But the best way to appreciate the "Golden Series" is to see and try one yourself. Your nearest authorized De Laval Dealer will gladly show and demonstrate one for you. Sold for cash or on easy terms or monthly installments, so that they will pay for themselves. Trade allowances made on old separators of any age or make.

See your nearest authorized De Laval Dealer about information on De Laval Separators and Milkers, or write nearest office below.

The De Laval Company, Ltd.

Montreal Peterborough Winnipeg Vancouver



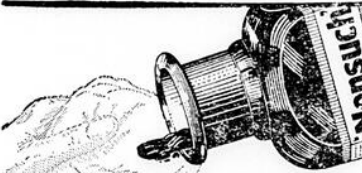
Milk the De Laval Way

De Laval Milkers are now being used on thousands of farms, and are milking more than one million cows. They milk faster, better, cleaner and cheaper than can be done in any other way. They soon pay for themselves. Sold on easy terms.

50TH
GOLDEN
ANNIVERSARY

First in 1878
Best in 1928

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Nonsuch Stove Polish

Liquid and Paste Gives a Quick Shine that Lasts a Long Time

As good as Nonsuch Silver Polish

Made in Canada
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STOCK EXCHANGE OPERATIONS

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Members Montreal Stock Exchange
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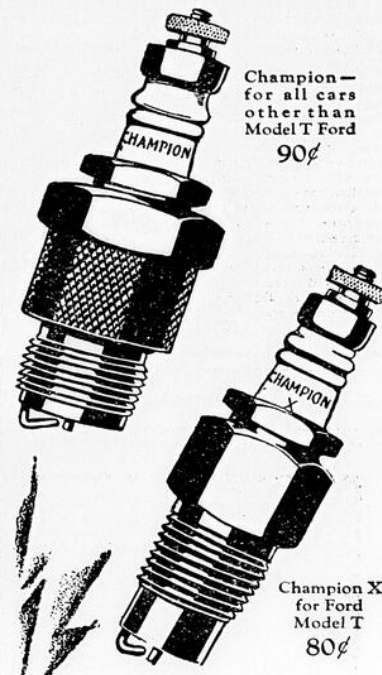
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The Journal of Agriculture contains valuable information in every issue and it costs only \$1.00 per annum.

Send your subscription to Mr. O. Lessard, secretary of the Council of Agriculture, Parliamentary Building, Quebec, Que. On request we send a sample copy.

CHAMPION offers Striking Improvements



FARM OWNERS operating trucks, tractors, and other engine-driven farm equipment will be vitally interested in these new Champion improvements.

A remarkable new sillimanite glaze on the insulator—keeping the plug free from carbon and oily deposits—thus increasing its insulating efficiency.

New compression-tight patented gasket seal which holds absolutely gas-tight—thus insuring maximum compression.

Improved special analysis electrodes providing a permanently fixed spark gap which is far more efficient under all conditions.

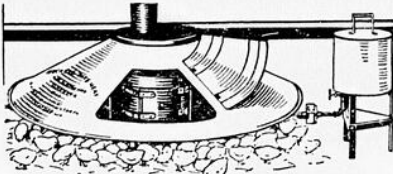
Champion says in all sincerity, that Champion superiorities are so pronounced as to warrant immediate equipment with new Champions, no matter what spark plug you may be using now.

CHAMPION SPARK PLUG CO. OF CANADA, LIMITED
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Use CHAMPION Spark plugs

A CANADIAN-MADE PRODUCT

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A Revolutionary Invention — the Buckeye "Rite-Heat"

The Buckeye "Rite-Heat" Brooder is different from any other oil-burning brooder ever built. It's the brooder that gives unlimited heat. It's the brooder that automatically provides accurate and dependable heat regulation. It operates with practically no attention—no bother, no getting up at nights. It broods up to 1,000 chicks at one time. They don't get chilled, overheated, or smothered to death. They live. Your profits grow.

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World's Greatest Coal-Burning Brooder

More than a quarter million farmers and poultry raisers know the amazing chick-saving ability of the Buckeye Coal-Burning Brooder. The stove is bigger—holds more coal—gives more heat—burns longer. Double check draft automatically regulated, provides constant correct temperature. Buckeye stops baby chick losses. It raises more chicks. It increases profits.



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AT ROCKINGHAM SPEEDWAY

a 4-cylinder Whippet has established a new record—71.6 miles an hour. One more example of the fact that the Whippet is today's fastest and finest light car.

The Powerful Whippet

Time-tested, Owner-proved

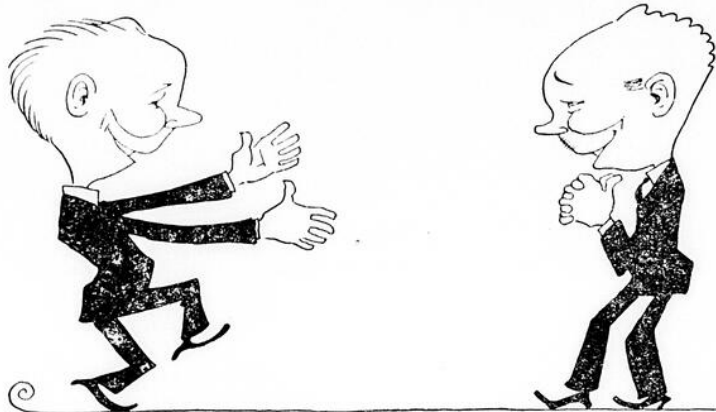
The Whippet has improvements that some or all other light cars lack—gas tank in rear, force-feed lubrication, silent timing chain, adjustable steering wheel, longer spring-base and other refinements that mean longer, more satisfactory service.

COACH \$695

F.o.b. Factory. Taxes Extra.

Willys-Overland Sales Company Limited, Toronto, Ontario

Branches — Toronto, Montreal, Winnipeg.



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WHEN you spend your good money for a tire, there's a whole lot of satisfaction in buying it from *someone you know*.

The reliable tire dealer located near you wants your goodwill for years to come. He wants to give you value. He has a reputation to maintain. That's the kind of dealer who is a Goodyear Selected Dealer.

He operates under the Goodyear Selected Dealer plan because it enables him to give his customers the greatest value, wide choice of prices, sizes, treads. Then his knowledge of tires is so wide that he can give advice that will help you to get every last one of the thousands of miles which are built into these tires at the factory.

A mighty good man to know? He certainly is! And there's one in every town in Canada big enough to support a good dealer.

All Goodyear Tires are built of SUPERTWIST Cords — 61% more stretch and life than old-style cords.

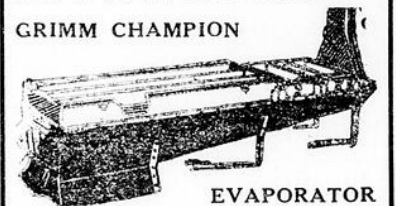
Goodyear means Good Wear

GOOD YEAR
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If Map's trees ran maple syrup instead of sap—there would still be untapped trees owned by people who just naturally let things slide. A Maple tree gives you its sap for nothing, it will be there anyhow whether you use it or not. Turn this fresh pure sap into high grade syrup or sugar and you make money out of your Maple trees—tap them all and make as much money as you can, that is what the

GRIMM CHAMPION



EVAPORATOR

is specially built for and it thoroughly knows its business. The fall is a splendid time for fixing things up in your maple Grove and putting everything in shape for sap-running next spring. Have a Grimm Champion there and it will last a lifetime. Write.

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50 Thousand Skinny Men

To Put on at Least 5 Pounds of Solid Flesh in 30 Days.

Countless thousands of underweight men and women have not rid of that scrawny face and figure by a simple easy treatment that is sure and inexpensive.

It's really marvelous how quickly those who try it take on flesh where flesh is most needed.

Hollows in neck and chest fill out and narrow sunken chested men begin to take on a decided manliness in just a few weeks.

The one great scientific weight producer that people who need more flesh can depend upon is McCoy's Cod Liver Extract Tablets and besides helping you to bring to those who take them more energy, strength and vigor—they have proven a superb tonic.

McCoy takes all the risk — Read this ironclad guarantee. If after taking 4 sixty cent boxes of McCoy's Cod Liver Extract Tablets or 2 one dollar boxes any thin, underweight man or woman doesn't gain at least 5 pounds and feel completely satisfied with the marked improvement in health—any druggist is authorized to return the purchase price.

YOU CAN'T CUT OUT A BOG SPAVIN OR THOROUGHPIN but you can clean them off promptly with



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TRADE MARK REG. U.S. PAT. OFF.

and you work the horse same time. Does not blister or remove the hair \$2.50 per bottle, delivered. Will tell you more if you write. Book 4 R free. ABSORBINE, JR., the antiseptic liniment for mankind, reduces Varicose Veins, Ruptured Muscles or Ligaments, Enlarged Glands, Wens Cysts. Allays pain quickly. Price \$1.25 a bottle at druggists or delivered.
W. F. YOUNG Inc., 134 Lymans Bldg., Montreal, Can.
Absorbine and Absorbine, Jr. are made in Canada.

Down Go Prices
Two Big Firms Consolidate

—to cut down operating costs and thereby make Big Cuts in Prices. Incubators of both makes are made of California Redwood —hot water, copper tanks, double walls, air space between, double glass doors, "Jiffy" Egg Turning.

Trays, Wisconsin are finished natural Redwood color. Ironclad covered with galvanized iron. Shipped complete—set up ready to use from TORONTO or WINNIPEG.

FREIGHT AND DUTY PAID
You take no risk. We give you 30 Days' Trial. If not satisfactory, then send them back at our expense and get your money.

| WISCONSIN PRICES | | IRONCLAD PRICES | |
|------------------|---------|-----------------|---------|
| 140 Egg Size | \$17.95 | 140 Egg Size | \$18.80 |
| 180 " " | 20.50 | 180 " " | 21.65 |
| 250 " " | 27.50 | 250 " " | 29.50 |
| 500 " " | 55.00 | 500 " " | 59.00 |

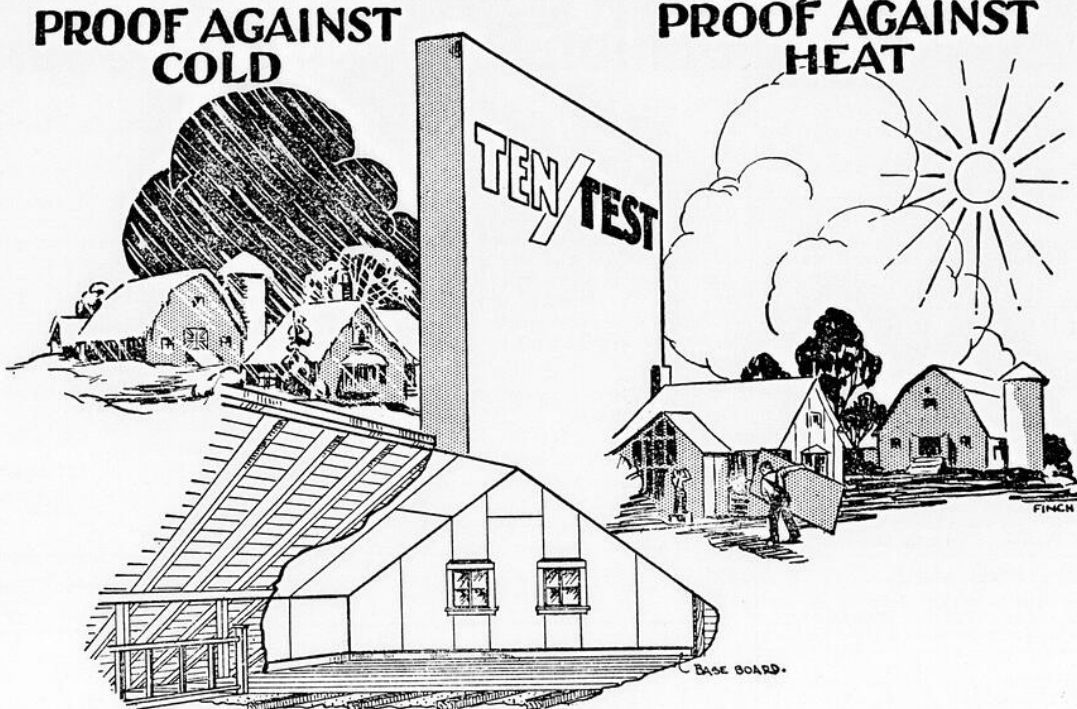
7% Discount if Incubator and Brooder is ordered together. Order direct from this ad. Send for **New Free Book** —shows larger sizes up to 2000 eggs—tells how to get eggs in winter; how to stop chick losses; how to feed, care, etc.

WISCONSIN-IRONCLAD CO., Box 1402 Racine, Wis.

SOUFFLERINE

A guaranteed cure for HORSE HEAVES, COLD, BROKEN WIND. Certificates in our hands prove the real merit of "SOUFFLERINE". Don't delay to learn about write at once.

5 lb.-box \$4.50, 10 lb. \$9.00
Sent by mail C. O. D.
MAINLAPBERT, P. O. Box 1597, Montreal.



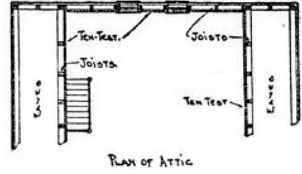
Year round Farm House comfort

If your farm house is cold in winter —over-warm in summer—you can get uniform comfort by insulating throughout with TEN/TEST Sheathing. It is easy to handle, saws and nails like wood, fits right and tight to the studding.

Are you building a new home? TEN/TEST Sheathing, used outside is more economical for building than wood sheathing—plus a saving of 35% on fuel bills.

point at which 60% of the costly heat you generate escapes to the outer air. While insulating the attic with TEN/TEST (as illustrated above) you can also make an attractive room or rooms. No additional heat is required for these rooms.

TEN/TEST keeps out all dampness, heat and cold, and it makes the home a healthier, happier place to live in.



TEN/TEST not only insulates the attic, making the house warmer in winter and cooler in summer, but also provides extra room that can be put to many uses, when company comes, or as larger quarters for the growing boys.

Consult your lumber dealer, or write Department TTA for specifications
INTERNATIONAL F'BRE BOARD LIMITED, MIDLAND Ont., GATINEAU, Que.

GENUINE BARBADOS
Extra Fancy
MOLASSES
"BEMA BRAND"

BRIMFUL OF HEALTH AND ENERGY
Serve it at Every Meal
GOOD GROCERS SELL IT . . . IN BULK ONLY

THIS trade mark on the head of every cask is your guarantee and your grocer's guarantee of the World's Finest Molasses.

FOR SALE

FEW registered Ayrshire calves, males and females, accredited herd. Registered Chester White young pigs coming from old sows, farrowed in March. Moderate prices. Hatching eggs of Barred Plymouth Rocks, \$1.25 for 15 or \$7.00 for 100. J. C. BERNARD, St. Pie, Bagot Cty., P. Q. R. R. No. 2.

FOR SALE

CHESTER White and Yorkshire young pigs farrowed in March and April. Apply to ULDAIRE P. FONTAINE, Ste. Angele, Rouville Cty., Que.

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CHINCHILLA and Angora rabbits, raccoons, minks. Serious representatives wanted. BREEDING FARM "QUEBEC", Montmagny, P. Q.

CHESTER WHITE

FOR SALE: 3 litters of registered Chester White young pigs farrowed in March and April. Selected offsprings, moderate price. Apply at ARMAND LUSSIER, St. Damase, St. Hyacinthe, Cty.

White Leghorn Chicks

COMING from one of the best laying strains in Canada. Delivered every week. 100% living. Ask for price list St. Francis Poultry Farm Reg'd., St. Francois Xavier de Brompton, Que.

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ONE apray with complete outfit, in account of owner's death. Apply to MADAME CAMILLE PESANT, St. Dorothee, Laval Cty, Que.

ONE DAY Chicks, nine various breeds, all guaranteed pure bred. We guarantee that 100% of ordered chicks, will be delivered strong and living. Ask for our catalog freely sent on request. LAURENCELLE & ROUTHIER, 1421 Bleury St., Montreal.

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ONE farm, two miles from Shawinigan Falls, 94 acres of land, 45 under cultivation, balance in bush and pasture. Good buildings. Price \$5,000.00. For information, write to FREDDY FERRON, Glenada, St. Maurice Cty., P. Q.

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HATCHING eggs from White Leghorns Barred Plymouth Rocks, at reasonable price; also Giants of Flanders, Golden pheasants. For price, write to JEAN D. LACHAPPELLE, St. Paul l'Ermite, P. Q.

Ayrshire, Chester White, Yorkshire

FOR SALE. Two fine bulls, 22 months and 1 year old, coming from dams registered in R. O. P.; herd will be soon accredited. Few litters of young pigs farrowed in March and April. Selected registered specimens. Moderate price. GEORGIS E. MORIN, St. Hyacinthe, R. R. 2, Tel. Bell 712-2.

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MANY litters of Improved and registered Chester White and Yorkshire young pigs which will born in the first days of April. Moderate price. Apply to LUCIEN MORIN, St. Hyacinthe, P. Q.

CREAM WANTED

SHIPPERS for our new butter department. Highest prices; weekly settlements. WILD-GROVE LIMITED, 175 Colborne St., Montreal, Que.

STRAWBERRY PLANTS FOR SALE. Improved Extra Hardy early Senator Dunlap. Quality guaranteed. Delivery prepaid. \$1.25 hundred. \$4.50 five hundred. \$8.00 thousand. LEONARD BARKLEY, Morrisburg, Ontario.

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ONE 8-month old Holstein bull, calves, male and female, coming from cows registered in R. O. P. (305 days) 13,000 and 14,000 pounds of milk. Accredited herd. LDOUARD P. LACHAPPELLE, St. Paul l'Ermite, L'Assomption Cty.

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65 Percheron, Belgian, Clydesdale, Hackney Stallions and Mares. Prize winners Canada's leading fairs. Prices reasonable and suitable terms arranged. Write for details. ARNOLD & SON, GRENVILLE, QUE.

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SPRING calves and selected bulls, seven to fifteen month old, coming from qualified dams very carefully selected and from sires of high quality, sons of SIR ANDREW Imp. and MAJOR DE ST-SULPICE. Accredited herd. Whether you buy by correspondence or in person you will be equally satisfied. LA FERME BELLEVUE, St. Hyacinthe, Que., R. No. 1, Tel. Ste. Rosalie.

Here's Speedy Relief From Bunion Pains and Soft Corns

Emerald Oil Must Give Complete Satisfaction or Money Cheerfully Refunded.

Get a two-ounce bottle of **Moone's Emerald Oil** (full strength) today. Every well stocked drug store has this, with the distinct understanding that your money will be cheerfully returned if it does not reduce the inflammation, soreness, and pain much quicker than any remedy you ever used.

Two or three applications of **Moone's Emerald Oil** and in fifteen minutes the pain and soreness disappears. A few more applications at regular intervals and the inflammations is gone.

And as for Soft Corns a few applications each night at bed time and

they just seem to shrivel right up and scale off.

No matter how discouraged you have been with pads, shields, or other applications, if you have not tried **Emerald Oil** then you have something to learn.

It's a wonderful formula — this combination of essential oils with camphor and other antiseptics so marvelous that thousands of bottles are sold annually for reducing varicose or swollen veins.

Every good druggist guarantees the first bottle of **Moone's Emerald Oil** to end your foot troubles or money back.

End Your Rupture

in this new scientific way Without Pain, Operation or Delay You Can Try It FREE!



No springs or gouging pads to push into the rupture opening. Its soft, clean, oval air cushion brings the edges of the rupture together. Asleep, awake, at work or rest, it works for your cure. It has healed thousands. The most modern and the cleanest healing method known to science.

Gives Absolute Freedom in Motion Write today for Free Trial Offer. Don't Delay—Rupture is a dangerous thing. BROOKS APPLIANCE CO., 207B State St., Marshall, Mich.

Ayrshire, Yorkshire, Chester White

FOR SALE: Four one year old Ayrshire bulls coming from dams registered in R. O. P. Few calves which will born in March and April. Accredited and selected herd. Few litters of Yorkshire and Improved Chester White young pigs coming in March and April. Moderate price. Apply to ADELARD MORIN, St. Hyacinthe, Tel Bell 716, s. 3.

BRIGHTEN YOUR HOME — NOW — AT LITTLE EXPENSE

*More Beautiful
Less Expensive*



"Kashmir" Pattern No. 562 is shown here—a stunning combination of Mulberry, Old Gold and Royal Blue—the 9 x 6 foot size costs only \$6.75—at your dealer's.

FOR that room that needs "doing-over" . . . why delay longer? . . . Congoleum Gold Seal Rug prices are again reduced; this time the savings offered are greater than ever.

The 1928 patterns are the most beautiful you've ever seen; a host of charming colour schemes are instantly suggested . . . all made with new "Multicote" longer-wearing surface . . . an improvement that builds longer wear from the felt base right through the hard-wearing surface—only genuine Congoleum with the Gold Seal on the surface offers this exclusive feature.



And Guaranteed

Do not forget to ask for the Gold Seal . . . your Guarantee of satisfaction and positive assurance of the best floor-covering value your money can buy.

CONGOLEUM GOLD SEAL RUGS

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Send me, without cost or obligation, a copy of your latest booklet entitled "Charming Colour Schemes That Cost So Little."

Name.....

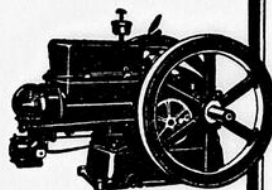
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for a few cents
a day!**



**Water Systems
for every
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Electric or engine driven. Capacities from 120 gallons an hour up. We also supply wind mills, pump jacks and pumps.

Think of the savings you can make by getting a

"Z" Engine

to do for a few cents per hour the many jobs you've been doing by expensive man-power! Think too how it saves back-breaking labour and lost time. Over 400,000 farmers have proved it simple and profitable to operate.

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Write for free booklet



**A new home
Electric
Power Plant**

Completely enclosed. self-contained. Gives steady light direct from generator or from battery.

On the
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45

The Canadian Fairbanks-Morse Co., Limited
St. John - Quebec - Montreal - Ottawa - Toronto - Windsor - Winnipeg - Regina - Calgary - Vancouver - Victoria
The Makers of Fairbanks scales and valves

**TO HELP YOU with YOUR
INCOME TAX RETURN**

To assist the income tax payers of this community in preparing their returns for the year 1927, due on April 30th next, the Bank of Montreal has issued a new edition of its booklet on

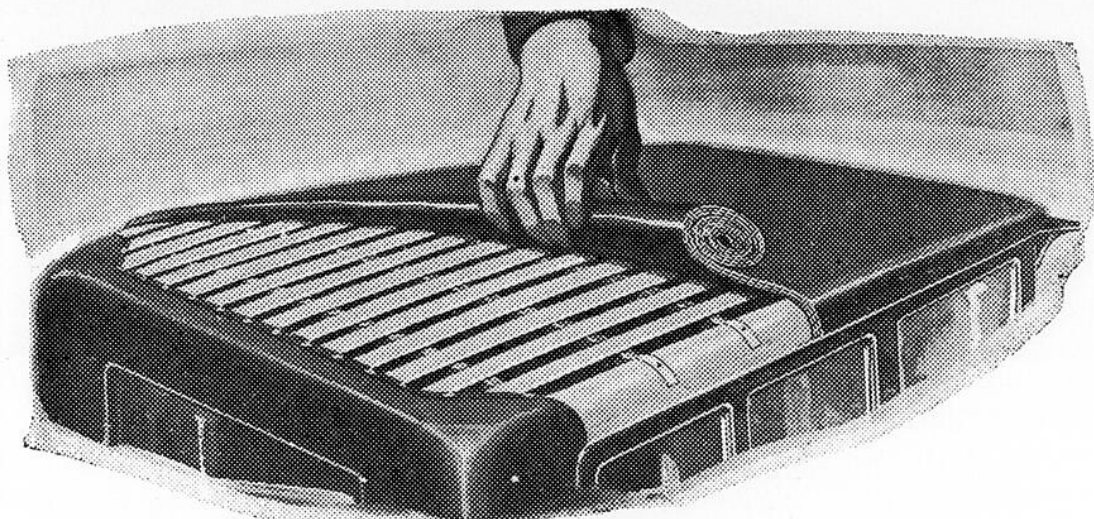
**THE CANADIAN
INCOME TAX ACT**

This booklet contains the full text of the law as it now appears in the Revised Statutes of Canada, 1927. All the changes to date are incorporated. It also gives clear interpretations and examples. Copies may be obtained without charge on application to the nearest branch.

Bank of Montreal

Established 1817

Total Assets in excess of \$830,000,000



The Roof Over Your Head

**Features of Fisher Roof
Construction**

1. The roof of every Fisher Body is practically a separate assembly, resting as securely upon the body's pillars as does the roof of a home upon its framework.
2. Slats and bows form the sturdy structure of a Fisher roof deck. The bows are twelve inches apart; the slats three inches apart.
3. The bows used in a Fisher roof are cut to shape, not steam bent. They retain their shape permanently.
4. A layer of sound-absorbing cotton batting laid on the Fisher roof framework between two sheets of cotton cloth, reduces drumming noises.
5. All Fisher roofs are covered with extra durable weather-proof fabric—specially constructed to stand up under all conditions of weather.

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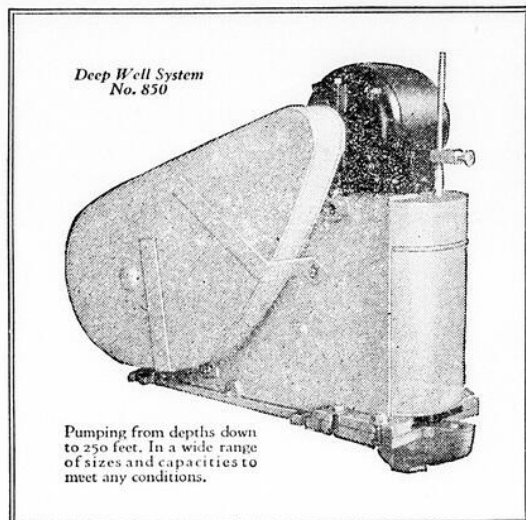
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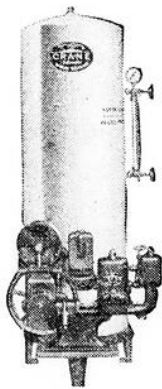
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EDITORIAL COMMENT

A ONE-VOLUME POULTRY REFERENCE LIBRARY

We are in receipt of the newly printed Report of the World's Poultry Congress which was held last summer in Ottawa, a beautifully bound book of almost 600 pages, handsomely illustrated. It is not the binding, however, that strikes one about this book, nor yet its size (though its heavy cloth binding and its size—600 pages, 7¾ by 10½ inches—are impressive), but the extraordinary scope of its contents. For the Report gives not only an account of the various general meetings that were held in connection with the event, but also the full tale of papers presented by the world authorities before one or other of the many sections of the Congress.

It will be remembered that, in order to facilitate the presentation of the many important papers, the meeting resolved itself into different sections, each dealing with one phase of the poultry industry. One group of workers listened to the addresses of world famous experts on subjects connected with breeding, another to those dealing with questions of poultry disease, and so on. So that not even the man who spent the whole week at the Congress could keep in touch with all that went on: many meetings were progressing at the same time. In this Report, however, the interested poultry producer has an opportunity to get, in one single volume, all of the papers delivered on all of the subjects considered—a more up-to-date reference work on poultry, and one of greater scope, than any other obtainable anywhere today. Forty-one papers on breeding are printed here, 34 on poultry diseases, 21 on nutrition, 26 on marketing, 16 on extension work with poultry and 15 on general poultry topics—is not this a real reference library? And the papers cover the findings of not only one or two countries, but of most of the countries where poultry are kept for profit.

We recommend this volume to our readers. Quebec is quickly awakening to her opportunities in poultry, and we want our poultrymen to have the best available information. We are informed, however, that there is only a very limited edition of this work available, and that those who desire copies should send in their orders without delay to the Secretary, World's Poultry Congress, Ottawa, Ont. The price of the volume is \$3.00.

ARGENTEUIL TO BE MADE ACCREDITED AREA

A request, in the form of a petition signed by over 80% of the cattle owners of the County of Argenteuil, has recently been presented to the authorities asking that the Federal Government establish in Argenteuil a tuberculosis-free "area". As our readers no doubt know, under this plan all the cows in a given area, purebred or grades, are tested for freedom from bovine tuberculosis and all suspects slaughtered. In other words, the area is cleaned up, in so far as this disease is concerned, and regulations are enforced which will see that the district stays clean. It is not new to Quebec; already some eight counties are free from tubercular cattle.

The advantages of such wholesale cleaning up of this disease are many. Foremost, perhaps, is that of better milk for human

consumption: in one united action the producers of milk over a very large area are cleansed of the disease, and the result must be great in the increasing safety of the milk produced there. Again, there is the matter of improved sales of stock from such a district. More and more are buyers of cattle insisting on knowing that the cows they buy are free from tuberculosis, and the areas that are known to be free from the disease are likely to invite the prospective buyer of breeding cattle. And, too, the fact that all of the cattle in a large area are accredited lessens the risk of reinfection.

Quebec has many very famous dairying districts, and Argenteuil is not the least important of these. Not only is this county well known as a heavy shipper of milk to Montreal, but it is well known as well for its herds of purebred stock. We can think of no fair that has shown greater development during the past few years in its dairy cattle section than has Lachute, in the heart of Argenteuil. We congratulate the people of Argenteuil on their decision, and we are sure that they will not regret it.

TO HELP THE MAPLE SUGAR INDUSTRY

Two announcements of great importance to maple sugar makers have recently been made. The first concerns research. It is to the effect that a grant has been made by the National Research Council of Canada, to be administered under the direction of Dr. J. F. Snell, professor of chemistry at Macdonald College, for research into some of the problems of maple sugar and syrup makers. The second concerns administration, being to the effect that the Hon. W. R. Motherwell, federal Minister of Agriculture, has declared his department to be ready to take over the administration of the law regarding substitution and adulteration in maple products.

Our information in the latter matter is simply a newspaper note, but, if correct, it is, we think, a very important announcement. For several years now some of the more interested maple products producers and buyers in this province have been asking for just this thing. The trouble up to the present has been that the Act under which adulteration was supposed to be curbed was administered by a department that was interested, not in the maple industry, but in seeing that consumers received a product that was not injurious to health; and, while maple products that have been adulterated by the substitution of cane sugar may be quite healthful, the adulteration has had a harmful effect on the industry as a whole, making it very difficult for dealers in the pure product to meet the competition of those who resorted to adulteration. The Department of Agriculture, however, should be interested in seeing that 'pure' maple products are really pure, not only because it is the right of the consumer to get what he pays for, but also because the maple industry is one that is well worth fostering in this country.

FARMERS FROM EMPIRE TO VISIT ENGLAND

The recent visit of a number of people interested in Canadian farming and Canadian agriculture generally to England and the Continent to study at first hand marketing conditions, etc., has no doubt been followed in the daily press by many of our readers.

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AND HORTICULTURE

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NOTICE TO SUBSCRIBERS

Subscribers and members of agricultural societies, of farmers' clubs and of the Provincial Dairymen's Association, who do not regularly receive either the English or the French Journal of Agriculture and Horticulture are requested to address their complaints to the Secretaries of their respective Societies, who will transmit them to the Secretary of the Council of Agriculture at Quebec.

From what we have gathered, the visit has been a good thing, not only for those who made the trip, but also for those with whom they came in contact on the other side. An *exchange* of ideas was made. A still more ambitious project of this nature is now being arranged for the coming summer under the auspices of the British National Union, namely the bringing together in England of farmers from all parts of the Empire.

The programme for the visit has already been prepared, and, at the request of the secretary of the B. N. U., we reprint the following resume of it from the columns of *The Times* of Feb. 13:

"Canada, South Africa, Australia, and New Zealand and smaller Dominions and Colonies are sending representatives, and the total may be from 80 to 120. The various contingents are due to arrive, or assemble, in London on June 4, and all will be received on that day by the Prince of Wales at St. James's Palace. The first ten days are to be spent in London, when the programme will include, in addition to a reception by the King and Queen at Buckingham Palace, visits to the several markets, the Derby, Windsor, and the Port of London. This arrangement will enable the members of the party to get to know each other so that they may be better able to confer and discuss things during the subsequent tours throughout the country.

"For the provincial part of the tour the excellent plan of 1927, for the South African party, will be followed. The company will divide into four groups and, leaving London on June 14, they will take different routes into the country. Some of the details of the different programmes have still to be adjusted, and will be published later, but although it will be impossible for every member of the party to visit all districts, the choice is attractive and representative of the various interests comprised in the industry. The points touched in the routes include Cambridge, Norwich, Ipswich, Colchester, Reading, Salisbury, Nottingham (for the Royal Show), Leeds, Sheffield, Edinburgh, Aberdeen (for the Highland Show), Balmoral, Perth, Belfast, Dublin (for the Horse Show), Liverpool, and back to London, where four or five days will be allowed the party in which to compare notes and experiences.

"It may again be remarked that the primary objects of the tour are business and personal intercourse. It is intended to provide the visitors with every opportunity for studying the home markets. The more they can see of, and have explained to them, the different systems of farming the better, but the supreme ideas are markets and "the personal touch." These points are emphasized to make it known that the visitors place greater importance

upon the utility side of their tour than upon extravagant entertainment. Former visitors have told us that, while they did not misunderstand, or fail to appreciate, generous hospitality, they would like to have seen more of the normal life and habits of their fellow-farmers at home. So far as may be practicable, it is intended that the welcome departure initiated last year will be continued and possibly extended next summer. In this connexion it may be repeated that the work of the British National Union—evolved from the South Africa National Union—(237-238, Moorgate Station-chambers, E.C.2) is, like the older institution, managed on self-supporting principles, is non-political, and non-profit-making. The Imperial idea runs through the whole proceedings, and it is in furtherance of Imperial relations and intercourse, business and social, that the visits planned have been conceived and are to be carried out.

"The visit to this country this year is but the first of a series. It will be followed by a tour of Australia and New Zealand in 1926, of Canada in 1930, and of South Africa in 1931."

On My Way

QUITE frequently now I journey into the country, and were it that my setting out had in it no particular purpose and my journeying had for its object no definite destination, even then my going would not be void of pleasure. For I love the stretching land so wide and free, smothered though it lies in the trackless blanket of the winter snow. Empty, cold and desolate it may be, merciless in its callous unproductiveness, but in its sweeping waste triumphant over the will and inclinations of man—untethered and defiant. I see in it the answer to the need I often feel in me—to escape for little while at least, the greatness and the littleness of men, even to be free from myself. To enjoy it, it is not necessary that I possess even a tiny parcel of the ground, and he whose possession it is may not deny me the pleasure of which I speak. Besides, strange as it may seem, I can never concern myself unduly about possessions, though I belong to that careful race of men at whose expense many witty stories are told.

So as I journey I look out upon the countryside through which my window passes and I see the hand of winter, heavy upon the land. There is almost dreariness in the stainless waste and hopelessness in the frozen fields. The humble farm homes, set too far apart to be companionable, are but tiny forlorn shelters in the great snow-white expanse. With fresh cut woodpiles near their doors they appear to be, with valour and determination, enduring the grip of ice and snow only because better days must come—verily are at hand. Surely sturdy must be the frame and stout the heart of those continuing here amid the bareness of winter that they may till and toil in summer fields.

Not until I arrive at a certain city of modest size, whose extent and importance scarcely hampers the openness of fields and hillsides in which it lies, do I realize how I have become accustomed to the life of a great metropolis. Like the grateful calm it is of a restoring night after a beleaguered day. As I make my way along the quiet streets of the friendly town I appreciate the restfulness of its uncrowded ways. Being eager to reach my objective I walk quickly with ease along the roomy sidewalks. There are tram cars but their frequency and numbers do not create a problem of long obstructing lines, but rather is the opposite true. They move on a leisurely schedule and are suited to people who need not hurry, rather than those who feel the desire to hasten. I am happy, for on the fringe of this town, just where the country begins, Danny and Paul with their mother still dwell and there await me. Conscious of the peaceful lull into which I have been transported, and about to be at home once more, my step is brisk and my spirits light.

This arrangement of things which necessitates my absence from home is not suited to my desires, but on my way I am planning, striving and hoping, as most mortals are, to better the scheme of things so as to make for the most happiness in living. Yet there does always seem to be one thing at least out of line and quite beyond my control to sight it. Some one said to me not long ago, "You can't have everything right, and if you wait until you do before you are happy, you'll never be happy". So though counting my blessings may not be the particular thing I feel like doing when some certain blessing I want very much is withheld from me, still it is no doubt the best way out. Doing without some thing I so much would have, not as a virtuous practice, but because I cannot help myself, may prove often times good for my body and

better for my soul. It may be, if properly used, the unwanted material out of which character is formed, and as character is the one imperishable thing that humans may build up, the requisites for the building should be all the more welcome.

So spring comes once again to my waiting heart. My body was glad and comfortable as I walked today in the warmth of sun that never before was quite as warming at this time of year. Maple syrup at fifty cents a bottle in the grocery windows was, I think, the most impressive indication of the glad season and was an information perhaps to some reflecting minds, none too well informed, of what an easy and profitable living fell to those fortunate, farmer folk. Awkward puddles collected on the sunny sidewalk just where so many people wished to walk, and shiny new rubbers shod many of the passing feet. From the weeping earth fresh streams came forth and down the hillsides hurried, rippling and shimmering as they ran in the sunlight that gave them birth. The bonded earth was glad in the dawn of deliverance—the reward of well kept faith. Somewhere, it would seem, from out the nothingness of space, a hand moved, and all the world was changed. Life that in some mysterious way had died, but had not ceased to live, was reviving into life again. Nature's fasting season was nearly at an end, and resurrection, not as told in old, old history pages, nor revealed through form or creed, was permeating even the atmosphere that I breathed. The miracle of conquering life was there before my unveiled eyes, sweeping me on in its convincing strength to deeper peace of belief, to lesser fears from doubt.

Thus shall I follow the winding road that shapes itself before me, and wend my way onward. I shall hear the song of streams, the murmur of the leaves, and see the broad abounding fields where'er I be. I shall be refreshed with the cool of night that follows the heat of day, and, weary, I shall pause as pilgrims do at the wayside shrine, and my strength shall be renewed.

H. H.

Agricultural Advisory Committee Meet at Macdonald

THAT very satisfactory progress, both in teaching and in research work, has been made during the past year by Macdonald College; that Macdonald is in a position to give a valuable technical service direct to the farmers of this province in the solution of problems that can only be attacked on the farms; and that the only thing now holding the College back from even greater possibilities of service is lack of funds—these were some of the opinions expressed by the Advisory Committee on Agriculture at their meeting with the Faculty of Agriculture of McGill University held at Macdonald College last month. This Advisory Committee, appointed three years ago by the McGill Board of Governors to help in framing courses in agriculture and in keeping research workers of Macdonald in touch with the needs of the rural districts of Quebec, is made up of some of the more outstanding farmers of the province, with F. E. M. Robinson, of Richmond Jerseys Inc., as Chairman and E. C. Budge of Montreal as Secretary.

At this meeting, which was presided over by Sir Arthur Currie, Principal of McGill University, reports on the year's activities were made by Dean H. Barton and other members of his staff. The Dean's report showed the registration in the Faculty of Agriculture to be 153 as against 116 last year. Special mention was made of the Old Country boy project, a joint effort on the part of the C. P. R. and Macdonald College, which offers special opportunities to selected boys from the Old Country to secure the necessary training in agriculture and the necessary guidance in establishing farm enterprises of their own in Canada.

Under this scheme 79 boys have already been brought out, of whom the larger proportion are still attending college. Some wastage in terms of farmers is expected, since most of the boys are young and farming is a new experience to them. Prospects are good, however, for the establishment of a goodly proportion of these on Canadian farms and the training they are receiving will be of value to all of them whether they follow farming or not.

In extension work Macdonald has been able to do more as a result of a special grant made by the Quebec Department of Agriculture, and short course work at strategic points, club meetings, exhibitions, field demonstrations and so on have had the services of members of the staff. In research work the chief development has been in the direction of joint effort in attempting to solve some of the larger problems facing Quebec farmers.

INCUBATION AND BROODING

By L. H. Bemont, Poultry Dept., Macdonald College.

THE ability of a poultryman is automatically measured by the number of matured chicks he can raise in proportion to the number of eggs set in the incubator. Large numbers of good strong chicks cannot be hatched and reared with poor equipment, nor can good equipment produce good chicks from eggs that are not of first class quality. The man who lacks either of these things is greatly handicapped at the start, so if he has had experience in this work he will put forth every effort possible to supply the two most important essentials for success.

Probably the most important thing to look for in hatching eggs is high fertility. Naturally, the best quality egg produced is useless for incubation purposes if that egg is not fertile. Fertility in eggs is affected by many things. The size of mating, or the number of males to females, is probably the most important consideration, although the general management and care of the breeding flock can do much to increase or decrease the fertility of the eggs produced. Happy, contented, well housed, well fed, healthy birds will give good fertility provided a sufficient number of males are placed with the females two weeks before the eggs are saved for hatching. A vigorous Leghorn cockerel, when mated to fifteen to twenty females, will give excellent results but it is not advisable to ask a vigorous male of the heavier breeds to give the best results when the number of his females exceeds fifteen. A less vigorous, older or less active male bird will not be able to handle as many females as the young sturdy cockerel.

If matings of this size give poor fertility, look to the management of the breeders, and I am confident you will find the cause. Females in their second year of production lay the best eggs for hatching and produce the best chicks. Hens that have been forced into high production during the fall and winter months seldom lay eggs that will give you good hatchability. The largest number of good strong chicks will come from hens that have rested for about two months before the incubation season and have come back into production gradually, just in time to have their eggs go into the machines. This schedule of laying may be controlled very nicely by feeding the breeders heavily on scratch grain from the middle of December to the latter part of January, when the amount of the scratch grain is cut down to twelve pounds per one hundred birds and the hens are compelled to eat mash to appease their appetites. When the last change is made, two percent by weight of Cod Liver Oil or five percent by weight of Cod Liver Meal should be added to the dry mash, green food in variety should be fed daily and good fresh water should be in front of the birds at all times. Experience has demonstrated that this method of

management will give excellent results when the birds are in good dry houses.

Fertile eggs of any shape, size or colour will usually hatch under correct conditions if all the necessary parts of the egg are there in proper proportion and the shell is not too thin or broken. We must remember, however, that the pullet that comes out of a small, mishaped, or poorly coloured egg will in all probability lay approximately the same kind of an egg. The market men are asking and are willing to pay a premium for a two ounce egg that is well shaped, sound in shell and of the standard colour for the breed that produced it. In order to realize the most from the sale of our eggs, then, we must put in our machines exactly the type of egg we want our pullets to lay during the coming winter. Too much emphasis cannot be placed on this point to-day. Our R. O. P. inspectors are complaining of small egg size throughout Canada, and this means that poultrymen are setting too many small eggs. Breeding up the size of egg in a flock is a slow process, and I believe that the careful selection and culling of our hatching eggs will give us immediate results.

Large numbers of excellent hatching eggs are practically ruined every year by the lack of proper handling between the time the eggs are laid and the time they are placed in the incubator. During the cold weather, eggs should be gathered frequently. It pays to collect hatching eggs every hour on extremely cold days and every two hours under ordinary spring conditions. An egg does not have to freeze to kill or weaken the germ, and a weakened germ causes us more waste of time than a germ that we know is dead. If an egg is exposed to the cold for any length of time it should never be set. Hatching eggs should be set as soon after they are laid as possible. The germs in the eggs will be fairly strong until they are ten days of age; after that age they deteriorate very quickly, even under ideal conditions. When holding eggs for an incubator they should be stored in a cool, well ventilated cellar where the temperature will hold constantly between fifty and sixty degrees Fahrenheit. They should be turned once daily to insure healthy germs at the end of the holding period.

The purchaser or seller of hatching eggs should be sure that when the eggs are shipped they go by rapid transit and that they are packed very carefully. Broken eggs can be replaced after time is wasted but eggs that are chilled or badly shaken cannot be identified until they have been in the machine for a week or more and inconvenience in planning the hatch is caused. When eggs are shipped in cold weather they should be loosely wrapped in paper and then well packed in saw-dust, bran, excelsior or some such material. A shipment of hatching eggs should be conspicuously marked as such and shipping instructions should indicate that

they must not be put near a stove or in a cold draught.

Probably the most important advantage artificial methods of incubation have over natural methods is that the operator can control and plan his hatches to suit his needs. With ordinary results in incubation he may plan on having one good vigorous, mature pullet go into his laying quarters in the fall for every five eggs set in the incubator. Artificial incubation insures early hatching, which is usually impossible to any great extent when using natural methods. It is better to have chicks of one or two ages rather than many small lots of varying ages.

The average farmer hatches his chicks too late in the spring, and the pullets are, therefore, not mature enough to begin laying in the fall. A pullet that does not start to lay before cold weather sets in, will usually not begin until the middle of January or even later. The really profitable months of production for the pullet flock have gone, and the bird lays the greater part of her first year production when eggs are low in price.

Chicks may also be hatched too early. Early hatched chicks are apt to commence laying too early and as a result will moult as soon as the cold weather comes and thus lose a large portion of their winter production. As a happy medium, plan to have the first hatch of Plymouth Rocks and similar breeds come off about St. Patrick's Day and the last hatch by the first of May. For Leghorns and other purely egg breeds move these dates along about two weeks and you will find that your pullets will come into production about October fifteenth, which date we have found to be about ideal under careful management practices.

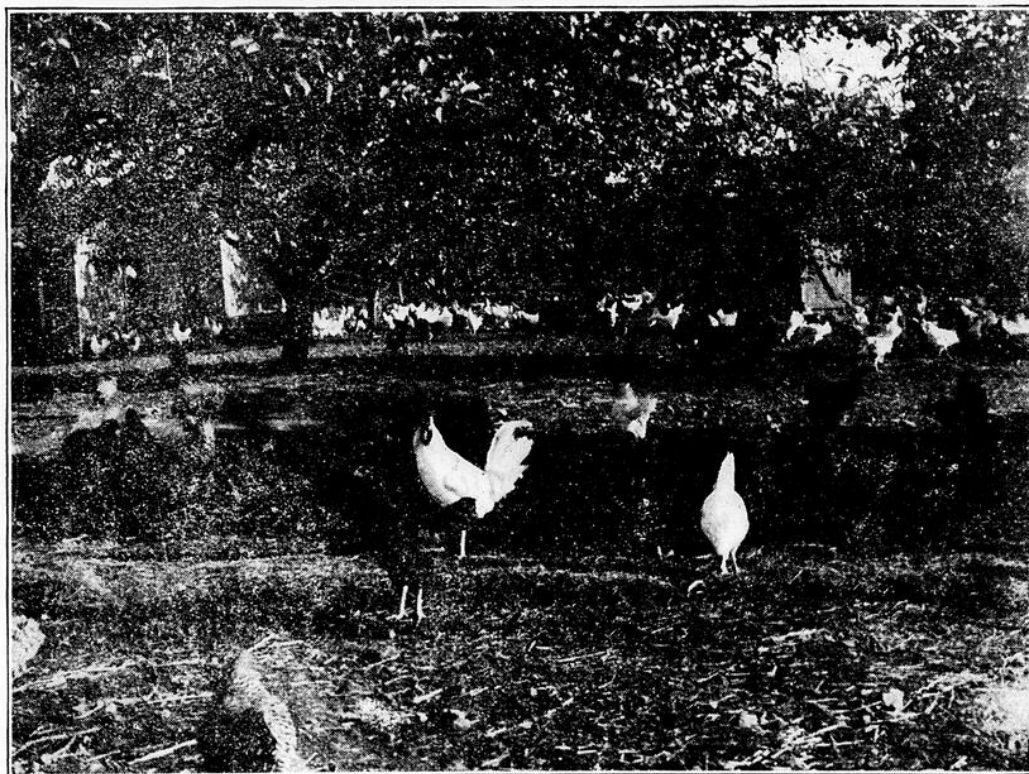
I have made it a very important point that you have the very best of incubators. The kind of machine to use lies entirely with the individual. Purchase incubators that have a good reputation and are giving good results in your district under similar conditions to your own. The fuel reservoir should hold at least a thirty-six hour supply. The machine should not be affected by moderate changes in room temperatures. The same saying holds true in buying incubators and brooders as in purchasing poultry feeds. The actual cost is not measured by the price paid but rather by the quality of the results.

Best results in incubation can be obtained if the machine is located in a place where the temperature holds steady day and night, where the air is naturally moist, where there is no vibration from walking, and where direct rays of the sun cannot strike the incubator. All of these conditions can usually be controlled in a basement or cellar. Should the air in the room be dry, sprinkle the floor with water or place pans of water under the machines.

Every incubator company give a book of instructions with each machine they ship. These instructions are written up after experiments have been tried on their incubators and are the very best guides for the beginner to follow. Quite often it is found, after running the machine several times, that you can change the manufacturers' methods of operation under your own special conditions. Before making any changes be sure that they are going to mean better results, and if they are radical changes consult some more experienced poultryman before attempting them. Under ordinary conditions the people who manufacture the machine know more about incubation than the average poultryman.

Start your incubator a few days before you plan to fill it with eggs. This rule applies to machines you have operated before as well as to new incubators. Get the temperature up to one hundred and one degrees and so regulate the thermostatic control that you can maintain this heat by using a low flame on the lamp. It is easy to make any necessary adjustments after the eggs are put in provided the machine is running evenly this way from the first. When eggs are first placed in the egg chamber, the temperature will drop considerably but will gradually increase as the eggs become heated through, which will be completed in about twelve hours when the thermometer should register about one hundred and one degrees.

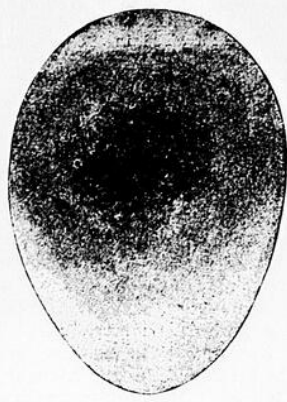
All incubator thermometers should be tested each year. This is done by using a clinical thermometer or three or four incubator thermometers. Hold them in water that has been brought to a temperature of one hundred and three degrees Fahrenheit and keep the water moving constantly. Mark discre-



POULTRY AND FRUIT—The orchard as a poultry run provides shade for the birds, a consideration on very hot days.



Fig. 1



C.F.P. Fig. 2



C.F.P. Fig. 3



C.F.P. Fig. 4



Fig. 5 C.F.P.

pancies in any thermometer that does not register as it should and add or deduct enough when taking the reading during incubation to get the true temperature.

The care of the lamp is of utmost importance. A fresh, new, hard wick should be placed in the burner at the start of each season. Make sure that there is enough wick to go through each hatch before trusting the eggs to the machine. The wick should be trimmed each morning. This consists of rubbing off the char that forms on the top of the wick. The best way to remove the char is to take the lamp out of the machine, set it on the top of the incubator, turn the wick up out of the channel about one-quarter of an inch and rub with a cloth, tissue paper, or your fingers, from the bottom of the wick channel to the top of the wick. This will clean the edge of the wick channel and lift off the char at the same time. The top of the wick should be even and flat with the no specks of char on the surface and no rough places. These last two conditions give pointed flame, and if they are not corrected will smoke badly, reduce the heat and in really bad cases, become fire hazards. The most satisfactory wick is flat on the top except at the corners where it is slightly rounded off. This type gives a good round flame without points at the ends and makes for the most economical use of fuel. Practice and care makes trimming the wick an easy task. Never cut the wick during a hatch because it is difficult to get a good flame for a few days after doing so. The wick should be trimmed and the oil reservoir filled three-quarters full in the morning after turning the eggs. Eggs should never come in contact with oil because they pick up odours very readily and the developing embryo would suffer accordingly.

Start to count the twenty-one days of the incubation period the day after you put the eggs in the machine. If you set the eggs this afternoon they will not be warmed through until tomorrow morning, so count to-morrow as the first of the twenty-one days. Beginning on the third day, turn the eggs twice daily until the eighteenth day. This is necessary because the egg shells are porous and the moisture or water in the white of the egg evaporates more rapidly under incubation conditions. As the water evaporates the white becomes thicker and the yolk floats to the top of the egg. The blastoderm, or germ, that will develop into the chick, floats always on the top of the yolk. This is the living part of the egg and would soon become attached to the shell membrane if it were permitted to remain in one spot for any length of time. When the egg happened to move, the germ would be torn away from the membrane and a rupture of the tiny blood vessels that soon develop would take place and the embryo chick would bleed to death. Where the embryo has grown for eighteen days it moves of its own accord and turning of the eggs is no longer necessary.

Infertile eggs or those containing dead germs are not as warm as live eggs, and, therefore, if they are permitted to stay in the machine they lower the temperature of every egg that rests against them. These eggs should be removed from the tray as soon as they can be identified for the above reason and also because they are useless and help to fill up the tray, making it very difficult to turn the eggs.

The first test is usually made on the seventh day. At this time all eggs that appear to be like figures one and two should be removed. Figure number one shows what is known as a blood ring. This egg has been fertile and started to develop normally but due to some inherent defect or faulty incubator condition the little embryo has died and the egg should be discarded. Figure number two is an X-ray of an infertile egg that has been in an incubator for seven days. Eggs that look almost clear with a slightly visible solid dark mass in the centre should be removed at this time. Figure

number three is an X-ray of a normally developing embryo on the seventh day. Notice the clearly defined blood vessels apparently floating in the white of the egg. This shows a healthy development and promises to become a good big chick in another two weeks. All eggs showing a clear strong network of blood vessels on the seventh day should be put back in the machine. Notice the proportionate size of the air-spaces as they appear at this stage of incubation. Just enough moisture has evaporated from the egg.

The second test should be made after the thirteenth and before the nineteenth days. Figure number four shows an egg that has been in the machine eighteen days and is still alive and healthy, promising to start working its way out of the shell to-morrow or the next day, when the little chick will be in about the position of the chick shown in figure number five. Any eggs that do not look like figure number four should be removed at this time. The chicks that have died soon after the first test will not nearly fill the shell and can be found and identified quite easily. The other eggs that have died quite recently can be distinguished by the cloudy appearance of the egg white just under the air-space. Should you be doubtful about any egg, mark it and put it back with the good eggs and give it a chance. Quite often if you hold the eggs quite still in front of the candling machine you will be able to see the chick move. Notice the size of the air-space in figure number four. This is as it should be on the eighteenth day.

If there is no automatic turning device the easiest way to change the position of the egg is to remove the first few rows from the front of the tray, shuffle the remaining eggs from the back to the front and fill in the spaces with those eggs that were removed from the front of the tray.

In ordinary incubators the temperature recommended is usually one hundred and one degrees Fahrenheit for the first week, one hundred and two degrees Fahrenheit for the second week, and one hundred and three degrees Fahrenheit for the third week. Some manufacturers and poultrymen advise us that we should have the temperature up to one hundred and three and a half degrees Fahrenheit at the actual hatching time but our experience has been that over-heating at this time must be guarded against. The best plan, however, is to follow the directions that come with the machine until you find that your results show the need of a change.

Moisture is constantly being evaporated from the egg during incubation. A certain amount of evaporation is necessary, but too much will tend to give you small chicks and too little will cause the chicks to be soft, stick to the shell before they can work their way out and make the first chicks to hatch dry off very slowly. Evaporation can be regulated by controlling the amount of air that passes through the egg chamber. If the size of the air-space within the eggs should be increasing too rapidly decrease the amount of ventilation, and should this space grow very slow increase the ventilation. Directions that come with each different make of machine vary greatly but the size of the air-space they are working for is quite similar in all machines. The figures shown here will demonstrate the correct size for the different stages of the incubation period.

When you notice that the chicks are just beginning to break through the shells, it is time to close the door of the incubator and darken it by hanging paper over it. Leave it closed until the afternoon of the twenty-first day, when the egg shells should be removed and the chicks dropped down to the nursery tray in the bottom of the machine. They must remain in the incubator for at least twenty-four hours after the last chick is hatched, and this is your opportunity to gradually reduce the temperature to about one hundred de-

grees Fahrenheit so that they will be hardened off and accustomed to the temperature of the brooder house. Should the chicks start to pant, the door of the incubator may be fastened open to allow a more rapid change of air in the incubator. Usually a very slight opening of the door will be sufficient.

About the time you test your eggs the second time you should prepare the brooding quarters for the chicks. Examine the equipment to make sure it is in good condition. If you are using a coal stove colony brooder you should chop a supply of fine kindling wood so that in case of an emergency no time will be lost in starting a new fire. Every precaution should be taken to insure the comfort and well-being of the chicks. Most poultrymen will agree with me when I say that the kind of pullets you place in the laying quarters about five months from now and in fact, the success of your poultry enterprise for the next year is largely determined by the care, attention to details, and the management of your chicks for the next six weeks. Allow the fire to go out just once on a cold windy night or let the fire become too hot for just one night and you will have all your planning, labour and expense for practically nothing.

Disinfect your brooding quarters thoroughly at this time. If possible put the brooder house on land that has never been used for poultry before or has been tilled at least once since chickens were allowed to run on it. Disease can be very easily transmitted to baby chicks, and when some forms once get a foothold it is almost impossible to eradicate it without the loss of large numbers of chicks, time and money.

Put a circle of fine mesh wire around the hover of the stove about one foot from it on all sides. When the chicks are first put under the hover they should be confined closely to it until they have learned where to get warm and until they develop a more protective coat than they had when they were hatched. The third day this circle may be enlarged in all directions about one foot; then gradually increase it until the chicks have the entire run of the house. Make sure that there are no sharp corners formed by the house or feed bins, because chicks will crowd into these corners and trample each other or smother each other to death. Crowding is one of the greatest evils to be careful of in brooding. This habit is formed by too much heat driving the chicks to the furthest distance they can get from the stove, or else by too little to keep warm. The little chick is the very best automatic control that has ever been used for brooding. Let it become uncomfortable, hungry, thirsty, or frightened in any way and the loud chirping will immediately make you aware of the fact. When chicks chirp other than contentedly something is wrong and a look at them will soon tell you what to do to make them happy.

The first requirement of baby chicks is warmth. When they begin to pip the shells in the incubator you should light the fire in the brooder stove and have the temperature running steadily at ninety-eight degrees Fahrenheit with the thermometer just under the edge of the hover and the bulb on a level with where the backs of the chicks will be when they are sleeping.

When bringing the chicks from the incubators to the brooders carry them covered up. They can stand close quarters for a few minutes and if covered will not chill when they are out-of-doors. Put them directly under the hover and let them find their way out into the pen. They will only go as far from the source of heat as they can go comfortably and will soon learn where it is warm and where to go to get out of the heat. Do not feed the chicks until they are about sixty hours old. Nature supplies them with food material from the eggs to last about seventy-two hours and if fed before this supply is used up their digestion is impaired at the start. Their first feed should be

pearl grits in small amounts and all the milk to drink that they will take. The secrets of feeding baby chicks for good results are being studied carefully at the present time but there are a few simple rules that we can go by. Feed them the best

chick ration that you can get. Feed them often and in small amounts for the first week or ten days. Keep them always hungry, thereby preventing gorging and digestive troubles from the start. Write to your nearest Agricultural College and

get their advice about a suitable ration and how to feed it. Wash drinking founts daily and keep a good drink before them at all times. Do not over-feed.

REVENUE FROM THE YOUNG ORCHARD

Poultry As A Cash Crop

Address given by W. A. Maw before the Quebec Pomological Society.

THE orchardist who is developing an orchard has a period of years to wait for cash returns from the new trees, and even after the bearing of fruit has commenced production is so low for a time that it does not meet the general expenses of management. Supplementary crops must be raised during the time intervening between planting the trees and profitable bearing age. There are numerous classes of produce to which the orchardist can turn his attention and labour during the period of orchard development. Dairying, small fruit and vegetable culture, apiculture and poultry production are all possibilities. The production of poultry products, such as meat and eggs, offers an opportunity to produce a cash crop taking the minimum of attention during the orchardist's busy seasons and at the same time giving a fair profit over cost of production including labour.

Naturally with poultry production as with any other production work, the producer must understand the economic factors influencing profits in the business. The ability to produce the product at a profit must be coupled with the business ability to sell the product to advantage, thereby realizing the maximum profit on the produce offered.

Various factors in production work greatly influence the degree of profit one is to realize from such a cash crop as poultry. First of all, the decision of how to start with the least expense and work, yet have possibilities for a fair return on the necessary investment in equipment, stock and feed. Another very important factor to be remembered in this connection is the necessity of working capital to finance the production up to the period of first sales. Having the above two questions in mind, let us consider the possibilities for starting. When should the start be made? This is dependent on the available cash on hand for this side-line production. If starting in the spring season with baby chicks with the intention of producing a flock, the necessary cash outlay is much less, firstly, because of less housing and equipment being necessary, and, secondly, the cost of the stock is much less, as your intention is to provide your own labour in rearing the stock, thereby realizing the profits which another breeder would expect if selling mature stock to you. The modern systems of handling baby chicks are such as to make it possible to handle a fairly large number with very little continual attention, over a period of time, at any time of day. The necessary

attention to the brooder stoves is given morning and night. The watering and feeding can be looked after at the same time with an extra visit at the noon hour to refill the drinking founts and feed hoppers. Provide comfort and a proper complete ration and the chicks will look after themselves.

The time to start with baby chicks is a very important factor if the maximum returns are to be made out of sales of male stock as meat, and out of eggs during the fall months. The cockerels should be disposed of as broilers. The broiler market opens during late May and June with the highest prices of the year for quality stock. In order to cater to the early market, the chicks must be March or early April hatched stock. The broiler should be from ten to twelve weeks of age in order to weigh from one and a half to two and a half pounds. The heavy broiler is in greatest demand. There is a difference between the light and heavy breeds as broilers chiefly with regard to rate of maturity. This factor allows for the handling of two classes of stock on a plant giving the added opportunity of having a late hatch of chicks (about May 1st. In White Leghorn stock) and still have the pullets from that hatch come into maturity for profitable fall egg production. The early hatched stock should be a general purpose type such as the Barred Plymouth Rock. The Rock produces a good broiler and also makes an exceptionally good fall laying pullet (if bred right for production).

If a number of hatches of chicks are wanted, it would be wise to have them come about two weeks apart, starting about March 15th. with the Rocks and starting the Leghorns April 15th. Early Leghorns pay well as broilers (especially if the stock is large in size) and fall layers, but as a rule go into a partial body and neck moult during late November and December. Such a check in production affects the winter egg profits. When considering a side line cash business it is wise to avoid the fall and early winter check in egg production.

If one chose to start poultry keeping in the fall season making egg production the feature for cash returns the necessity of paying out a much larger cash investment might curtail the possibilities of making the best use of available labour in the work through not being able to secure sufficient stock. It is cheaper to raise the pullets than to buy them already developed or even at the eight or ten week stage.

EQUIPMENT NECESSARY FOR BROODING

The brooding of the chicks should be done in moveable colony houses 10ft. by 12ft. in size, each having a coal burning brooder stove to accommodate approximately three hundred chicks. The chicks should be of one age only as chicks of varying ages will not do well under the one hover and especially so at the beginning. The number of houses and brooders is, therefore, dependent on the number of hatches of chicks to be handled. The colony houses will accommodate their brood for about eight weeks at which time the sexes should be separated. It is advisable to dispose of the cockerels as broilers. The cockerels are, therefore, fed under separate conditions to force body and flesh development and disposed of as soon as ready for market. At ten weeks of age it is advisable to feed under confined conditions in order to put on a finish. Crate feeding is to be recommended if quality produce is to be the aim.

Such small equipment as feed hoppers and drinking founts and troughs are also necessary but same represent but a small cash investment. The main point in mind with such feeding equipment is to have sufficient for proper feeding conditions.

METHOD OF FEEDING CHICKS

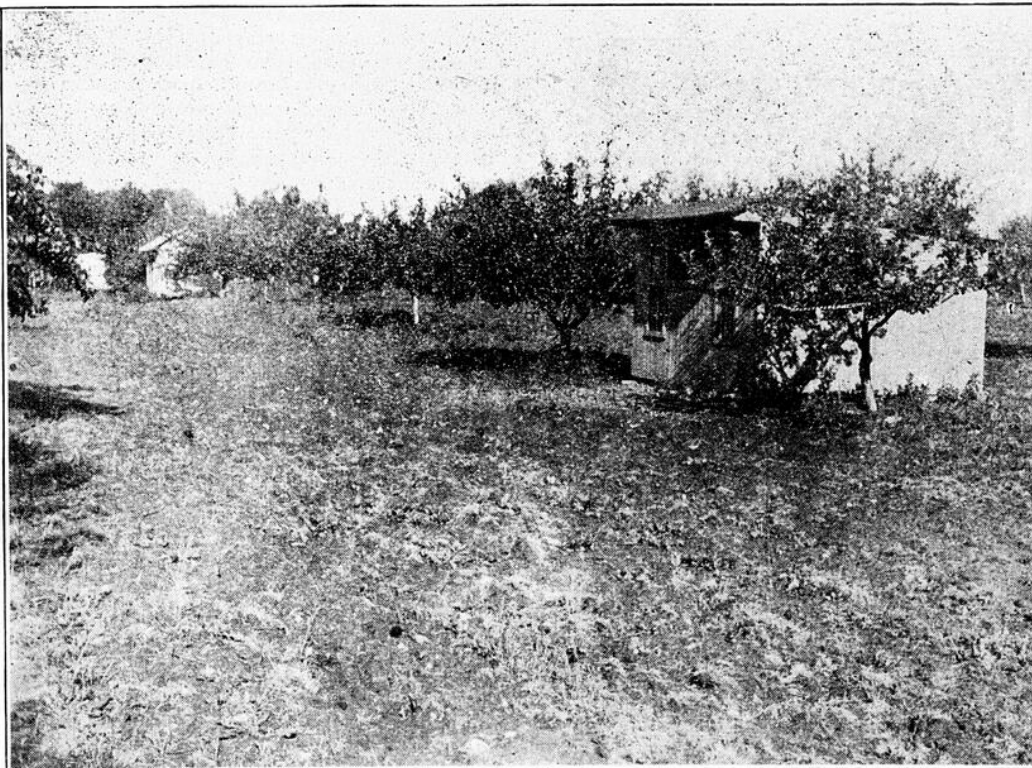
The method of feeding the chicks with the least trouble and still get good results is by what is known as the "all mash method". Chicks during the early stages of development do as well on this method of feeding as where grain and mash are both fed. It also means much less work. The one essential is to make sure that the hoppers are carrying sufficient food at all times. After the chicks have passed the ten weeks old stage mixed grain can also be fed but all feeding done is by the hopper system. This system of feeding saves considerable time as the hoppers can be of a size to hold a week's grain supply. Watering can be done automatically by a pipe system if the water supply is available. Otherwise the watering should be done once daily on the range and twice daily when the chicks are small and confined to the use of small founts for drinking purposes. On range conditions large troughs can be used to allow a large supply of water and also plenty of drinking space.

POSSIBILITIES IN EGG PRODUCTION AS A CASH CROP

Egg production is a profitable phase of poultry production, provided the stock on hand is in the proper condition to come into laying during the early fall season in order to realize on the normal high egg prices which are due to the natural low egg production generally at this season. Unless the pullet flock is in shape to lay through the fall and early winter seasons, it is not possible to realize similar profits during the balance of the year. In order to get egg production during the fall season the pullets should be hatched early enough to mature normally in body size. The immature bodied pullet even if sexually mature cannot be expected to lay persistently throughout the winter season.

Since there is a difference in the rate of maturity between the light and general purpose types of fowl in coming into laying, it is possible to have part of the flock as light and part as general purpose stock each hatched at different times and coming into laying at the same time. Generally speaking it takes the Rocks approximately one month longer to mature. The dates of hatching to take advantage of the early broiler meat market prices and the fall egg market prices coincide. The general purpose type, such as the Barred Rocks, should be hatched from March 15th. to April 15th., and the Leghorns from April 1st. to May 1st. approximately.

Another factor in egg production to be remembered is that it is not necessary to carry the laying stock over the summer season to realize the greatest profits. In fact, if the laying flock is not thoroughly culled in the early spring to rid the flock of the poor layers, part of the profit will be lost through feeding the poor stock. Only the best layers should be kept during the summer months.



POULTRY AND FRUIT—The combination of poultry with fruit is a particularly happy one in the case of the man who has just set out a young orchard. Farm his hens he receives returns during the years he must wait before his trees come into profitable bearing.

STOCK RANGING EFFECT ON ORCHARD

Provided too much stock is not ranged on a given piece of orchard, no harm to trees should be seen. When the number of stock is such that all cover crop forage is removed naturally the trees will show the result of soil baking and the loss of moisture. The stock needs a large amount of green food,

which makes it necessary to control the amount of stock on the land and at the same time provide a crop which will stand close cropping and grow persistently. Sod conditions are better than cultivated conditions in an orchard as the stock very seldom keep ahead of a growth of mixed grasses and alfalfa or a similar mixture. Fall rye sown in the spring has also been found to be able to withstand

the close cropping and persist in tillering throughout the summer season.

Side line production must be thoroughly understood if it is to be made profitable and still maintain its proper place in the major enterprise. Plan the procedure carefully and then use only the most up-to-date methods to economize in expense and labour to realize the maximum profits.

Nutrition of Poultry

By C. D. Fogerty, Extension Poultry Husbandman, Macdonald College.

FROM the standpoint of Nature, feed is provided for all animals, poultry included, that they may live in order to reproduce and so perpetuate the race. Man feeds himself that he may live, but he feeds his domestic animals either to change food that he cannot consume to some form that is available for humans or to produce a product that will bring him greater money returns in the market. Looking at the question as poultrymen, we find that a bird uses the food we give it for four different purposes, namely, growth, maintenance, reproduction and fattening.

During growth a bird is building up the various tissues that form the body, and there is a big demand for material to form bones and muscle. In other words, the primary demand is for minerals for bones, and proteins for muscles and the various internal organs whereby the animal body functions. At the same time the young birds are very active picking up food, chasing bugs, fighting and enjoying life generally, and to supply energy for all this activity carbohydrates, or starchy foods, are necessary. Like any healthy young animal, all that a chicken asks for successful growth is certain foods and plenty of them and a comfortable place to eat and sleep.

When an animal has completed its growth, there is a continual demand for food to replace the parts of the body that are being worn out and discarded. This does not mean that complete organs or parts are thrown off from the body, but that there is a continual wearing away of the various tissues, and this wear must be replaced. This maintenance demand does not call for minerals as much as growth does, but a considerable amount of mineral matter is used and there is a demand for proteins and carbohydrates. In a mature hen that is laying fifty percent, fifty-seven percent of the food utilized goes towards maintaining the body in a normal condition while the remainder is used to produce eggs.

This brings us to the third use of food made by the hen, that of reproduction. The egg calls for a large supply of minerals: the shell contains a high percent of calcium, and other minerals are also necessary. The white of the egg is largely water and protein, and protein is also included in the composition of the yolk. The yolk also contains fat and those elusive substances called vitamins, concerning which so much is written and so little known although scientists are lifting the veil of secrecy to a

certain extent.

Finally, when a bird has grown and matured, reproduced itself and is still maintaining itself in a healthy condition, any feed, beyond this maintenance demand, that is digested is stored up as fat. Fat is formed principally from other fats and from carbohydrates.

While talking of the various uses that a bird makes of the food digested, we have been using terms such as mineral, protein, carbohydrate and vitamin. Together with water these are the building stones with which all foods that are useful to the body are built up. Water is essential for life. An egg is sixty-five percent water, while the body of a mature fowl is fifty-five percent water. From these figures it is easy to see why so much stress is laid upon the necessity of having a continual supply of clean, fresh water before hens at all times.

The mineral mentioned when discussing feed is the part that is made up of such substances as calcium, phosphorus, iron magnesium and sodium. These are practically always found in the animal body combined with other substances. While some minerals are found in the animal body in extremely small quantities they are, nevertheless, essential for the continuation of life.

The grit that a fowl eats should not be considered as a source of minerals unless it is of some limestone formation that can be dissolved in the stomach of the bird. The grit serves to help the gizzard to grind the food. There is considerable variation in the amount of grit that individual birds need and the frequency of the periods when it must be fed. A considerable amount of grit has been found in the gizzards of hens which had had no grit fed to them for a number of months. In order to be certain that all the birds in a flock are getting all the grit that they require this material should be before them all the time where they can help themselves.

The best examples of protein that we have are lean meat and the white of eggs. Proteins are built up from a class of substances called amino acids, and in order to build up the proteins needed by its body a bird must be fed a feed containing the necessary amino acids. Amino acids may be thought of as building stones that can be put together in a large number of combinations, each combination representing a protein. Since the lean meat of her

muscles and the whites of her eggs are largely protein, it can easily be seen why a hen must be fed these substances.

Fats are known wherever seen, and carbohydrates are starchy foods such as kernels of corn, oats and wheat with the hulls removed. These food products furnish energy to keep the bird active and fat to store on her body for use at some future time.

Having made this brief examination of the food materials that a laying hen needs in order to mature and function properly, and the parts of the body that utilize the various foods, let us see where these can be obtained. The first business of the poultryman is to make as good a living as possible, and since the feed bill is one of the largest items on the cost side of the ledger, these foods must be obtained as cheaply as possible.

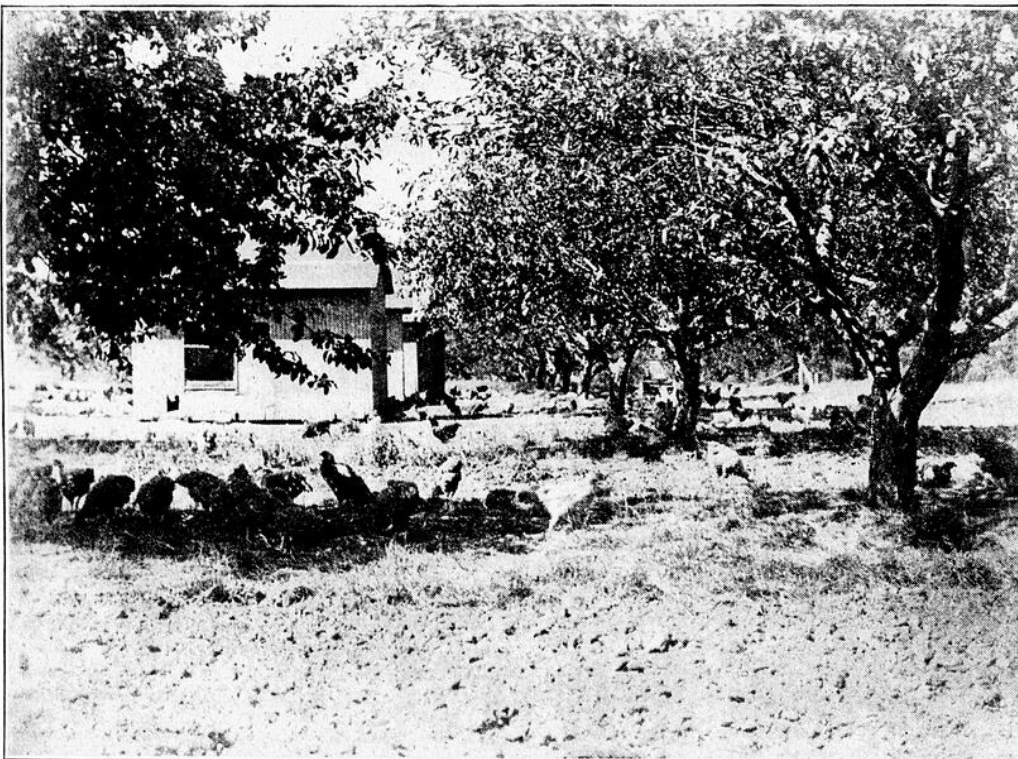
The cheapest, and easiest, nutrient to obtain, aside from water, is the carbohydrate, since this is furnished in abundance in the ordinary grains such as corn, wheat, oats, buckwheat and barley. From this carbohydrate the bird gains the energy that it needs, and also, by means of complicated chemical and physical processes within the body, builds up fat from it. The differences in the various sources of carbohydrates are due more to the parts that are not assimilated by the body than to those that are. Thus light oats have a high percentage of fiber, due to the large hull, and this fiber is indigestible by the hen, making it impossible to use a feed mixture with too high a percentage of such oats. Usually about a fifth or sixth of the scratch grain consists of whole oats, while the mash contains about the same amount of ground oats. Buckwheat should not be fed in amounts to exceed ten percent of the ration the ration, in this case, meaning the scratch and mash. Because of its heavy hull, buckwheat increases the fiber content of the ration. Corn and wheat are considered two of the best feeds for poultry and are fed in large quantities.

While the grains furnish carbohydrates, they are deficient in protein, minerals, and some of the vitamins. For this reason there are various protein supplements, some of animal and some of vegetable origin, that are used to supply this very necessary ingredient. The most common source of protein is meat scrap, or beef scrap, as it is usually called, although fish scrap is replacing it in some districts where it can be obtained more cheaply. Beef scrap should be bought on a guaranteed analysis with a protein content of from fifty-five to sixty percent, the variation usually being due to the amount of bone that is included in the scrap. It has been stated that the eggs are tainted when fish scrap is fed, but investigation has proved this to be untrue where a good grade of fish scrap is used.

Milk is a very good source of protein and at the same time seems to furnish something else that helps to keep the birds in good physical condition. This is probably the lactic acid that the milk contains. It is fed either as the liquid skim milk or buttermilk, or in a condensed or dried form. The latter two forms are more universally fed since in many localities they are easier to obtain than the liquid skim milk or buttermilk. Sour milk in some form is almost essential for the commercial growing of young chicks to-day.

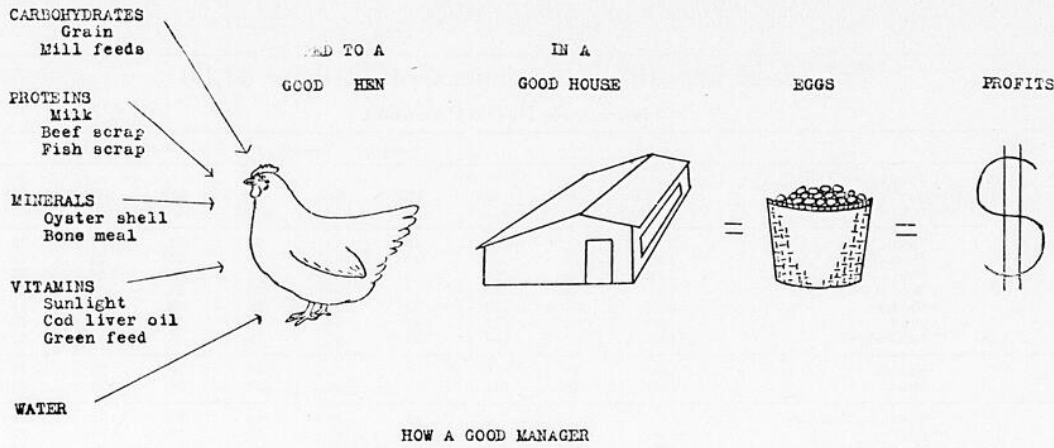
In experiments at the Pennsylvania State College and on Dominion Experimental Farms comparing the various sources of protein for egg production, milk was found to be better than beef scrap. At Pennsylvania a combination of beef scrap and either condensed or dried buttermilk gave higher returns than either meat scrap or a milk product when used alone as a source of protein. Using milk in a ration increases the feed cost, but the higher egg production resulting from its use more than returns this extra cost. At the same time, the Pennsylvania experiments seem to prove that the birds maintain both body weight and size of egg better when milk is included in their ration than when it is not.

Of recent years many poultry investigators have been interested in the mineral demands of the hen's body. Only a small part of the bird's body is com-



Chickens being raised under ideal conditions in the orchard at Macdonald College.

THE FARMER A MANUFACTURER



HOW A GOOD MANAGER Manufactures Eggs From Feed.

posed of minerals, yet this small amount is very important. Since the amount of each mineral used in the body is small, the food that the bird ordinarily obtains will meet the mineral demand except in the case of calcium, or lime, and phosphorus for the laying hen and the growing chick. Since calcium compounds compose about ninety-six percent of an egg shell, it is easy to see why a laying hen may not get enough lime in her daily ration. The bones of a chick are increasing in size rapidly and demand a comparatively large amount of calcium and phosphorus, which is not supplied in an ordinary grain ration.

The usual and easiest way to supply a laying hen with lime is to leave a supply of crushed oyster shell before her where she can help herself at any time. Lime and phosphorus are supplied to the chicks by mixing finely-crushed oyster shell and bone meal in their feed.

Another mineral that should be supplied to poultry is salt. This material is needed in the blood and stomach. While a small amount of salt is necessary, a large amount is poisonous to chickens. Fowls can withstand up to eight percent of salt in their food without fatal results, but one percent in the mash is all that they need. As well as furnishing material to the body, salt makes the feed more palatable in some cases.

Finally, the question of vitamins in poultry feeding must be considered. The discovery of the existence of vitamins, although it is doubtful what they are, has made it possible to raise chicks under conditions that at one time would have permitted only failure. This discovery has also made it possible to keep the laying hens in better condition and at the same time help them to lay eggs the germs of which are stronger, thus giving higher hatchability of the eggs and greater livability of the chicks after hatching.

Up to the present time five vitamins have been determined. They have been named vitamins A, B, C, D, and E. Vitamins C and E do not attract as much attention among poultrymen as the other three, since the lack of C does not affect poultry and E is evidently supplied in sufficient quantities in all the grains ordinarily fed. Lack of A results in failure to grow, sore eyes and often cheesy growths in the nostrils and mouth. Lack of B results in nerve disorders, and lack of D brings on leg weakness.

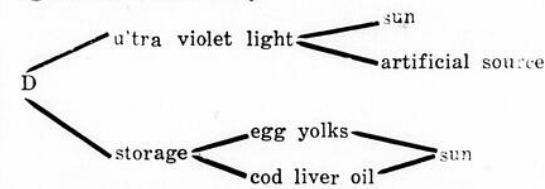
There are a number of sources of vitamin A that are available to poultrymen. Certain of the grains, such as yellow corn, carry this valuable substance. The edible parts of such vegetables as lettuce and cabbage contain it, as do yellow and red carrots and cod liver oil. Some people have the impression that mangels and sugar beets also carry vitamin A. This is a mistake, for, while mangels are a good succulent feed and thus help digestion, they are of no value as a source of vitamin A.

The outer coats of wheat and corn carry vitamin B. Any ration that contains a certain amount of wheat bran and middlings and corn, either whole or ground, will satisfy the needs of the hen for vitamin B. There has been considerable propaganda carried on urging the feeding of yeast as a source of vitamin B. While yeast does contain this food factor in large quantities it has not been demonstrated that any of the other vitamins are present in any quantity, and the high cost of the yeast more than offsets any benefit that the poultry derives from the extra supply of vitamin B.

Of more interest to the poultryman than any of the others is vitamin D. It is lack of this that causes early hatched chicks to lose the use of their

legs and go down entirely or hobble around on their wings and hocks. The original source of the beneficial part of vitamin D is the ultra-violet rays of the sunlight, rays that are invisible to the human eye when ordinary white light is broken up into the various colors of the spectrum as we see them in a rainbow. The beneficial part of these rays may be absorbed by an animal directly from sunlight or they may be stored in certain foods that the animal eats and thus reach the system indirectly. Ultra violet rays may be produced artificially by a special type of electric lamp, but at the present time these lamps are so expensive that their use is out of the question for the average poultryman.

The two foods that are the most important sources of vitamin D are egg yolks and cod liver oil, although many other fish oils and green vegetables also contain this substance. There is a variation in the vitamin content of various samples of cod liver oil that may be due to differences in the fish from which the livers were taken, or to the processes to which the livers were subjected when extracting the oil. Variations in the vitamin D content of egg yolks are known to be due to variations in the amount of sunlight that reached the hen before laying the egg, or variation of the amount of this food factor that was in her ration. The following diagram shows the direct and indirect paths that vitamin D takes in passing from light to an animal body.



A glance at this diagram shows that the most economical source of vitamin D is sunlight, something that costs nothing and may be had for the taking whenever the sun shines. One of the assets of the farmer is a large supply of sunlight without interference from smoke, dust or congested buildings. It is wise, then, to let as much sunshine as possible enter the poultry house, both for young and mature stock, in order that they may benefit by it. This must be direct sunlight, for when ordinary window glass intervenes the ultra violet rays, that part of the light that contains the beneficial properties of vitamin D, are obstructed and do not pass through the window. There are glass substitutes on the market that allow the passage of ultra violet rays. They are expensive and their wearing properties are questionable, but they help birds that must be confined closely. It thus becomes a question of allowing as much sunlight as possible to enter the henhouse without being extravagant and without cooling the house too much on cold days.

One of the best and most convenient methods of furnishing the factor, vitamin D, is through cod liver oil. One or two percent of this oil added to the mash will enable the hens to lay eggs that have sounder shells and stronger germs. In the chick mash it enables the chicks to assimilate more calcium and phosphorus and consequently build up stronger bones and grow more rapidly.

The two minerals that are needed in the largest quantities are calcium and phosphorus, since egg shells and bones both demand a large supply of calcium for their formation. The bones need considerable phosphorus for proper formation. A supply of vitamin D has some effect on the bird that enables it to assimilate the calcium and phosphorus in its ration more efficiently than when the vitamin

is absent.

When making up a ration for poultry, the basis is thus a mixture of various grains and their by-products. To this is added a source of protein such as beefscrap or milk. Minerals are supplied, either in the mash as bonemeal, or separately as oyster shell. If there is a possibility of a lack of vitamin D, cod liver oil should be added to the mash. Clean, fresh water must be before the birds continually unless skim milk or buttermilk is available.

An example of a laying ration for hens consists of a scratch made up of two parts corn, one part wheat and one part oats. The mash fed with this is made up of two hundred of bran, one hundred wheat middlings, one hundred ground oats, one hundred cornmeal, seventy-five of beefscrap, ten of charcoal and five of fine salt. These are all parts by weight. The mash is kept before the birds at all times and the scratch is fed morning and evening. By knowing the composition of the various grains, substitutions can be made in a ration such as this in order to include the cheapest feeds that are on the market at any given time.

In the feeding of poultry it should be remembered that feeding is but one link in successful management. Other essential factors for success are good birds, good housing and a good manager. Together with feeding, these three factors are the basis of poultry husbandry, and any business is only as strong as the weakest factor.

April Poultry Suggestions

It is important that the quarters into which the chicks are put should be clean and sanitary. The best method for keeping the floor of the brooder house clean is to use a sufficient amount of some sort of litter. There are various substances that can be used for this purpose, and a liberal use of them will make it easier to raise healthy chicks. A satisfactory litter must be cheap, plentiful and of such a nature that it will not harm the chicks if they eat it, which they will. Clover or alfalfa leaves, such as can be gathered from the floor of the mow, coarse, clean sand, clipped straw that does not contain chaff or husks of grain, and planer shavings all make satisfactory litter. No matter what kind of litter is used it must always be clean, dry and free from mold. Dusty, moldy litter and general uncleanness will give rise to brooder pneumonia. If cut straw is used as a litter for the chicks, be certain that it is fine enough to allow them to scratch it aside as they search for food.

If a natural supply of litter is not available, there is often a tendency among poultrymen to economize in the amount that is used. One can only go about so far with this sort of economy, however, without incurring losses that will more than offset the small saving effected. Chicks that are confined more or less to the house must have enough litter to give them the needed exercise when scratching. There must always be litter enough to absorb moisture and odors and to keep the floor well covered.

When a litter of inflammable nature, such as planer shavings or cut straw, is used, see that it is pushed well back from the brooder stove when attending to the fire. Spreading sand around the base of the stove for about a foot in all directions will help to reduce the fire danger.

SPRING MANAGEMENT OF THE LAYING FLOCK

When the weather becomes fine, the adult stock that is being used for breeding should be allowed to range, since there is always an improvement in fertility and hatchability of the eggs as soon as the stock is able to get out on the ground. If only market eggs are being produced, letting the birds range before the ground is dry is a doubtful practice, since so many dirty eggs are found in the nests.

Birds on the range in the spring find some food, but bugs and worms are scarce and the various grasses have not made much growth so there cannot be much change in the method of feeding. As the spring advances, less feed will be required but this change should be made gradually and care taken to see that the stock is always getting enough.

Bare yards should be plowed and seeded down. Oats, rye, wheat or rape can be used for this purpose. If the birds are kept off the plot until the crop has made some growth there is a considerable supply of green food and the soil is freshened. If rape is used be careful that the birds do not get too much before they are accustomed to it. This is true of all green feeds when the birds are turned into an unlimited supply after not having been accustomed to it.

WHICH FEED SHALL I BUY?

E. W. Crampton, Asst. Prof. of Animal Husbandry, Macdonald College.

THIS morning I received a wholesale feed price list and could hardly believe my eyes to find bran quoted at \$38.25 and corn almost \$50 per ton in car lots, transportation charges extra. The prices are decidedly disconcerting to one who must buy feed, but since stock must be fed the moral is that more care than ever must be exercised toward economical purchase. This statement suggests a fact which is not fully appreciated by all too many farmers—that the cost per ton of a feed is not the final index, nor in some cases a reliable index at all, of the real cost of the nutrition received for money spent.

Several factors have a bearing on the economy of a given feed stuff, one of the first of which is the quantity of non-digestible material which the feed contains and which must be taken along with the rest whether wanted or not. Some feeds contain as high as 1800 pounds of digestible material to the ton, while in others there may be as low as 1200 pounds. Realizing this, it is obvious that the proportion of nutritionally useful material in a given amount of feed has a direct bearing on the real cost of that feed as a source of nutrition. An ideal dairy mixture should contain at least 1400 pounds of digestible material to the ton. Incidentally it may be mentioned that it is not an easy matter to compound a satisfactory dairy cow mixture which will contain more than 75% of digestible nutrients. Mixtures carrying more than this proportion of digestible nutrition are usually on the heavy side for ideal feeding.

The second factor which must be considered in this question of economic purchase is the suitability of the feed in question for the stock to be fed. Some feeds are poisonous to certain classes of stock and of course would be dear at any price. Some feeds are not palatable, and the feeder cannot afford to sacrifice much palatability for cheapness in price per ton.

This factor is well appreciated by feeders of experience, and experimental evidence also assures us that rations which are not well liked by stock seldom prove as efficient for production, be it milk or body fat, as feeding combinations which are more to the liking of the animals. It is well known that the sight and smell of those foods which are pleasing have a stimulating influence on the secretion of digestive fluids in the body, and it is quite probable that the completeness with which a given feed is used by the body is related to its palatability.

The bulk of the feed is another factor of importance, though to a greater extent with hogs than with dairy cattle. Bulk is determined in no small measure by the fibre content of the feed. Feeds which are bulky are usually high in fibre and, incidentally, also high in non-digestible material. Practice indicates that a dairy mixture should weigh approximately one pound per quart and investigation has shown that feeds weighing less than this usually carry more than 10% of fibre.

As suggested above, with animals which normally eat considerable quantities of roughage the factor of bulk is not of such grave importance. More of such feeds must be eaten to supply the same net nutrition than would be the case with heavier feeds. With hogs, on the other hand, we have a digestive apparatus which is of limited capacity and not at all suited to the handling of much bulk of feed. It has been determined experimentally that each percent of fibre in the ration over two decreases its value 5% for fattening hogs. It is obvious, then, that under such conditions a light, bulky feed such as dried brewers' grains would not be an advisable buy for fattening hogs, even though the net digestible nutrition in it were cheaper than in corn.

Still another factor which, under certain conditions, is important is the laxative or constipating nature of the feedstuff. With dairy cattle, for instance, when first put into pasture in the spring, excessive quantities of oilmeal in the ration would tend to aggravate the laxative properties of the pasture grass, and advantage might be taken at this time of the constipating effects of cottonseed meal. On the other hand, the dairy cow fed during the winter without succulent roughage needs some laxative feeds in the mixture such as wheat bran or oilmeal. Under this latter condition the substituting of cottonseed meal for oilmeal, even though the former were a somewhat cheaper source of nutrition, would in all probability be unwise.

But to appreciate these points and to really make

Pounds of Digestible Nutrients Obtained for \$1.00

(Figured to Nearest Pound)

| Av. Dig. Protein of Group | Feeds (Grouped by Protein Classes) | Lbs. Dig. Nutrients per Ton of Feed. | Cost per Ton or per 100 Pounds Feed. | | | | | | | |
|---------------------------|------------------------------------|--------------------------------------|--------------------------------------|------|------|------|------|------|------|------|
| | | | \$25 | \$30 | \$35 | \$40 | \$45 | \$50 | \$55 | \$60 |
| 7%—10% | Corn | 1714 | 69 | 57 | 49 | 43 | 38 | 34 | 31 | 29 |
| | Hominy | 1696 | 68 | 57 | 48 | 42 | 38 | 33 | 31 | 28 |
| | Rye | 1620 | 65 | 54 | 46 | 41 | 36 | 32 | 29 | 27 |
| | Wheat | 1602 | 64 | 53 | 46 | 40 | 36 | 32 | 29 | 27 |
| | Barley | 1588 | 64 | 53 | 45 | 40 | 35 | 32 | 29 | 26 |
| | Oats | 1408 | 56 | 47 | 40 | 35 | 31 | 28 | 26 | 23 |
| | Buckwheat | 1268 | 51 | 42 | 36 | 32 | 28 | 25 | 23 | 21 |
| 13% | Shorts | 1386 | 55 | 46 | 40 | 35 | 31 | 27 | 25 | 23 |
| | Bran | 1218 | 49 | 41 | 35 | 30 | 27 | 24 | 22 | 20 |
| 20%—24% | Distillers' Grains | 1778 | 71 | 59 | 51 | 44 | 40 | 35 | 32 | 30 |
| | Gluten | 1614 | 65 | 54 | 46 | 40 | 36 | 32 | 29 | 27 |
| | Buckwheat Middlings | 1532 | 61 | 51 | 44 | 38 | 34 | 31 | 28 | 26 |
| | Pea Meal | 1524 | 61 | 51 | 44 | 38 | 34 | 30 | 28 | 25 |
| | Brewers' Grains | 1414 | 53 | 44 | 38 | 33 | 29 | 26 | 24 | 22 |
| 36% 30% | Cottonseed Meal | 1564 | 68 | 52 | 45 | 39 | 35 | 31 | 28 | 26 |
| | Oilmeal | 1558 | 62 | 52 | 45 | 39 | 35 | 31 | 28 | 26 |

use of them in the practical selection of feeds are two different things. Of the factors mentioned, it is usually the first one with which it is most difficult for the average feeder to deal. The suitability of the common feedstuffs for the various uses to which they are put is more or less stock-in-trade information to the feeder. The proportion of non-digestible material inseparably attached to each and every feed, however, is not so well known, and the variations between feeds in this respect are often not fully appreciated. The table accompanying this article represents an attempt to indicate these differences in feeds commonly used in eastern Canada.

The figures in the table are the pounds of digestible material obtained for one dollar according to the price per ton or per 100 pounds of each of the several feedingstuffs listed. A range of prices in units of \$5 per ton from \$25 to \$60 per ton is given, which should cover most cases.

The feeds are grouped roughly according to their protein content, which means that, in general, substitution of one feed for another within the same group can be made without seriously changing the protein level of the mixture. Comparisons between feeds of different groups involve not only the question of economy in the supply of digestible nutrition but also the change in the protein level of the mixture. High protein feeds are usually more costly per ton than low protein feeds. This does not mean, however, that in the interests of economy low protein feeds can be satisfactorily substituted for those carrying larger quantities of this nutrient without causing detrimental results in the mixture.

To use the table is quite simple. For instance, with corn quoted at \$50 per ton we are obtaining 34 pounds of digestible nutrients for a dollar. Oats at \$40 per ton supply us with 35 pounds of digestible material for a dollar. It is obvious then that if oats cost \$40 we can afford to pay nearly \$50 per ton for corn and be buying our net nutrition at the same cost. Incidentally, it is interesting to know that with corn at \$50 per ton oats are actually quoted at \$48 at which price we should be getting but 29 pounds of usable nutrition for each dollar spent. At these prices, therefore, wherever corn could be used in place of oats it should be done.

How much more one can afford to pay for an ideal feed over one which is less suitable, though usable where necessary, is something which no fixed table can tell. Nor is it advisable to rely too much on the adaptability of the animal to less suitable feeds as occasion may arise. There are, fortunately, some substitutions which can be made without fear of seriously changing the suitability of the mixture for any class of stock. Corn and hominy are interchangeable, as are wheat and rye. To a limited extent barley and oats may be substituted one for another. Barley, however, is less palatable for dairy cattle than oats. Shorts and bran are not interchangeable. Generally speaking, bran should be included in the dairy mixture, while shorts is far better as a hog feed.

Among the high protein feeds, distillers' grains and gluten may be substituted for each other, while brewers' grains, because of its high fibre content, must be used with somewhat more thought as to its suitability. Some feeders substitute brewers' grains for wheat bran when bran is relatively costly. It should be remembered, however, that no small part of the value of bran is in its physical characteristics and not in its digestible

nutrient content.

Buckwheat middlings and peameal, if used in small quantities may be substituted for each other, though either one is better suited for the hog mixture than for dairy cows. Cottonseed meal should never be fed to hogs because of its poisonous effects. Oilmeal may be used, though tankage is to be preferred under most conditions.

Malting Barley

PRELIMINARY steps for improving the quality and broadening the market for Canadian barley were taken last month at a Conference called by Dr. J. H. Grisdale, Deputy Minister of the Federal Department of Agriculture, and attended by representatives of the producers, manufacturers of barley products, Provincial Departments of Agriculture and Agricultural Colleges from Quebec, Ontario, Manitoba, Saskatchewan and Alberta, with officials of the Federal Department of Agriculture.

A wide and growing market for barley for feeding purposes was reported by officials of the Ontario Department of Agriculture where barley is proving a profitable substitute for corn, but the Western representatives held that where good crops of wheat and oats could be grown, barley is not a profitable crop. On the other hand, the barley crop is a life and death matter for the farmers in Eastern and Northern Manitoba, it was stated by Professor T. J. Harrison of the Manitoba Agricultural College, who said that Manitoba now produces nearly half the barley crop of Canada as the ravages of rust are compelling farmers in the Red River Valley to grow less wheat and more barley.

C. D. McFarland, Manager of the Canada Malting Company, reported a rapidly widening market in Canada for malting barley, and said that his Company had never yet been able to get enough good malting barley to meet the demand. This year approximately two million bushels more malting barley will be required for malting purposes in Canada, the opening of the new plant in Toronto providing a new market for close to a million bushels. Mr. McFarland explained that there is a large increase in the use of malt for other purposes than for brewing beer.

Several of the delegates emphasized the urgent necessity of adopting new grades for barley, and a committee was appointed to see what could be done to secure amendments to the Canada Grain Act which would provide grades for malting barleys. It was felt that one of the first steps to be taken was to make a thorough investigation into the question of securing the varieties and strains best suited to the different localities where barley could be profitably grown and a committee to have charge of this duty was appointed. This Committee was composed of Mr. L. H. Newman, Dominion Cerealist, Professor T. J. Harrison of the Manitoba Agricultural College, and Professor R. Summerby of Macdonald College, Quebec. They too, a Seed Committee was appointed with G. H. Clark, Federal Seed Commissioner as Chairman, and this Committee included Sub-Committees composed of L. P. Roy and Professor Buchanan for the East, and Major H. G. L. Strange of Fenn, Alta., M. P. Tullis and J. A. McGregor, Winnipeg, Man., for the West.

Major H. G. L. Strange President of the Canadian Seed Growers Association, stated that there had been a large increase the past few years in the quantity of registered barley seed, as over 115,000 bushels, mostly O. A. C. 21, of registered barley seed, is now available.

A Consideration of Quebec's Seed Needs

Reports Given at Quebec Seed Board Annual Meeting Show Important Projects Now Under Way.

By L. C. Raymond, Ass't. Prof. of Agronomy, Macdonald College.

AT the annual meeting of the Quebec Seed Board, held in the city of Quebec on Tuesday, March 13th, many important matters pertaining to the supply and production of seed in Quebec were discussed and arrangements made to further this work along the best possible lines.

This is the first meeting of the Board since the completed constitution has been in effect. A word or two in regard to that will serve to show the nature of the organization. The constitution was formed, as to membership, so as to bring together all parties interested in good seed. It includes all the personnel of the respective staffs of the following:—

1. Field Crops Division—Provincial Department of Agriculture.
2. The Federal Experimental Stations in the Province of Quebec.
3. The Agronomy Departments of the Agricultural Colleges.
4. Representatives of all recognized seed firms.
5. The District Agriculturist Inspectors.
6. The Provincial Officers of the Dominion Seed Branch.
7. Provincial Officers of the Canadian Seed Growers' Association.
8. A representative producer of the various registered field crops.
9. A representative of the Dominion Seed Branch, Cereal Division and Forage Crop Division at Ottawa.
10. The Secretary of the Canadian Seed Growers' Association.

An exceptionally good representation was out for the Quebec meeting, making a gathering of between thirty and forty men.

Apart from the election of officers for the coming year, the main business of the meeting consisted of receiving and discussing reports of various committees that had been appointed at the November meeting of the Board. A brief resume of these reports will serve to show the nature of the work being considered.

1. Oats.

The committee dealing with the oat crop pointed out the need for a reliable supply of two distinct types of oats—one of the Banner or later type and one of Alaska or earlier type. The present supply of good seed of either registered or No. 1 was reported as insufficient. The former is grown mainly in the Berthier and Laprairie districts, and it was recommended that these be further developed and that they be kept supplied with the best possible strain of Banner.

The need for a much greater supply of Alaska seed was particularly emphasized. This seed is in great demand in all the shorter seasoned sections and particularly in Northern Quebec and Ontario and even in the West. It was estimated that for some time there would be an annual demand of some 10 to 15 carloads of Registered or No. 1 seed. The districts about Portneuf and Hemmingford

have largely produced the supply in the past. It was suggested that these districts be further developed, and, in addition, that a new centre be developed at Ste. Anne de la Pocatiere, where the Agricultural School has agreed to foster such work.

2. Peas.

The report on the pea crop emphasized the need and the opportunity for greater production. There is a good demand for seed at a good price and in addition peas are becoming of greater importance all the time in forage production.

With this crop the situation is more complicated than in some others since peas are used for at least three distinct purposes. In the production of O. P. V. for silage it is the fodder yield that is of greatest value. When producing the crop for grain as feed naturally the one producing the highest grain yield is desired. Finally, there is a considerable quantity produced for human consumption, largely for soup purposes, where their ability to cook satisfactorily is the factor of greatest merit. These problems will be studied further by the committee and, if found feasible, plans laid for a definite scheme of investigation.

3. Barley.

The fact that there was an increasing demand for a high grade malting barley and that a large part of the British import came from countries outside the Empire was stressed by the committee dealing with the barley crop. A representative of the Canada Malting Co. addressed the meeting, pointing out the situation in Canada so far as malting barley is concerned. He stated that the consumption of malt in the Province of Quebec was approximately two million bushels, and that so far as he was aware no barley for malting purposes was grown here. It was further pointed out that with malting barley a higher scale of prices maintained as compared with barley for feeding purposes. Several members pointed out that, so far as soil and climate were concerned, there were a number of sections in which barley could be made a successful crop. Furthermore, barley is of great value for feeding purposes and particularly as a substitute for corn. The Board approved the idea of encouraging the growing of malting barley in the districts adapted to it and referred the question back to the committee for further consideration and possible action.

4. Loose Smut of Barley.

A report was presented summarising the work that had been done on methods of controlling the loose smut of barley. Formerly it was maintained that the hot water treatment was the only method of checking this fungus pest. Recent investigations have shown at least some measure of control by the formaldehyde treatment. The results, however, were not entirely conclusive, and the Board recommended that the whole question should be given further consideration. The co-operation of the plant pathologists was recommended.

5. Corn.

The report on seed corn summarized the effects of the corn borer on the Canadian crop and showed that Quebec was rapidly becoming overrun with this insect pest. Due to the corn borer, the supply of Canadian seed was practically non-existent, and seed had to be imported almost entirely from the United States. It was pointed out that this would likely result in a lack of genuineness of variety and possibly later maturity, and, due to the unsatisfactory crop, would tend to discourage the production of fodder corn. The committee recommended three things:

- a. That measures be introduced for the control of the borer infestation in the Province of Quebec.
- b. That a start be made in the production of seed in this province from some of the earlier maturing varieties already in existence.
- c. That a small area be devoted to the production of seed of one or more of the most promising varietal hybrids.

The Board approved the recommendations and, if found feasible will put them into operation during the 1928 season.

6. Vetch.

The existence of a large but scattered production of vetch seed in the Laprairie district was indicated. The total production in 1927 was in the vicinity of 400,000 lbs. of seed. It is planted in combination with a thin seeding of flax and is utilized as a farm cash crop. Yields of seed average around 15 bush. per acre with a maximum of twenty-five. In 1927 the top price offered to the producer was \$4.35 per hundred for No. 1 seed.

The committee recommended encouraging the production of vetch seed in one or two counties where there had already been a considerable amount of success attained.

7. Red Clover.

Considerable time was devoted to a discussion of clover seed production following a concise report on the existing situation in the Province.

In 1927 there was produced some 800,000 lbs. of clover seed. In all some twelve to fifteen counties can successfully produce such seed. The chief centers at present are in the districts of Chateauguay, Vaudreuil, Laprairie, Berthier, Portneuf, Lake St. Jean and Temiskaming. It was the opinion of the committee that with proper methods of growing and marketing, the amount produced could be greatly increased.

The Provincial Government has done a good deal in the way of establishing local cleaning plants in various centers. To date some thirty-three such plants have been established.

During February auction sales had been held in two districts, viz., Howick and St. Clet, to dispose of the seed produced. All of the seed in these districts had been cleaned and graded. Between the two districts some 60-70,000 lbs. of seed was disposed of at a good price to the producer. The larger proportion of it graded as No. 1.

A much larger clover centre is in process of development at Ville Marie, Temiskaming. Here a cleaning plant with storage facilities has been built. The producers in this district are organized into a co-operative operating on the pool principle. In addition to clover they are also handling seed of other crops, e. g., timothy, barley and peas. In all they expect to handle 175,000 lbs. of seed of the 1927 crop.

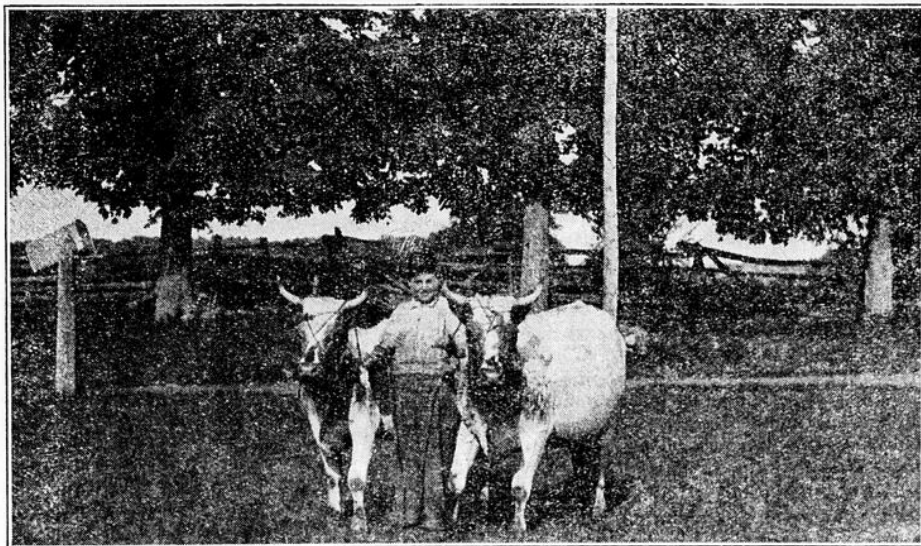
The Board was of the opinion that every encouragement should be given to the production of clover seed in Quebec in view of the hardy nature of the seed. They recognized the need for further organization, particularly with reference to marketing facilities.

The question was referred back to the committee for further consideration.

8. Provincial Comparative Tests.

A year ago a committee of the Board had been appointed to conduct, survey and interpret the provincial comparative tests. These tests were instituted three years ago and have been conducted at the federal experimental stations and at two of the schools of agriculture. The report presented showed the status of this work.

In connection with each one of the eight projects outlined above, a standing committee was appointed to work with the executive in furthering the desires expressed by the Board.



Frank Woodward, of Massawippi, is very proud of his Durham heifers, pure bred, belonging to the accredited herd on Maplewood Farm. The heifers won first prize at the Stanstead County Fair, held at Ayers Cliff, also first prize in the Calf Club.

Frank is on the right road to become a real farmer. He is getting his training in raising calves and chicks, field and garden crops, and in sugar-making, while also attending school, which luckily for him, is close by. This allows more time for farm work and play. (Photo by B. W. P., Massawippi).

In accordance with the constitution, the annual meeting elects an executive of four, who in turn appoint a secretary to make a complete executive of five members. Those elected by the Board were as follows:

President—R. Summerby, Prof. of Agronomy, Macdonald College.

Vice-President—L'Abbee Jean, Agricultural School, Ste. Anne de la Pocatiere.

Members:—L. P. Roy, Field Crops Division, Provincial Department of Agriculture.

G. Langelier, Superintendent, Experiment Station, Cap Rouge.

The executive met the following morning, March 14th, and considered ways and means of implementing the findings of the various committees as reported at the Board meeting the previous day.

energy, it is then using its strength and vitality in the growth of roots. Consequently it is the more easily combated at this latter period—from early June onwards.

Other suggestions.

Other suggestions connected with the "Crane" system are the following:

The disks should be sharp so that they will cut right through the sod. Working with dull or blunt disks is merely wasting time.

Be very careful on these points: covering the entire field; having the disks sharp; having the disks set at a steep angle all the time.

Do not seed to any crop until the quack is dead. Those roots that are so deep that the disk or cultivator does not reach them will die and decay, provided the green blades have been kept from conveying the breath of life to them.

The improved condition of the soil, together with the decayed quack grass roots, will give an increase in crop yield that will amply repay the farmer for the extra work involved.

Use a jointer instead of a revolving coulter, to invert thoroughly the furrow. Every vestige of the sod must be completely buried.

*"Quack Grass Eradication" by P. B. Crane, Webb Publishing Company, St. Paul, Minn, U. S. A.

The Eradication of Quack Grass--

An Explanation of the "Crane" System*

By Dr. A. McTaggart, Ass't Prof. of Agronomy, Macdonald College.

THE "Crane" System of quack or couch grass eradication, which is reported as being highly successful in the Middle West states of U. S. A. is herein explained, for trial, if need be, by farmers who are bothered with this pest. The writer has never tried the system, nor has he seen it tried, but he has been impressed with the published reports of successes obtained in the region above-mentioned, to such an extent that he deems it worthy of trials preferably on a small scale to start with, here in Quebec where this troublesome weed has in many cases obtained almost "a strangle hold".

The system involves (1) the spraying of the quack with a suitable spray, followed by (2) deep careful ploughing and systematic disking of every square inch of the ploughed area—so thoroughly done that the quack never sees the light of day and so eventually perishes. Details of the spraying and the systems of cultivation are elaborated below. These, though confidently recommended by the originator of the system, do not do away with what should always be regarded as the first step in prevention, namely, looking to the grass or other seeds and not planting any with quack in them.

Formula for spraying to kill quack grass.

Take 40 gallons of water and dissolve in it 8 lbs. of sulphate of iron and 2 lbs. of salt. To this add 2 gallons of sulphuric acid. Stir until the sulphate of iron and the salt are thoroughly dissolved, and the solution is then ready for use. It is effective in killing quack, yet it is harmless to the soil when applied as herein directed.

Quantity and application of spray.

The above quantity of spray is sufficient for one acre of quack grass, and should be sprayed in a thorough manner, taking care that every portion of the field is touched with the spray. Apply the spray 24 hours before beginning to plough; and the ploughing should be finished within 4 days upon completion of spraying. The spray should not be applied while the grass is wet, nor before a rain storm. There should be two hours of sunshine after spraying, before dew or rain falls upon it, thereby enabling the material to do its destructive work.

The cultivation recommended for success with the system varies somewhat with the condition of the sod and the nature of the ground due to previous cropping or other causes. These variations are discussed below.

Heavy Sod.

Heavy sod of quack should be ploughed with a breaking plough, and should be turned over just as smooth as possible, 7 to 9 inches deep. This will provide on top sufficient loose dirt with which to form a mulch of dust covering to prevent the evaporation of the spray, and will also hold the moisture in the ground, which will in turn cause the roots to decay.

The ploughing should be followed immediately with the disk, which should not be ridden the first time over the field, as that would cause it to cut too deep and thereby turn up more or less sod. This must be specially avoided, as the main sod is wanted underneath where it will decay. The disk should also follow the direction of the ploughing, and should overlap half of the previous disking at every round. This provides for a double disking of the entire area ere the field is completely covered. Upon the completion of this operation the field can rest for two weeks. At the end of this time take the disk and go after it again, overlapping half way every time round as before. Disk until you have thoroughly pulverized the surface of the field at every point; and where there is a patch more stubborn than the rest, turn around and go over it until your own good judgment tells you that you have conquered it. Ride the disk always after the first time over the field, and at all times have the disk set at as steep an angle as you possibly can. Be thorough with this work. Disk it until you have completely killed all the new growth of quack, and

have pulverized the sods so that the surface of the field has a perfect dust covering all over it. Then let the area rest for another two weeks. At the expiration of these two weeks green blades will appear and may seem very discouraging. On the contrary, it is not discouraging, for two reasons: (1) because green blades help to manure the land; (2) the cultivation necessary to kill this growth will pulverize the ground and at the same time draw the moisture from below and retain it so that the main sod, which is beneath, must decay. Now take the disk and go at it for the third time, lapping the disk half way every time, and always set at the steepest angle possible. The team should also move at a fair gait so as to move the ground.

After two weeks rest, take the sulky corn cultivator and go over this field in a thorough manner, cultivating 3 inches deep. Then cross cultivate, going now 4 inches deep. Be sure and stir every inch of the ground. Now let the field or area rest for one week and then harrow in a most thorough manner. Frequent disking, as described above, thereafter will complete the job. Do not plough this ground for the next crop. Double disking and harrowing will prepare it, putting it into excellent shape for the seed.

Stubble ground.

Where a crop has been raised and harvested, the spray above referred to can be applied to the stubble and, after an elapse of the prescribed 24 hours, the plough should be set to work, ploughing six inches deep. Follow this with the disk always set at a steep angle. The driver can ride this all the time. Lap half way and go over the field several times, then rest it one week and repeat the disking. Every time that the field is gone over in this manner improvement in the condition of the ground will be noticed. The time is short in which to prepare the area for the crop to be seeded next season. Therefore it behoves the farmer to repeat this work just as often as he can during the fall or autumn season. The fourth cultivation should be with the corn cultivator, going 3 inches deep the first time over, then cross cultivating and going about as deep as the ploughing. Now harrow most thoroughly, and the remainder of the work should be with the disk. In preparing this field for the spring crop, when spring arrives, use the disk and harrow only.

Spraying and cultivation without the plough.

Where the condition of the ground is such that the disk and corn cultivator (or spring tooth) will cut up the surface, the plough is not used. Spray the grass, as above described, and then use the disk with the heaviest driver procurable (a weighty person). Disk thoroughly and use the corn cultivator until you have a perfect mulching 4 inches deep all over the field. Then use the cultivator every two weeks, with an occasional harrowing, and soon the quack will not be seen.

The following is described as decidedly the easiest way to kill quack grass. One is recommended to take a field that was in corn the previous year, the disk and cultivator diligently applied thereto, as above advised, doing the work of eradication. Where the sod is firm, then the plough must be used. Where the plough is not to be used, the work of eradication can be commenced in early April and the field seeded July 1st. Where the plough is used, however, the work should not be commenced until June. The operations involved in quack eradication, above described, may even be commenced as late as November 1st, and the cultivation continued during the early spring following. It must be borne in mind, however, that it takes 12 weeks' time to make sure that quack is dead.

Ploughing a quack grass area in April or early May (the spring of the year is to be avoided). The grass is too vigorous at this date to even think of giving up its growth for the production of seed; but when it has spent this special spring time

National Dairy Council of Canada Represented at Tariff Hearings at Washington

THE National Dairy Council was represented at the recent hearing before the United States Tariff Commission at Washington by Mr. P. C. Armstrong of Montreal. The hearing, which was to deal with an application for a fifty per cent increase in duty on imported milk and cream, was held on February 23rd, 24th and 25th.

The Council had decided to make it clear that Canadian interests were neither supporting nor opposing the proposed increase, but were only interested in seeing that a correct picture of the dairy situation in Canada was presented.

Mr. Armstrong first pointed out that in no year had Canadian exports to the United States exceeded 8% of Canadian production or more than a fraction of one per cent of total United States production. He also showed that the trade had been built up chiefly by buyers from the United States seeking supplies in Canada, on the ground that insufficient supplies were available within safe shipping distance of the great United States consuming centres, which appears to contradict the assertion of United States producers that Canadian imports were competing with United States production.

Great alarm was expressed over the possible flood of milk from the Canadian Northwest—a flood which Mr. Armstrong argued existed only in imagination.

He then argued that since the great bulk of exports is in the form of cream in summer, and since this was largely supplied from factories that only entered the American market when spot cream was selling to yield more than Canadian cheese or butter, it was probable that under the requirements of the Lenroot Act many of these factories would not be willing to go to the trouble of organizing all their patrons to meet these requirements for a part time market, and that therefore a large decrease in exports might reasonably be expected.

The Commission had prepared a very voluminous report, purporting to show that cost of production in Canada was much less than in the United States. Mr. Armstrong showed that in making this comparison areas composed wholly of producers of fluid milk for all-the-year markets in the United States had been compared with Canadian areas in which but a few producers were on the all-the-year basis. This of course renders the comparison valueless, as summer dairying cannot and does not compete with all-the-year production, but enters an entirely different market.

He dealt also with apparently erroneous assumptions as to average cow production in Canada, with too great value placed on skim milk in Canada, and with certain minor errors in the report.

On his return to Canada Mr. Armstrong stated that as far as he could see the opposition to entry of Canadian milk and cream was based on a total misunderstanding, both of the extent of the trade, and also of Canadian agricultural conditions—the idea seeming that we were in this country producing milk under much cheaper conditions than in the United States—an obvious error when similar types of dairying are compared.

FARM AND VILLAGE HOME PLANTINGS

By C. E. Russell, Department of Horticulture, Macdonald College.

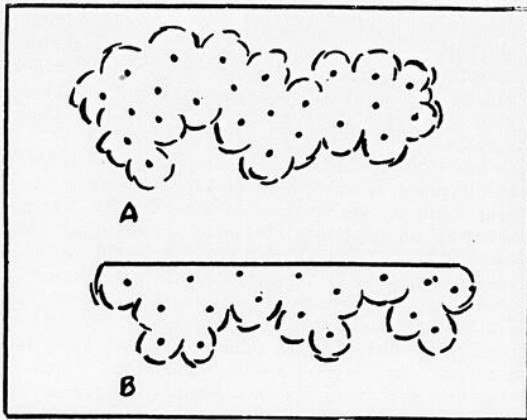


Figure 1. Borders designed to be viewed (A) from two sides and (B) from one side.

Planting.

THE shrubs and trees which may have been ordered from the nursery will need immediate attention upon their delivery. However well they may have been packed, a certain amount of drying out will have taken place while en route. As they are in bundles with burlap about the roots, the first care will be to put the bundled roots, together with the burlap, in a tub of water for several (from five to eight) hours. In case the twigs and branches seem to be dried out, a plumping of the tops may be aided by wrapping the whole bundle, tops and all, in wet burlap. If the plants are small enough to permit, the burying of them in moist soil will accomplish the same end.

After having revived the plants with the above treatment, they should be set as soon as possible. If there is any delay in the setting, due to improper soil conditions, the bundles should be opened and the plants heeled in.

Upon removing the plants from the nursery or wood lot there was necessarily a considerable loss of roots. In orders that those remaining can care for the feeding of the foliage, the branches should be pruned moderately. Any necessary shaping of the top can be started at this time by the removal of limbs that are broken, weak or not in the proper position to form a well shaped tree or shrub. The only root pruning that should be practised is to remove any broken or long roots.

The hole in which the plant is set should be sufficiently large and deep that there will be no cramping nor bending of the roots—they need to have a natural position in order to get a good start and make up for the loss they have suffered. In filling in the hole the soil which was originally near the surface and is richer should be placed around the roots. A caution is needed to correct a practice which is often followed, that of placing sod about the roots. Pieces of sod should never be used to fill in the hole, because they act as a layer through which moisture cannot penetrate in order to reach the roots. Other than that, this sod often starts growth even at a considerable depth, thus using up plant foods and moisture which belong to the roots of the shrub or tree.

The depth of planting should be from one-half to one inch deeper than it originally was in the nursery. This allows for the settling of the earth in the new location.

If there is any one thing which should be emphasized in the planting it is the proper firming of the soil about the roots. Much pressure should be applied in order that the soil comes in close contact with the roots. It is these particles which carry water and food to the roots, and their closeness will determine the degree of success the plant can have in getting a good start.

Often the question arises whether or not watering should

be done. In most years, if the planting is done at the proper time, as early as possible, the soil has sufficient water to supply the needs of a plant. However, at the time of planting a mulch should be established on the top in order to preserve the water which is present. After the firming of the soil a shallow cultivation of the surface will help prevent loss of water by evaporation. It is not sufficient to merely establish this mulch, but it should be maintained throughout the season by frequent cultivation.

Planning the borders.

Much has been said in the February and March numbers of "The Journal" relative to the use of borders. This month a discussion of the actual location of the plants in these borders, is such as used, will be useful.

A border of shrubs which may be located along a fence or building and is thus to be viewed from one direction will have the natural curving line on one side as shown in Fig. 1B. Often, however, a border's usefulness can be increased by using it as a boundary between two yard areas, having both sides planned in the natural style or curved lines. Such a border is shown in Figure 1A.

Whether planting a border to be viewed from one or from two sides, the plants should not be set at the outside first. In the case of one which is to have the natural effect on both sides, set the plants in the middle first and then work toward the two sides. Likewise, in a one-sided border begin planting near the fence or building and work toward the front. Figure 2A shows the results of incorrect planting, or beginning at the front. It will be noticed that there is a tendency to produce a harsh front line with the plants equally spaced. Figure 2B gives a natural front line with the plants spaced at various distances. In this diagram the plants near the building were located first and the front line one set last.

Uncovering plants.

In the fall a protection is often afforded such plants as roses, bulbs, etc. At first thought it may seem a simple matter in determining the proper time to remove such a mulch; however, one finds many examples of a mistake in this. It should be borne in mind that such plants are naturally fairly hardy and that the mulch was used to protect them only from the long period of severe winter temperatures. In view of this, a rational removal program can be worked out. By a gradual exposing of these plants to weather conditions they build up an immunity to cold sufficient to carry them through any low temperature of spring. To do this the mulch is best removed gradually. Begin as soon as enough

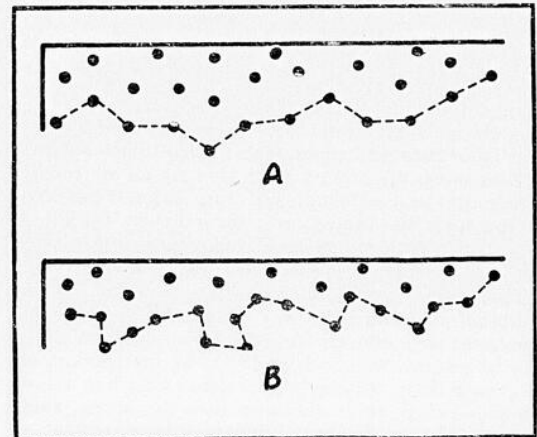


Figure 2. (A) Equally spaced shrubs forming harsh front line which results from planting from the front. (B) When the back shrubs are planted first a natural front line is obtained.

thawing has taken place to loosen some of the covering. As fast as more mulch is loosened remove that until it is all off. This permits the cold of the nights to be gradually admitted to the plant. The night's cold will delay the starting of growth until such time as the plant is acclimated to the weather conditions. If the mulch is left on too long (and this is too often the practice), the heat of the day will be held in by the mulch so that the plants begin to grow and produce bleached shoots that have no chance to become accustomed to cold weather. Then when the time comes that the mulch is removed, one cold night may cause such frost damage that the tips will be an unsightly brown throughout the season.

Pruning.

Figure 3 illustrates the effects gained by the two types of pruning of shrubs. Most shrubs should be pruned by thinning out whole branches, thus giving the appearance in Figure 3A. After the season's growth has taken place the shrub will appear much as in 3B. The improper method, or that of heading back, is shown in Figure 3C, and the top-heavy results are shown in Figure 3D. There is no question but a result such as shown in the first case is in better keeping with the naturalness that is desired. There are a few exceptions to the above thinning-out rules, and those are hydrangea, elderberry, Sorbaria sorbifolia and Rosa Rugosa; with these heading back should be practised instead of thinning out.

The Pee Gee Hydrangea should have the shoots which were produced last year cut back so that only one or two pairs of buds are left on each. In addition, some thinning may be necessary at this time to remove broken, dead and crossing branches.

The elderberry, Rogosa rose and Ural False Spirea (Sorbaria sorbifolia, formerly called Spiraea sorbifolia) should be pruned after the same method of pruning (heading back).

British Columbia Bulbs of Excellent Quality

HITHERTO the world's bulb market has been controlled by a few European countries, but now, according to the Superintendent of the Sidney, B. C., Experimental Station, this European supremacy in the bulb market is being threatened by the appearance of diseases difficult to control. In fact, of 7,000,000 bulbs shipped from Europe to Canada last year, a third were rejected on account of disease. Research work at the Sidney Station has proved conclusively that Vancouver Island can produce healthier bulbs of better quality than any of the European products.

"The best time to hold on is when you reach the point where the average man would quit."

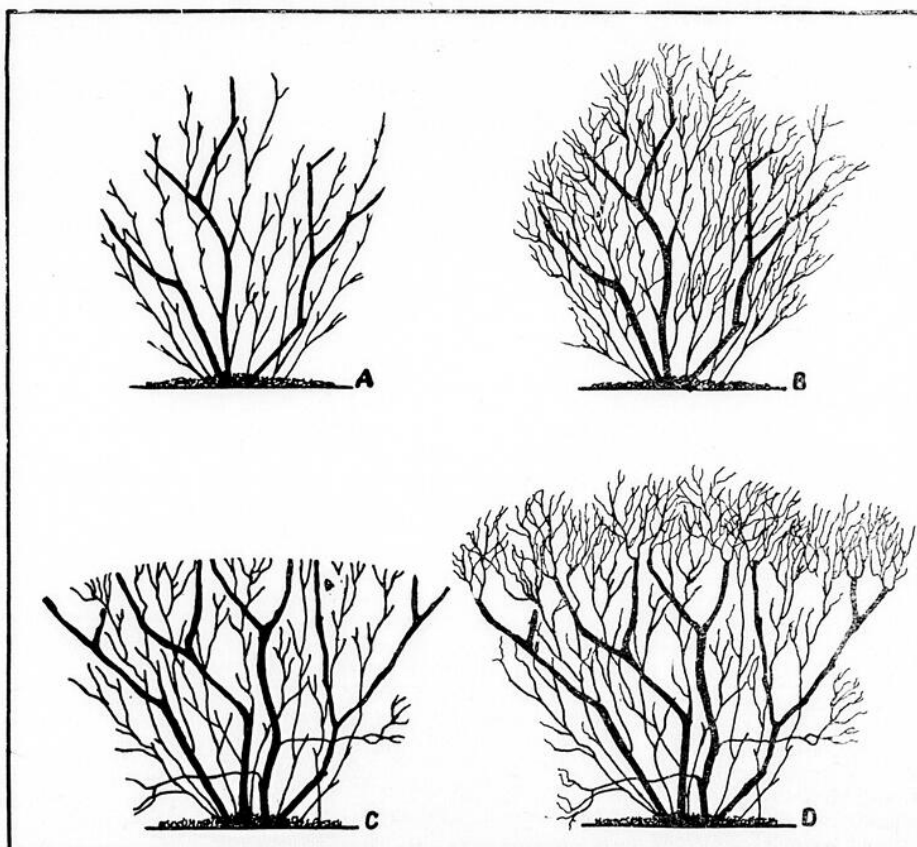


Figure 3. Methods of pruning. A and B show the effects of thinning out; C and D of heading back.

"SWAT" THE FLY AND KEEP WELL

By W. E. Whitehead, Dept. of Entomology, Macdonald College.

ALTHOUGH an insect of the greatest economic importance, there is probably less heard about the house fly than about any other insect of equal importance. This may be due to the fact that it is difficult to estimate the damage caused by this pest in dollars and cents. The agriculturist suffers just as much discomfort from this fly as his cousin in the city, and, although his crops are not destroyed, he and his family are nevertheless taking a chance of contracting some dread disease, when they allow their home to be overrun by the house fly.

The prevalence of house flies in some homes would almost indicate that they are part of the family, as no notice whatever is taken of them when they alight on the food, and yet, as interesting as they may be to watch, it is possible that but a few minutes before their entrance into the house, they may have been feeding upon the discharge of a patient carrying some contagious disease.

The tolerance of the house fly is undoubtedly due, in a large measure, to the lack of publicity which has been given to this problem, as it is only by educating the people to realize the dangers attending the presence of flies that their numbers can be appreciably reduced. Co-operation is essential, as success can only be attained where all members of the community are willing to work together.

Relation of the House Fly to Disease

The house fly's body is particularly well adapted for the purpose of carrying disease germs. The bottoms of its feet are in the form of two soft pads which are covered with minute hairs. In addition to these, the legs are thickly covered with bristly hairs, in fact, the entire body in a greater or less degree bears hairs, so that when the fly alights upon some filth in which it may be breeding, many of the germs readily adhere to its body and may in this way be carried to human food, causing its contamination. Germs are not only carried in this way, but also in the alimentary canal of the insect. These may either be passed in the excreta, or in yellowish, regurgitated drops which the insect is in the habit of leaving behind it wherever it goes.

When we consider that flies feed upon practically anything, from the most loathsome filth to the food upon our tables, it can readily be understood why they are charged with being carriers of such diseases as typhoid, tuberculosis, dysentery, enteritis, etc., besides being carriers of the eggs of certain parasitic worms. Not only in cities does contamination take place, but also in farm houses in small communities, for although the flies usually remain in the vicinity of their breeding places, they have been known to travel considerable distances, especially when there is a scarcity of food. These facts alone should be sufficient to emphasize the necessity and importance of house fly control.

Relatives of the House Fly

By no means are all the flies found in houses the species on which this article is based, although some others very closely resemble it. Probably the species most frequently mistaken for the house fly is the stable fly, but although alike in superficial appearance the stable fly's mouth parts are designed for piercing the flesh and it is the so-called fly that "bites," usually on warm, muggy days preceding rain. The mouth parts of the house fly are incapable of piercing. They consist of a short stout beak, at the end of which are two fleshy lobes, the insides of which are ridged and it is these with the aid of saliva that break up solid substances which are then sucked into the body.

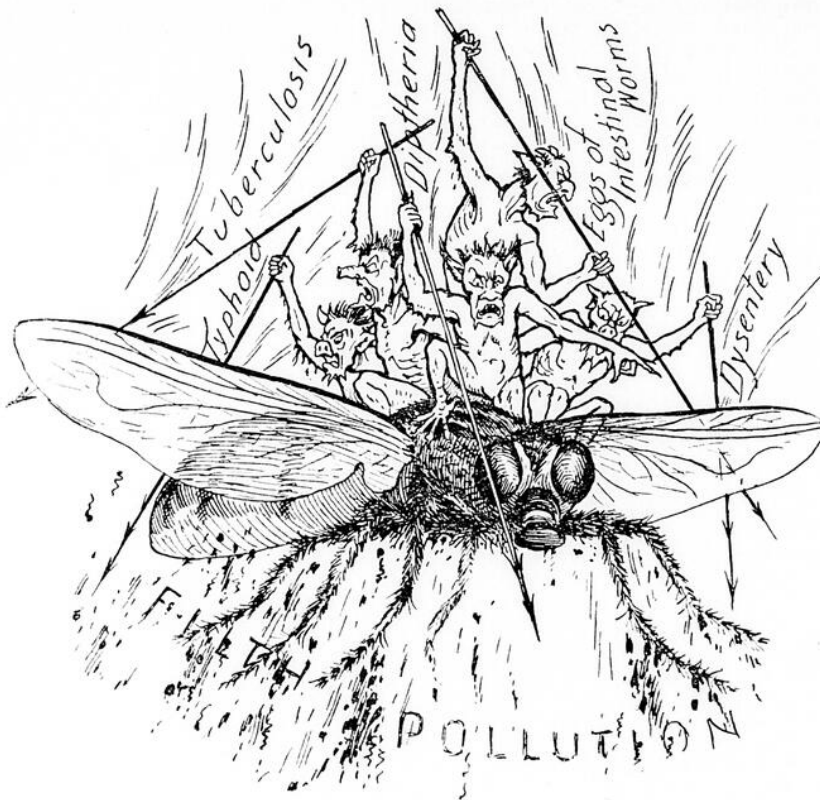
Another species frequently found in houses is the cluster fly, especially in the late fall and sometimes throughout the winter. The insect, however, can readily be distinguished from the house fly, owing to its larger size, the fact that its body is covered with numerous, minute yellow hairs, and that the wings when the insect is at rest, overlap on the back. It has the habit of collecting round window frames, and is usually somewhat sluggish in its movements.

In addition to these are a few others of less importance, but of all species combined, the house fly is by far the most numerous, and it can be identified by being of medium size and having four black stripes on the back.

Life History Habits

The most usual place for the deposition of eggs is in horse manure, but it is also known to breed in the excrement of humans, hogs, poultry, and to a less extent cattle. Other breeding places are in the refuse one sometimes sees thrown from the door, in garbage and in dumping grounds, in fact in almost all decaying vegetable and animal matter if more suitable locations are lacking.

Provided temperature and other conditions are suitable, the adult begins laying within a few days after emergence and lays usually two, but sometimes four, batches consisting of about 125 eggs. These hatch in a day or so, sometimes very much less, and the resulting headless, legless, wriggling maggots attain full growth in from four to seven days, except under adverse conditions when the stage may be greatly prolonged. When the maggots are full-grown, they migrate to the edges of the manure or whatever they may be feeding on, and transform to pupae, which are about the size of a wheat kernel and of a dark brown colour. The insect remains in this stage from three days to one week during the most favourable part of the year, and then the adults emerge, shortly after which they are ready to begin another life cycle.



The fly has been known to pass its entire life cycle in eight days, but this would be under exceptionally suitable conditions. Supposing a cycle were completed every fortnight during the summer months, it can readily be figured out what would be the approximate number of descendants from a single pair of flies at the beginning of the season. Even allowing for a substantial natural mortality, it will be seen that the number reaches a staggering total, which is illustrated practically every year by the great increase in the fly population towards the end of the summer.

Eliminating the Source of Supply

The prevalence of flies just referred to can, to a very large extent, be prevented with but very little extra cost and labour. Repression must begin at the insects' breeding grounds, and a great deal can be done by combined, well-directed effort. Isolated attempts at control, especially in the larger communities, are of no use, but anti-fly campaigns should be supported by the entire community and, in the case of cities, be directed by health officers.

Instead of broadcasting garbage from the house from the back doorstep into the yard, within a few feet of the door, and inviting flies to congregate, breed there, and be in a strategic position to enter

the house as soon as the door is opened, it should be placed in covered garbage pails and these should be emptied before decay sets in. Open privies should not be tolerated, or where this occurs, they may be treated with chemicals to repel the flies from such places.

As has already been stated, the house fly's chief breeding place is in horse manure, and there are several methods which may be adopted for either eliminating or lessening this source of supply. In cities it is suggested that manure should be removed at least twice a week, but to the farmer, whose busiest season is fly season, such a suggestion is out of the question; he may, however, treat the manure pile with certain chemicals. Hellebore is said to have given good results when used by dissolving one half pound of powder in ten gallons of water, allowing to stand for twenty four hours and sprinkling this amount over ten cubic feet of manure. Powdered borax also gives good results, but it is not recommended for the treatment of manure, since it later has injurious effects upon growing plants. It may, however, be used to advantage in privies, or on decaying material which is not to be used as a fertilizer. Calcium cyanide and acid phosphate, one half pound of each mixed together, sprinkled over the surface and then damped down with water, is said to have considerable larvicidal properties, at the same time adding nitrogen and phosphorus to the manure.

Where manure can be hauled and spread thinly on the field every day, it becomes dried out and unsuitable for the development of flies. A method used in England is to build the manure into compact piles, driving the loads over the top and making the sides as compact and vertical as possible. The resulting high temperature makes this an unsuitable breeding ground for flies.

There are a number of other remedies suggested, such as fly traps, manure bins, pits, etc., but those already mentioned are inexpensive and if used conscientiously will give good results.

Screening

This well-known method of preventing flies from gaining access to a house is most effective if carefully done and decaying screens renewed when necessary, as it is surprising how quickly flies will find their way through a screen that is beginning to rust into holes. All food should be screened unless kept in a refrigerator, for although screening does not decrease the fly population, it protects food from the danger of contamination.

Dealing with Flies in Houses

Sticky papers are widely used and are effective too, until one places an elbow on them. Possibly strings are better, as they can be hung up out of the way.

In addition to the various proprietary sprays and pads used in fly control, a very useful and effective poison may be made at home by mixing with one pint of milk, or one half pint of milk and the same amount of water, one dessertspoonful of formaldehyde and a little sugar. This is best poured in shallow plates, in the centre of which a crust of bread is placed on which the flies may alight. It kills quite rapidly and the flies may then be swept up. No other food should be available if the best results are to be obtained.

Conclusion

Whatever method of prevention or control is adopted, it should be thorough, and the co-operation of neighbours should be solicited, as half measures are useless if any degree of success is to be attained.

First of all, see to the sanitary disposal of all garbage, and destroy all miscellaneous breeding places.

Secondly attack the chief breeding places, either by frequent removals, or by treatment with some chemical substance.

Thirdly, screen windows and doors and so protect food from contamination by flies.

Fourthly, "swat" the first flies that enter houses in the spring, or have poison or sticky papers ready as soon as they appear. These may have already

laid a batch of eggs but it will prevent them from laying any more.

If some of the foregoing control and preventive

measures are adopted, the fly population will be greatly decreased, and the danger to human health will be lessened.

GRAY DAYS MAY BRING GAY DAYS

By Miss Jeanette Babb, Household Science Department, Macdonald College.

MOST people are beginning to plan their gardens at this time of the year. Bacon says "God Almighty first planted a garden, and indeed it is the purest of human pleasures." Every woman needs a hobby and needs to ride it good and hard. There is no better hobby than gardening. In order to have plenty of time for this hobby let us begin our housecleaning early. This advice, however, depends on where we begin.

As this is the season for moths, let us on one of the gray days begin at the attic and check over all our summer wardrobe and gradually replace our woollen things by summer ones. Any wool blankets that can be put away may be washed.

To wash woollens we find that in order to prevent them from becoming matted and shrunken it is best to wash them in water not much more, if any, than blood heat with sufficient mild melted soap to make fairly good suds. See that the water is kept at the same temperature throughout the whole process, then hang them over the line dripping wet, in the breeze to dry. Keep turning them as they dry. When almost dry, brush them against the nap with a medium stiff hair brush or a regular wool brush. When thoroughly aired fold up, placing moth balls or some other moth repellent in each fold; tie up in several thicknesses of newspaper. You may either overlap the paper or paste the edges together to prevent the entrance of moths and label the parcel. Moths dislike Printer's ink hence the newspaper.

Comforters that are too warm for summer use may be put over the clothes-line, thoroughly sunned and aired or have them dry-cleaned then treated in the same manner as the blankets.

Leave no wool, silk, feathers or furs to harbor moths. If they are not useful, get rid of them, if useful, take care of them. Coats and dresses should be dry cleaned or cleaned and pressed at home before putting away. Moths, as well as humans, like sugar or food, and spots on clothing are an attraction. When clean put them away as blankets, or place with some moth repellent in moth proof bags and seal up. If you have any woollens, etc., not in use be sure to sun and air them well, re-wrap and put fresh moth repellents around them for another season. Leave no chance for the lurking moth.

Let us take another gray day and begin at the clothes closet. Remove all the clothing, etc., take an inventory of the necessary things to be replaced next fall, and if the budget will permit, buy them now at reduced prices, taking all precautions in their care. It may be some of the garments can be made over. Rip them up, overcast the edges, wash carefully and press without stretching with the warp threads. You have all spring, summer and the early fall to look for remnants or other materials with which to combine them for a new garment. "A bird in the hand is worth two in the bush".

Cleaning and pressing woollen dresses and skirts.

1. Shake the garment free from dust.
2. Spread on a flat surface and brush thoroughly.
3. Have a properly padded ironing-board, until there is a layer of padding about one inch in thickness. A pressing cloth of the right thickness for the garment being pressed and two pads for pressing. The heavier the material is the more steam and the hotter the iron needed.
4. Sponge with a cloth to match the material or duck or drill for heavy wool materials or brush with a small brush all the very bad spots first:—
(A) Dark colors—as navy serges etc., with a good detergent or a warm infusion of black tea.
(B) Loose colored materials use soapbark.
(C) Light Colors—Mild soapsuds to which a little Ammonia has been added.

Then sponge the whole garment with clear water or with clear water and ammonia (6%) in the proportion of 1 tbs. to 1 quart of water. Be sure that all traces of the soap are removed.

5. If there are any shiny spots they may be rubbed against the nap while damp with "00" sandpaper or sponged with deep blue water. In brushing satin or broadcloth be sure that you do not brush against the nap.

Pressing

1. Plaited skirts should have the plaits basted in after cleaning.

2. If the garment is quite damp press it over a dry cloth. If not very damp, wring the cloth out of clear tepid water until quite dry and press with a hot iron over the cloth until the garment is dry.

Keep the iron in motion, in order not to get a sharp and sometimes deep crease where the edge of the iron comes.

Always press on the wrong side of the material and always with the grain of the goods. If absolutely necessary to iron on the right side, first place a dry cloth and then a damp one over the place to be pressed. Then just pat the cloth with the iron, being careful not to make a shiny place.

3. In doing a one-piece dress press the sleeves first, then the waist, particularly the shoulders.

4. Hang garment in a warm room until thoroughly dry.

Expensive furs are better stored. The price of storage is nominal in comparison with the expense and worry over home storage. However, these may be thoroughly brushed with a stiff brush then wiped off carefully with a soft cloth, wrung out of tepid water and ammonia, put on the line to be aired, and sunned, then hung in a cool storage room which gets a certain amount of sunshine every day. The fur should not be hung in the sun, however. They may be placed in moth-proof bags if desired. Occasionally put them on the clothes line, or hang out of doors to be aired and sunned during the summer season.

The closet must be thoroughly cleaned with hot soapy water, beginning at the ceiling and going to the floor. The hotter the water the better, and use a strong laundry soap for cleaning. Leave the door open to thoroughly dry and air it. Begin the work early in the day and when it is dry spray thoroughly with turpentine, benzine or carbon bisulphide or some good commercial Moth Exterminator. Be sure that every crack in the floor, all around the shelves, wainscoting, etc., are thoroughly soaked.

All three of these substances are inflammable, turpentine—the least dangerous of the three. If care is used not to light a match or bring a lamp or any other heat near it, and the windows and doors are open while working with them, one need not worry. Carbon bisulphide, as well as being inflammable, is poison so greater precautions need to

SUPPER DISHES

Baked Maccodoine

3 carrots
4 stalks celery
3 potatoes
1 onion
¼ cup water

1½ cups milk
3 tablespoons butter
3 tablespoons flour
salt and pepper

Wash and pare the vegetables, and slice them in uniform pieces. Arrange them in layers in a greased baking dish. Add the seasonings and water and bake until the vegetables are nearly tender. Melt the butter in a sauce pan, stir in the flour, add the milk and stir until thickened; season well, and pour this hot sauce over the vegetables. Return the whole to the oven and bake until browned.

Potatoes on the Half Shell

Select medium sized potatoes, wash them thoroughly, and bake in a hot oven until tender. Split them in halves lengthwise, scoop out the pulp and mash it. To six potatoes add ½ cup milk or cream, 1 teaspoon salt, ½ teaspoon pepper, and 2 tablespoons butter. Beat thoroughly, and refill the shells with the mixture. Lay a slice of bacon on top of each and replace in the oven until the bacon is crisp.

Vegetable Scallop

Season mashed dry turnips with butter, salt, pepper, and sugar; arrange alternate layers of turnip and grated Canadian cheese in a buttered baking dish, having the top layer cheese. Place in a hot oven until the cheese melts and the scallop is heated through.

Corn Chowder

2-inch cube fat salt pork
1 small onion
1 quart potatoes cut in ¼ inch slices
2 cups water
1 can corn
1 quart milk
3 tablespoons butter
3 tablespoons flour
salt and pepper

Cut the pork in small pieces and try out, add the sliced onion and cook until yellow in color. Strain the fat into a sauce pan. Add the potato and 2 cups of boiling water, and cook until the potatoes are tender. Thicken the hot milk with the flour and add to the potatoes; add the corn and season well. Serve garnished with crackers.

Creole Eggs

½ cup chopped celery
2 cups canned tomatoes
¼ teaspoon salt
1 teaspoon minced onion
2 tablespoons butter
4 eggs
dash cayenne
6 slices toast

Cook tomatoes, celery, onion, salt, cayenne until the celery is tender. Add the butter and slightly beaten eggs, and cook over hot water until the eggs begin to get firm, stirring lightly so that the mixture may thicken evenly. Pour the mixture over the toast and serve immediately.

Scalloped Cauliflower

3 tablespoons butter
3 tablespoons flour
2 cups milk
1 head cauliflower
buttered bread crumbs
salt and pepper

Melt the butter in a pan, stir in the flour, add the milk and stir until thickened. Let this cook over hot water for ten minutes or more. Cook the cauliflower eight minutes, counting the time when the water begins to boil. Arrange the flowerets of cauliflower in a buttered baking dish, pour on the white sauce, and cover with the buttered crumbs. Bake in a hot oven until the crumbs are browned.

Cabbage which has been cooked in boiling water for eight minutes may be substituted for the cauliflower.

Baked Onions

6 medium onions
1 cup soft bread crumbs
1 tablespoon butter
¼ cup minced meat
salt, pepper
savory, sage

Peel the onions and parboil them in salted water for five minutes. Plunge them in cold water and let them remain ten minutes. Drain, and carefully remove the centers. Mix the bread crumbs, melted butter, meat, and add seasonings to taste. Fill the centers of the onions with the mixture, place in a baking dish and surround with a small amount of boiling water. Bake in a moderate oven until they are heated through and the tops are brown.

Tomato Scallop

1 can tomatoes
2 tablespoons sugar
1 teaspoon salt
¼ teaspoon pepper
1½ cups bread crumbs
1 tablespoon butter or bacon fat

Combine the tomatoes, sugar, salt, and pepper with 1 cup crumbs. Put the mixture in a buttered baking dish. Melt the fat and stir into it the re-

maining crumbs. Place these crumbs over the tomato mixture and bake until they are brown.

Creole Macaroni

1 cup macaroni 1½ cups canned tomatoes
2 tablespoons butter ¼ cup grated cheese
2 tablespoons flour salt, pepper

Break the macaroni in one inch pieces, and cook in boiling salted water until tender. Drain thoroughly. Melt the butter in a sauce pan, stir in the flour, add the tomatoes and seasonings. Stir the mixture until thickened, then let it cook over hot water for ten or fifteen minutes. Add the cooked macaroni and cheese. As soon as the cheese has melted, turn the mixture into a hot dish for serving.

Baked Macedoine

Brown Bread Cheese
Ginger Bread Peaches

Potatoes on the Half Shell
Whole Wheat Bread

Baking Powder biscuits Honey

Corn Chowder

Lettuce Salad Graham Bread
Raspberries Cookies

Creole Eggs Brown Bread
Fruit Salad Cake

Scalloped Cauliflower Cold Tongue
Whole Wheat Bread
Baked Apples Spice Cake

Tomato Scalloped Graham Bread
Coffee Cake Bananas and Cream.

M. H.

Branch Women's Institutes Hold Annual Meeting

MARCH is the month for the annual meetings of the Branch Institutes of the Province of Quebec, when officers for the organizations are elected for another year of work. A Campaign of extension work is carried on during the early months of each year through the School of Household Science of Macdonald College, and the Superintendent of Quebec Women's Institutes. Miss Hazel McCain and her assistant, Miss Adams, in the form of demonstrations, practical and theoretical, on subjects pertinent to homemaking and home keeping.

The Argenteuil Branch of the Women's Institute sent a consignment of clothing for distribution to the Western Hospital, Montreal, and co-operated with the local Farmer's Club in holding a successful banquet.

Brome County Branches held annual meetings, and at Foster, South Bolton and McNeill's Crossing demonstrations were held by Miss McCain. The latter named branch provided a phonograph for use at social gatherings. Home Economics and Child Welfare received attention at the branch meetings. Chateauguay and Huntingdon elected officers and reviewed the year's work.

Canterbury in Compton County held a social evening for young people. Brookbury sick and needy were remembered by this Branch, not only in food and clothing, but in substantial cash donations. A donation was also made towards the funds of the cemetery. Bury provided equipment for the public school and held a social function in aid of the cemetery, as well as remembering the sick.

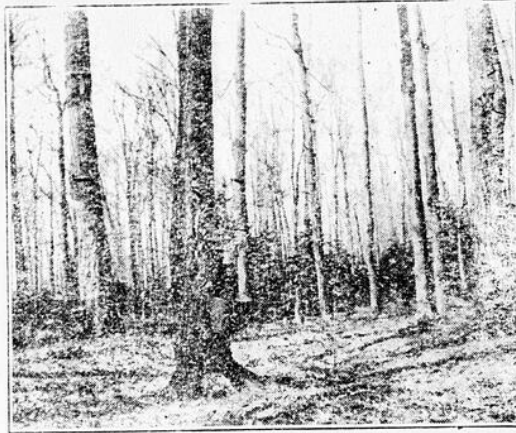
Cowansville, in Missisquoi County, took up the study of Banking and Investments, in a discussion and talk given by the local bank manager. Arrangements were made for a demonstration by Miss McCain.

In Ottawa County, Eardley Branch celebrated its ninth birthday in an all Canadian luncheon, with gentlemen friends as guests. The menu and subjects for the toasts were distinctively Canadian, and the function was a pronounced success. Practical subjects were discussed at the Branch meetings. Breckenridge welcomed a bride, and gave her a presentation. East Alceve co-operated with the Junior Red Cross, held a debate and several social gatherings. Lascelles stressed home, school and community work in its programme. Rupert Branch discussed Canadian made foods; planned for the annual school fair and for a banquet.

Wyman Institute in Pontiac County celebrated its fifteenth birthday. An apron contest was held, with prizes for the best.

In Shefford County Granby Hill branch sent practical help to needy ones, and had a paper on "Advantages of Country Life." Canadian Industries and their claims received attention in South Roxton

"The Romance of Sugar Making"



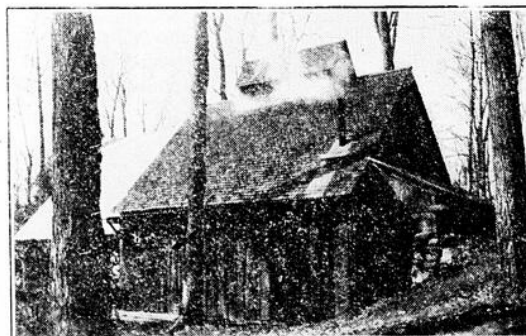
If you listen, you'll hear in the Spring time
The throbbing of old Nature's heart,
When Maple sap drips in the buckets,
And flowers from their brown covers start.



Distilled in the heart of the Maple,
Drawn up from the roots 'neath the soda,
Maple sap purer than crystal,
Is a beverage fit for the gods.



Collecting the sap of the Maple,
Given by Nature's free hand,
Is the work of the farmer in Springtime,
In Canada, dear Maple Land.



A shack in the forest of Maples,
Where sap on great arches they boil,
And Canada's Sweetest of products
Receive, as the fruits of their toil.

M. G. P.

Branch, and Waterloo-Warden planned for the annual fair and offered prizes in various branches of work. A large amount of practical kindness stands to the credit of this branch.

Sherbrooke County branches adopt the plan of a clearly defined printed programme for its year's meetings with a topic of educational value, as much along the line of present day interests as it is possible to lay out a year ahead. Names of hostesses, etc., are also given, and the outlines sent out by the Provincial Conveners are given a place on these programmes. Ascot Branch specialized on equipment for the splendid Consolidated School in the community, conducted an essay contest, held a demonstration and a sugar social. Lennoxville branch enjoyed a lecture on "Poets of the Eastern Townships" by Professor F. O. Call, Prof. of English literature at the University of Bishop's College, well known at a poet and author. Elections took place throughout the County.

Stanstead County branches held annual meetings at Ayer's Cliff, Beebe and Hatley. Programmes were submitted for the year's study and demonstrations held.

Prof. Wm. Caldwell of Montreal was the speaker at the meeting of Como, Hudson and Hudson Heights Branch in Vaudreuil County, his subject "The Place of Canada in the World To-day". This branch is distinctly patriotic, and recommended the purchase of books by Canadian Authors only with the generous cash contribution it made to the local library.

The Women's Institute of Quebec Province has a great field from which to draw in the matter of speakers, second to none in any part of Canada. Several Universities and Colleges have offered lectures and libraries at low rates, or no rates at all, and their cultured services are for the Branch Institutes on request. Many communities have availed themselves of these opportunities during the past year thereby lifting the status of culture to a higher level.

M. ELIZABETH McCURDY,

Provincial Convener, Publicity,
Quebec Women's Institutes.

Education in the Present and the Future

THE desired goal of all sincere educationalists is "equal educational opportunities for every child." Owing to the various handicaps of long distances, incompetent teachers and insufficient salaries, this goal is still looming far ahead in the future. Recent movements in school consolidation in efforts to render rural schools as modern in equipment and beautiful in surroundings, as well as to secure such remuneration for rural teachers as will induce them to remain in the country, will doubtless assist in bringing the ideal condition into existence. A well-balanced curriculum, adapted to the future needs of citizens of a growing country, will also help towards this objective.

Wider even than the opportunity which rural women's organizations have of providing better equipment, and better school plants in general, is that of urging upon Boards of Commissioners and School trustees the duty of assuming their own undoubted responsibility in these matters. It is a question whether any other method of securing school equipment is not really proving a handicap in the progress of education. Rural school boards often need educating along the lines of their opportunities, and if efforts result in their awakening, and in an illumination of the public conscience, a distinct step in progress has been achieved.

An important feature of the educational movement in the future will be a closer co-operation between the three parties concerned, the parent, the pupil and the teacher. A closer study of the various phases of school life will make for a more sympathetic interest on the part of parent, and will help to form the too often missing link between the home and the teacher. This in turn will create in the pupil the school spirit, a most important attitude of mind where the best development of the pupil is sought.

M. ELIZABETH McCURDY,

Prov. Conver. Publicity Dep't.,
Quebec Women's Institutes.

A thing of beauty is a joy forever,
Its loveliness increases; it will never
Pass into nothingness. Keats.

Classification of Stallions for the year 1928

| Proprietors. | Horse and Class. | F. Beaudoin, Broughton- Station. Soldat, | Belgian. | 1 |
|--|------------------|--|--------------|---|
| Argenteuil. | | | | |
| J. Richer, Huberdeau. Rock, | Crossbred. | R.G. Morency, Ste-Marie. Evan Bellini, | Standardbred | 1 |
| Ian M. Hay, Lachute. Craigie Allenby, Clyde. | 2 | A. Poulin, St-Joseph. Gris, | Crossbred. | 3 |
| Ian M. Hay, Lachute. Colonel Tipton, | Standardbred | A. Poulin, Grande Montagne. Frank, | Crossbred. | 3 |
| G. Moncrieff, Greece's Point. Baron Spark, | Clyde. | P. Pouliot, St-Victor-de- Tring. Prince, | Crossbred. | 3 |
| S. W. Morrow, Grenville. Hale Garner, | Standardbred | A. Dumas, St-Côme. Jay Boy, | Percheron. | 2 |
| G. E. Arnold, Grenville. Arn. Mastoc, | Percheron. | R. Carrier, St-Georges. Léonidas du C. R., | Canadian. | 1 |
| G. E. Arnold, Grenville. Arn. Pershing, | Percheron. | V. Lessard, St-Georges-Est. Black Prince, | Percheron. | 1 |
| G. E. Arnold, Grenville. Arn. Liberator, | Percheron. | Beauharnois. | | |
| G. E. Arnold, Grenville. Marval, | Percheron. | J. H. Lavoie, Valleyfield. Mambrino Peter, | Standardbred | 2 |
| G. E. Arnold, Grenville. Sande, | Percheron. | A. Leboeuf, Valleyfield. New Windsor Boy, | Crossbred. | 3 |
| G. E. Arnold, Grenville. Lavrat 2nd, | Percheron. | E. Roy, St-Stanislas. Jutland, | Clyde. | 1 |
| G. E. Arnold, Grenville. Braemer, | Percheron. | E. Roy, St-Stanislas. Grant, | Percheron. | 1 |
| G. E. Arnold, Grenville. Easter Cloud, | Percheron. | P. Vinet, St-Louis- Gonzague. Barney, | Crossbred. | 3 |
| G. E. Arnold, Grenville. Prince, | Percheron. | | | |
| G. E. Arnold, Grenville. Armonica jr., | Percheron. | | | |
| G. E. Arnold, Grenville. Arn. Champion, | Percheron. | | | |
| G. E. Arnold, Grenville. Chermis, | Belgian. | | | |
| G. E. Arnold, Grenville. Duke of Teck, | Clyde. | | | |
| G. E. Arnold, Grenville. King's Favou- rite, | Clyde. | | | |
| G. E. Arnold, Grenville. Happy Jack, | Hackney. | | | |
| G. E. Arnold, Grenville. Mischief, | Standardbred | | | |
| Arthabaska. | | | | |
| A. Hébert, St-Rosaire. John, | Belgian. | | | |
| C. Boutet, Victoriaville. Brown Gentry, | Standardbred | | | |
| F. X. Labbé, Victoriaville. Len-S, | Percheron. | | | |
| M. Verville, Victoriaville. Midnight, | Percheron. | | | |
| A. Gagné, Victoriaville. Napoléon, | Belgian. | | | |
| D. Sicard, Bulstrode. Dick, | Crossbred. | | | |
| A. Fournier, Warwick. Trépadour, | Crossbred. | | | |
| W. Fournier, fils, Warwick. Nighthawk, | Percheron. | | | |
| J. H. Muldoon, Tingwick. Nigger, | Crossbred. | | | |
| A. Perrault, fils Onés. Princeville. King, | Percheron. | | | |
| Bagot. | | | | |
| A. Dufresne, St-Pie. Eugène, | Canadian. | | | |
| A. Dufresne, St-Pie. Prince, | Crossbred. | | | |
| N. Gévy, St-Pie. Gentry, | Crossbred. | | | |
| D. Fontaine, St-Hugues. Bienfait de Voll, | Belgian. | | | |
| A. Deslandes, St-Dominique. Sir Leonard, | Clyde. | | | |
| E. Archambault, St-Dominique. Viviani, | Standardbred | | | |
| F. Bissonnette, Upton. Espoir, | Belgian. | | | |
| E. Blanchard, St-Nazaire. Lion, | Percheron. | | | |
| A. Laplante, Ste-Christine. Roscoe, | Percheron. | | | |
| Beauce. | | | | |
| G. Pelchat, St-Honoré- Shenly. Distingua, | Belgian. | | | |
| G. Pelchat, St-Honoré- Shenly. Royal Purple, | Standardbred | | | |
| E. Breton, St-Frédéric. Pit, | Crossbred. | | | |
| T. Beaudoin, Broughton- Station. Beauceron, | Belgian. | | | |
| T. Beaudoin, Broughton- Station. Gamin, | Belgian. | | | |

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355

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|---|------------|---|---|------------|---|
| A. Leboeuf, Valleyfield. New Windsor Boy, | Crossbred. | 3 | E. Roy, St-Stanislas. Grant, | Percheron. | 1 |
| E. Roy, St-Stanislas. Jutland, | Clyde. | 1 | P. Vinet, St-Louis- Gonzague. Barney, | Crossbred. | 3 |

Massey-Harris Cultivators
work the Land into
Shape Quickly

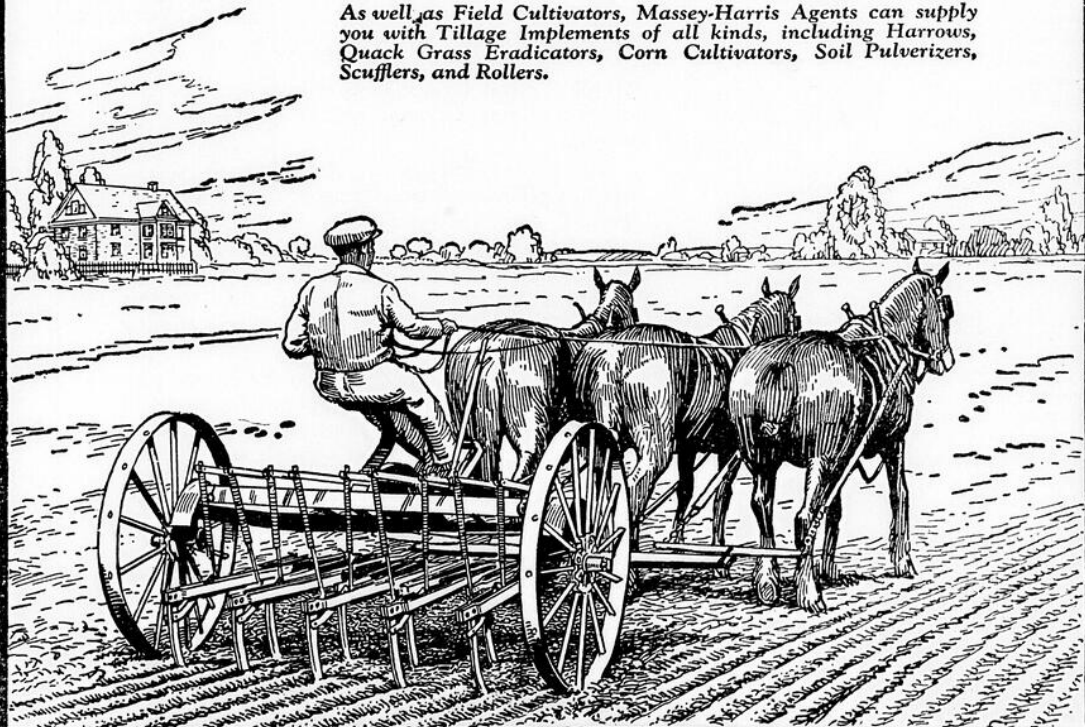
Power Lift
Implements
are easy to
Operate

"Three-Way" Clearance On All Massey-Harris Cultivators

The "Three-Way" Clearance of Massey-Harris Cultivators provides room for the passage of trash in the three important places—under the frame—between the rows of teeth—and in the zig-zag passageways. This "Three-Way" Clearance enables Massey-Harris Cultivators to clean out weed pests and cultivate fields quicker and better.

Strong frame, high lift; and wide-tired steel wheels are provided on Massey-Harris Cultivators. The line includes Spring and Stiff-Tooth Cultivators in hand and power-lift styles and you can get sizes suitable for the power you have available.

As well as Field Cultivators, Massey-Harris Agents can supply you with Tillage Implements of all kinds, including Harrows, Quack Grass Eradicators, Corn Cultivators, Soil Pulverizers, Scufflers, and Rollers.



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-AGENCIES EVERYWHERE

| | | | | | | | | | | | |
|---|--------------------|---|--|------------|---|--|------------|---|--|--------------|---|
| H. Laberge, St-Louis- Gonzague. Alcibiade, | Percheron. | 1 | M. Héroux, St-Maurice. Haricot, | Percheron. | 2 | A. J. Ness, Howick. Woodside Signal, | Clyde. | 1 | A. Gobeil, Riv-du-Moulin. Sunol du Saguenay, | Percheron. | 1 |
| H. Laberge, St-Louis- Gonzague. Lord Nickles, | Clyde. | 2 | A. Thibault, Pont St-Maurice. The Liar Jr, | Crossbred. | 3 | R. Ness & Son, Howick. Iron Signet, | Clyde. | 1 | D. Grenon, Chicoutimi. M. G. César, | Percheron. | 2 |
| J. C. McEwen, St-Louis- Gonzague. Sir Arthur, | Clyde. | 1 | Charlevoix. | | | R. Ness & Son, Howick. Royal Master, | Clyde. | 1 | M. Simard, Laterrière. Prinee, | Crossbred. | 3 |
| A. Sauvé, St-Etienne. Jack, | Crossbred. | 3 | E. Dufour, fils, Pointe de Roche. Brompton Boy, | Clyde. | 1 | J. Cullen, Howick. Kentyre Champion, | Clyde. | 2 | Compton. | | |
| A. Daoust, Beauharnois. Dexter Dan, | Shetland Poney. | 2 | Châteauguay. | | | J. Cullen, Howick. Senator, | Crossbred. | 3 | S. Campbell, Cookshire. Angus Lad, | Belgian. | 1 |
| N. Laberge, Beauharnois. Hindale, | Percheron. | 1 | A. Reid, Châteauguay. Pasteur, | Belgian. | 1 | T. Reid, Ormstown. DeSalaberry, | Belgian. | 1 | E. C. Taylor, East Angus. Viebert, | Standardbred | 1 |
| Bellechasse. | | | A. Reid, Châteauguay. Edgar de Gentinne, | Belgian. | 2 | A. Bétourné, St-Chrysostôme. Compton, | Crossbred. | 3 | Brompton Pulp and Paper Co., East Angus. Brompton Lad, | Belgian. | 1 |
| C. Asselin, St-Gervais. Medor, | Clyde. | 1 | Reid & frère, Châteauguay. Indigène de Ch., | Belgian. | 2 | Chicoutimi. | | | Brompton Pulp and Paper Co., East Angus. Midas de Ergot, | Belgian. | 1 |
| Syn. d'élevage St-Michel. Max, | Percheron. | 2 | Reid & frère, Châteauguay. Jupiter de Ch., | Belgian. | 2 | L. Tremblay, Ste-Anne. Baby Claude, | Crossbred. | 3 | Brompton Pulp and Paper Co., East Angus. Jericho II. | Percheron. | 1 |
| D. Roy, Ladurantaye. John, | Crossbred. | 3 | P. Normandeau, St-Urbain. Almoutmar, | Percheron. | 1 | | | | | | |
| E. Rousseau, Ladurantaye. Carman, | Crossbred. | 3 | | | | | | | | | |
| E. Pouliot, St-Philémon. Pit, | Crossbred. | 3 | | | | | | | | | |
| Berthier. | | | | | | | | | | | |
| J. Robillard, St-Cuthbert. Pascal, | Percheron. | 1 | | | | | | | | | |
| J. Pelland, St-Norbert. Smart, | Crossbred. | 3 | | | | | | | | | |
| A. Denis, St-Norbert. Gilbert du C.R., | Canadian. | 1 | | | | | | | | | |
| A. Dubeau, St-Norbert. Laddie of Sandy Bay, | Hackney. | 1 | | | | | | | | | |
| A. Lavallée, Berthier. Ronald, | Canadian. | 2 | | | | | | | | | |
| A. Desnonne, St-Damien. Pit, | Crossbred. | 3 | | | | | | | | | |
| A. Paquin, St-Charles- Mandeville. Rasta. | Percheron. | 1 | | | | | | | | | |
| Bonaventure. | | | | | | | | | | | |
| O. Fortier, St-André- Restigouche. Pit, | Crossbred. | 3 | | | | | | | | | |
| T. Mann, Escuminac- Nord. Dick, | Crossbred. | 3 | | | | | | | | | |
| T. Young, Oak Bay Mills. Bonaventure Pride, | Clyde. | 1 | | | | | | | | | |
| A. Bernard, Bonaventure. Forbes Johnson, | Standardbred | 1 | | | | | | | | | |
| G. Prince, Port-Daniel- Ouest. Napoléon, | Percheron. | 1 | | | | | | | | | |
| E. Lawrence, Port-Daniel- Centre. Professor, | Percheron. | 1 | | | | | | | | | |
| E. Lawrence, Port-Daniel- Centre. Daniel C., | Crossbred. | 3 | | | | | | | | | |
| G. McInnis, Port-Daniel- Est. Speed, | Crossbred. | 3 | | | | | | | | | |
| Brome. | | | | | | | | | | | |
| G. A. Lague, Mansonville. Eustache, | Percheron. | 1 | | | | | | | | | |
| Chambly. | | | | | | | | | | | |
| A. St-Jean, St-Basile. Pit, | Crossbred. | 3 | | | | | | | | | |
| I. Bigonnesse, St-Hubert. Lebrun, | Crossbred. | 3 | | | | | | | | | |
| A. Raymond, St-Hubert. Jaslarence, | Percheron. | 1 | | | | | | | | | |
| M. Quintin, Boucherville. Tibi, | Crossbred. | 3 | | | | | | | | | |
| F. Malo, Boucherville. Sir Joseph, | Percheron. | 1 | | | | | | | | | |
| F. Malo, Boucherville. Angus Balsam, | Belgian. | 1 | | | | | | | | | |
| F. Malo, Boucherville. Elma Vale Pride, | Clyde. | 1 | | | | | | | | | |
| Champlain. | | | | | | | | | | | |
| R. Carignan, St-Luc. Eel Dillard, | Standardbred | 2 | | | | | | | | | |
| S. Pronovost, St-Stanislas. Pit, | Crossbred. | 3 | | | | | | | | | |
| I. Delisle, St-Tite. Argus the Great, | Percheron. | 1 | | | | | | | | | |
| S. Plamondon, Ste-Thécle. Javert, | Percheron. | 2 | | | | | | | | | |
| A. Bilodeau, Grand'Mère. Lou Boy, | Crossbred. | 3 | | | | | | | | | |
| F. Francoeur, St-Séverin. Poney, | Crossbred. | 3 | | | | | | | | | |

Oil facts for farmers

(No. 1)

Only a quality oil has recommendations like these:

182 manufacturers of automobiles and motor trucks approve the Mobiloil Chart.

31 farm tractor manufacturers recommend Mobiloil.

30 stock engine manufacturers recommend Mobiloil.

43 stationary and farm lighting engine manufacturers recommend Mobiloil.

29 fire apparatus and rail car manufacturers recommend Mobiloil.

HUNDREDS of other manufacturers of automotive units approve Mobiloil.

How Mobiloil cuts expense

Mobiloil economy is so certain that these manufacturers readily recommend Mobiloil for use in their engines.

This point is important. Mobiloil cuts cost of operating farm tractors, trucks and cars in many ways.

The first thing most new Mobiloil users notice is a substantial reduction in oil consumption, ranging from 15% to 50%. Many farmers say this saving more than makes up for Mobiloil's slightly higher price per gallon.

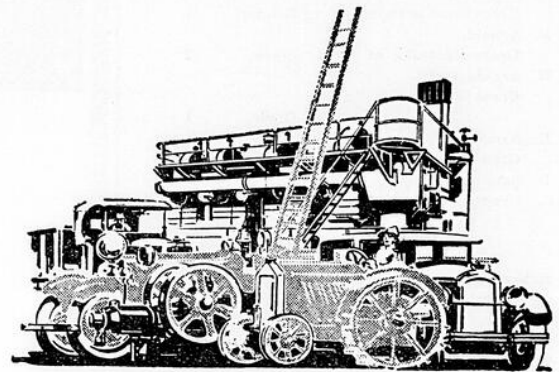
In addition Mobiloil gives you the utmost protection against costly repairs and breakdowns. And just one extra repair job may easily run into more money than your whole year's supply of Mobiloil.

How to buy

Most farmers buy a season's supply of oil at one time. We recommend the 55-gallon or 30-gallon steel drums.

Other Mobiloil containers are:—10-gallon steel drums with self-contained faucet, 5-gallon cans packed in easy-tipping rack. Also 1-gallon and 1-quart cans.

Your dealer has the complete Mobiloil Chart. It will tell you the correct grade of Mobiloil for your tractor, your truck and your car.



YOUR GUIDE—If your car is not listed below see any Mobiloil dealer for complete Chart. It recommends the correct grades for all cars, trucks and tractors. And remember that...

609 automotive manufacturers approve it!

The grades of Gargoyle Mobiloil, indicated below, are Mobiloil "E", Mobiloil Arctic ("Arc."), Mobiloil "A", Mobiloil "BB," and Mobiloil "B."

Follow winter recommendations when temperatures from 32° F. to 0° F. prevail. Below zero use Gargoyle Mobiloil Arctic (except Ford Cars, use Gargoyle Mobiloil "E").

| NAMES OF PASSENGER CARS | 1927 | | 1926 | | 1925 | | 1924 | |
|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| | Summer | Winter | Summer | Winter | Summer | Winter | Summer | Winter |
| Cadillac | BB | Arc. | BB | Arc. | A | Arc. | A | Arc. |
| Chandler Sp. 6 | A | Arc. | A | Arc. | A | Arc. | A | Arc. |
| " other mods. | A | Arc. | A | Arc. | A | Arc. | A | Arc. |
| Chevrolet | Arc. | Arc. | Arc. | Arc. | Arc. | Arc. | Arc. | Arc. |
| Chrysler 60, 70, 80 | A | Arc. | A | Arc. | A | Arc. | A | Arc. |
| " other mods. | A | Arc. | A | Arc. | A | Arc. | A | Arc. |
| Dodge Bros. 4-cyl. | A | Arc. | A | Arc. | A | Arc. | A | Arc. |
| Essex | A | Arc. | A | Arc. | A | Arc. | A | Arc. |
| Ford | E | E | E | E | E | E | E | E |
| Franklin | BB | BB | BB | BB | BB | BB | BB | BB |
| Hudson | A | Arc. | A | Arc. | A | Arc. | A | Arc. |
| Hupmobile | A | Arc. | A | Arc. | A | Arc. | A | Arc. |
| Jewett | A | Arc. | A | Arc. | A | Arc. | A | Arc. |
| Maxwell | A | Arc. | A | Arc. | A | Arc. | A | Arc. |
| McLaughlin-Buick | A | Arc. | A | Arc. | A | Arc. | A | Arc. |
| Nash | A | Arc. | A | Arc. | A | Arc. | A | Arc. |
| Oakland | A | Arc. | A | Arc. | A | Arc. | A | Arc. |
| Oldsmobile | A | Arc. | A | Arc. | A | Arc. | A | Arc. |
| Overland | A | Arc. | A | Arc. | A | Arc. | A | Arc. |
| Packard 6 | A | Arc. | A | Arc. | A | Arc. | A | Arc. |
| " 8 | A | Arc. | A | Arc. | A | Arc. | A | Arc. |
| Palge | A | Arc. | A | Arc. | A | Arc. | A | Arc. |
| Reo | A | Arc. | A | Arc. | A | Arc. | A | Arc. |
| Star | A | Arc. | A | Arc. | A | Arc. | A | Arc. |
| Studebaker | A | Arc. | A | Arc. | A | Arc. | A | Arc. |
| Velle | A | Arc. | A | Arc. | A | Arc. | A | Arc. |
| Willys-Knight 4 | A | Arc. | B | Arc. | B | Arc. | B | Arc. |
| " 6 | A | Arc. | A | Arc. | A | Arc. | A | Arc. |



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| | | | |
|---|---|---|---|
| Brompton Pulp and Paper Co., East Angus. Brompton John, Belgian. | 1 | E. Giroux, St-Eustache. King Quality jr, Percheron. | 1 |
| Brompton Pulp and Paper Co., East Angus. Brompton Bob, Belgian. | 2 | A. Paquin, St-Eustache. Bill, Crossbred. | 3 |
| Brompton Pulp and Paper Co., East Angus. Brompton Laddie II, Clyde. | 1 | A. Viau, St-Joseph-du-Lac. King, Crossbred. | 3 |
| Brompton Pulp and Paper Co., East Angus. Brompton Dan, Belgian. | 1 | J. Labonté, St-Benoit. Kontrole, Percheron. | 1 |
| A. B. Hartwell, Waterville. Uhlán, Percheron. | 1 | Ecole d'agriculture, La Trappe. Ridley Blind, Percheron. | 2 |
| L. Vien, St-Edwidge. Liege, Belgian. | 1 | Dorchester. | |
| Deux-Montagnes. | | | |
| H. Piché, St-Canut. Prince, Canadian. | 1 | P. Murphy, St-Bernard. Lincoln du C.R., Canadian. | 1 |
| J. Desroches, Ste-Scholastique. Diamond C., Percheron. | 1 | R. Lacasse, Ste-Claire. Honest Tom, Percheron. | 2 |
| O. Daoust, St-Hermas. Glory, Crossbred. | 3 | A. Fauchon, St-Malachie-Station. Captain Moncrieffe, Clyde. | 1 |
| E. Levert, Ste-Scholastique. Young Man, Standardbred | 2 | A. Fauchon, St-Malachie-Station. Jérôme du C.R., Canadian. | 1 |
| E. Renaud, St-Eustache. Direct Forbes, Standardbred | 2 | Drummond. | |
| | | Z. Dumouchel, Kingsey Falls. Castor Lion, Crossbred. | 3 |

| | | | |
|---|---|---|---|
| A. Duffy, South Durham. Master McColen, Clyde. | | D. Benoit, Mitchell-Stat. Petit Gars, Crossbred. | 3 |
| A. Duffy, South Durham. Royal Chamberland, Clyde. | 1 | W. Lupien, Wickham. Bayard, Crossbred. | 3 |
| E. Manseau, South Durham. Forbas 2nd, Belgian. | 2 | X. Girard, St-Eugène-Grantham. Prince, Crossbred. | 3 |
| A. Côté, L'Avenir. Balsam Rémi, Belgian. | 1 | Frontenac. | |
| A. Houle, St-Félix-Kingsey. Forbas, Belgian. | 1 | E. Proteau, St-Sébastien. Chançard, Belgian. | 1 |
| | | C. Bureau, Lambton. Buster Boy, Percheron. | 1 |



You Don't Have to Coddle an *Ingersoll* ALARM CLOCK

An alarm clock is meant to serve rather than to be served. *Nobody* wants to make it the pet of the family. *Everybody* wants it to give reliable service, both in time and alarm, and stand uncomplainingly the ordinary amount of abuse that every necessary article receives during a long and honorable life.

Ingersoll Alarm Clocks combine the accuracy of more delicate timepieces with a sturdiness that comes from sound, solid construction.

These clock tell time correctly and ring on time. They ring clearly and penetratingly.

And all this is only a part of Ingersoll Alarm Clock value. It wouldn't be

complete without Ingersoll "good looks" to round out the picture. Not only are they substantially made, but they look substantial. They will look well and serve well in the bedroom or kitchen.

Reliability . . . sturdiness . . . style . . . low price . . . and value! These are the Ingersoll "big five" and they mean alarm clock satisfaction for you! Look for the name INGERSOLL on the dial—just to make sure.

Should an accident occur, and a jeweler not be close at hand, send your Ingersoll

Alarm Clock to our Service Department at Montreal. It will be repaired promptly at a nominal cost.



A Really Dependable Alarm Clock for \$1.75
Ingersoll TYPE-T. Type-T Radiolite \$2.75. Height 6"

RENNIE SEED

EVERYWHERE IN CANADA

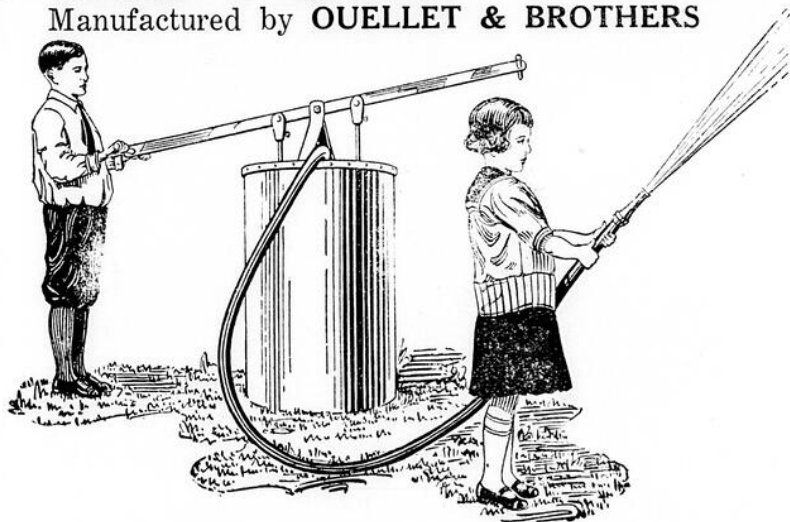
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|--|------|-------|-------|------|
| 74—Golden Acre Cabbage—One of the earliest Cabbages in existence. A most desirable variety | Pkt. | oz. | ¼ lb. | |
| | .25 | 2.00 | 6.00 | |
| 125—Golden Plume, or Wonderful Celery — One of the very best varieties for early Fall use. A good keeper | Pkt. | ¼ oz. | ½ oz. | oz. |
| | .25 | 1.25 | 2.25 | 3.50 |
| 260—Japanese Ebenezer Onion—A heavy yielding, producing large Onions which are wonderfully firm and solid and will keep nearly twelve months | Pkt. | oz. | ¼ lb. | lb. |
| | .10 | .50 | 1.50 | 4.50 |
| 355—Saxa Radish (Earliest of Scarlet Radishes) —Round bright scarlet with the smallest possible top | Pkt. | oz. | ¼ lb. | lb. |
| | .10 | .25 | .75 | 2.00 |

Wm. RENNIE Co., Limited
TORONTO - MONTREAL

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FIRE PUMP MADE WITH A STEEL BARREL

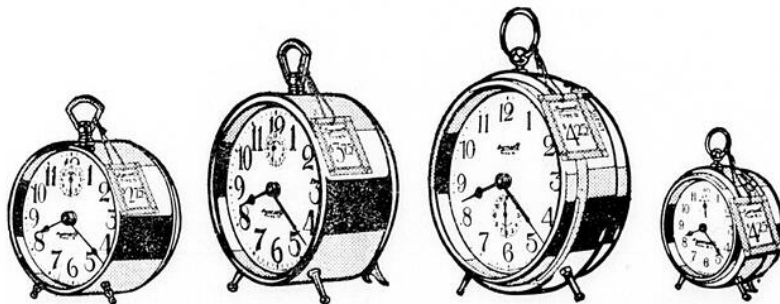
Manufactured by OUELLET & BROTHERS



This pump is called to be very useful. This forcing pump is always ready to operate and push the water from 30 to 35 feet high with great pressure. Every village should have at least two of them for protection and every rank must have one. Lots of fires have been avoided with it. On request we will give the name of municipalities which have prevented with this outfit the destruction of one part of their village. Dont wait to have a big fire, see to protect your property. For further information, apply to

OUELLET & BROS, St. Leonard d'Aston, Nicolet Cty.

INGERSOLL WATCH CO., Inc.
149 St. Catherine St. East, Montreal



TYPE-S \$2.75
Radiolite \$3.75
Height 5 3/4"
Back bell alarm clock at low price. Dependable quality. Continuous alarm.

TYPE-V \$3.75
Height 6 5/16"
Intermittent; back bell. Typical Ingersoll value. Reliable in both time and alarm.

TYPE-R \$4.25
Radiolite \$5.50
Height 6 7/8"
The aristocrat of the line. Large easily readable dial. Intermittent alarm.

TYPE-R Jr. \$4.25
Radiolite \$5.50
Height 4 3/4"
Everyone admires it. A handsome little clock with an intermittent alarm.

| | | |
|---|--------------|---|
| G. Dostie, St-Méthode- d'Adstock. Lord Roller, | Clyde. | 2 |
| L. Bisson, St-Méthode. Prince, | Crossbred. | 3 |
| <u>Gaspé.</u> | | |
| F. Labrie, Cap Chat. Harker II, | Percheron. | 1 |
| P. Scott, Cape Cove. General Currie, | Clyde. | 2 |
| P. Patterson, Gaspé. Frisco Peter, | Standardbred | 1 |
| <u>Hull.</u> | | |
| A. P. Radmore, Gatineau Point. Clemenceau 2nd, | Percheron. | 1 |
| M. J. Henderick, Hull. Sultan, | Percheron. | 1 |
| S. J. Kerr, Aylmer. Prince Victor. | Clyde. | 1 |
| C. Holmes, Luskville. Prince Aberdeen, | Clyde. | 1 |
| G. Frazer, Beechgrove. Galena Boy, | Percheron. | 1 |
| M. J. McLaugh- lin, Venosta. Lolap of Acme, | Percheron. | 2 |
| J. P. Daley, Venosta. Monarch of Mayfair, | Belgian. | 1 |
| M. J. Kelley, Venosta. Apollo of Arnolwold, | Percheron. | 2 |
| O. Haveron, Venosta. Sir Garnet Hood, | Clyde. | 2 |
| <u>Huntingdon.</u> | | |
| A. McDonald Campbell, St-Anicet. Albert, | Crossbred. | 3 |
| A. A. McEd- wards, Huntingdon. Sir Robert, | Clyde. | 1 |
| G. B. Campbell, Huntingdon. Hugo Heritage, | Clyde. | 1 |
| A. Douglas, Franklin. Cyclone, | Crossbred. | 3 |
| T. Jolly, Huntingdon. Sir Charming. | Clyde. | 1 |
| T. Jolly, Huntingdon. Woodland Pride, | Percheron. | 1 |
| J. J. Tannahill, Huntingdon. Ideen 2nd, | Percheron. | 2 |
| C. Trépanier, St-Anicet. Bijou, | Canadian. | 1 |
| C. H. Brown, Glencm. Le Rat, | Canadian. | 2 |
| W. Thompson, Ste-Agnès- Dundee. King Simon, | Clyde. | 2 |
| N. Lauzon, Ste-Barbe. Frank, | Crossbred. | 3 |
| A. Rankin, Huntingdon. Duke of Erin, | Clyde. | 2 |
| W. H. Arthur, Glencm. Sim Axworthy, | Standardbred | 1 |
| J. Dowd, Hemmingford. Pit, | Crossbred. | 3 |
| R. T. Brownlee, Hemmingford. Peachblow Sir Spencer, | Clyde. | 1 |
| <u>Iberville.</u> | | |
| O. Lamarche, Mont St-Grégoire. Grégoire, | Percheron. | 1 |
| O. Raymond, St-Alexandre. Brillant, | Crossbred. | 3 |
| A. Brault, St-Alexandre. Koutelas, | Percheron. | 1 |
| L. Lamoureux, Henryville. Sultan, | Percheron. | 2 |
| <u>Iles-de-la-Madeleine.</u> | | |
| J.-A. Delancy, Pointe-Basse. Kentucky, Marque. | Standardbred | 1 |
| <u>Jacques-Cartier.</u> | | |
| E. Legault, Ste-Genève. Royal Glory, | Clyde. | 1 |
| I. Meloche, Ste-Genève. Joe the Banker, | Percheron. | 1 |

(To be continued)

Green Feeds or Epsom Salts for Laying Pullets

IN the latest report of the superintendent of the Ste. Anne de la Pocatiere Experimental Station there is an account of a test made to compare the value of several green feeds for laying pullets and to ascertain if Epsom Salts are a suitable substitute for green feed. Four groups of pullets were used in the experiment. They were treated alike, except that one group received roots, another clover, another sprouted oats and the fourth group Epsom Salts once a day at the rate of 1¼ ounces per twelve birds, either mixed in drinking water or in the mash. Clover gave the best results, closely followed by roots. Epsom Salts gave the lowest profit, less than half of that from clover, on account of the fact that the birds getting them did not lay many eggs during the winter months.

Owner enthusiasm

With more than 120,000 Whippets in the hands of enthusiastic owners, the Whippet is still a year ahead of the industry. For Whippet design has been proved by millions of miles of driving.

Get a demonstration of the car's remarkable qualities — flashing acceleration, great power on hills, high speed, easy riding and parking.

Whippet \$695

F.o.b. factory. Taxes extra

Willys-Overland Sales Company Limited, Toronto, Ontario

Branches — Toronto, Montreal, Winnipeg.

Money Making Spring Equipment

SEE YOUR LOCAL AGENT NOW

EUREKA

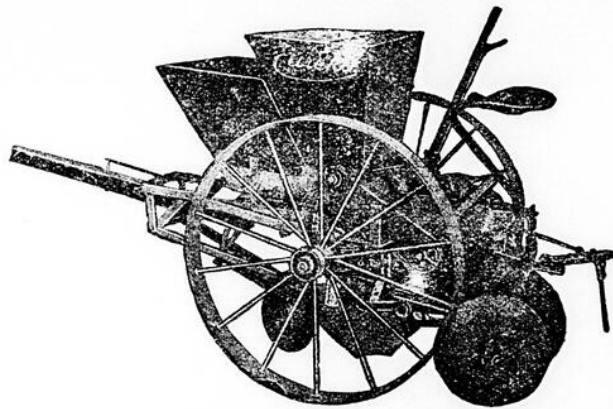
All-Steel Potato Planter

All moving parts made of steel or malleable iron. Takes few repairs.

The Eureka plants accurately up to 99% perfect. No extra man needed to watch seed hoppers and supply the "skips."

The furrow opening plow is carried directly under the main axle, thus carrying it the same distance from the ground level over uneven ground, assuring an even stand of potatoes.

Efficient fertilizer attachment increases crop yields and profits. The Eureka is built in one and two-row sizes, adjustable to any width of row.

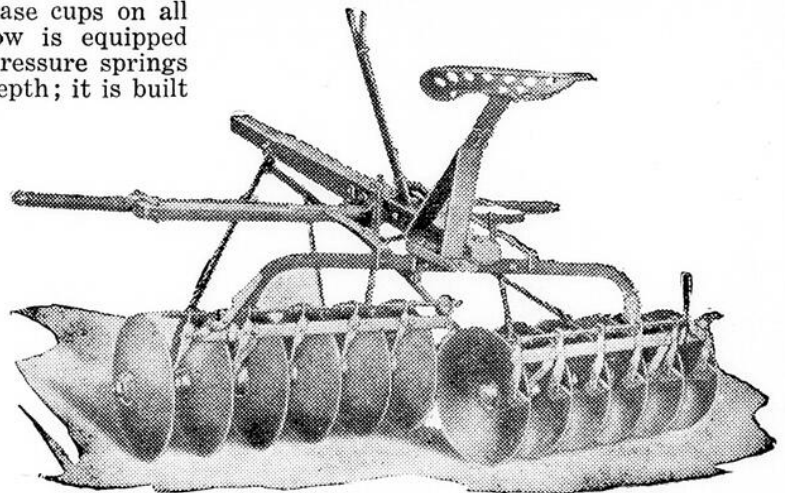


Frost & Wood Disc Harrows Give Good Service

The blades on Frost & Wood disc harrows are made of high-carbon steel, and they have the right "set" or "cut" to enable them to thoroughly pulverize the soil without causing heavy draft.

Frost & Wood discs have grease cups on all bearings. The "Lion" in-throw is equipped with ball bearings and with pressure springs to maintain an even cutting depth; it is built

in 12 and 14-blade sizes. The "Champion" out-throw has hard maple bearings and two-lever adjustment and is built in 13, 14 and 16-blade sizes. The "Tandem" is an ideal double disc for use with horse or tractor power.



Write for particulars and prices on Tobacco Transplanters, Wagons, Mowers, Rakes and other farm machinery.

Literature free on request.

FROST & WOOD QUEBEC LIMITED

Montreal, P. Q.

Quebec, P. Q.

FROST & WOOD

Dependable Farm Implements

Food Value Varies in Pasture Grasses

Supply of available nitrogen a vital factor affecting protein content of grass.

"ALL flesh is grass" but grasses may vary widely in their ability to provide the raw material for putting flesh on livestock, or in maintaining milking cows. The supply of digestible proteins in hay and pasture grasses is the deciding factor in determining their food value for farm animals. It is largely on account of shortage of proteins that fodders have to be supplemented with concentrated cakes and meals.

Careful analyses have shown that the percentage of proteins in grass is highest when the herbage is short but commencing to grow quickly. The earliest hay will contain twice as much digestible protein as the late-cut hay. These proteins are manufactured inside the plant and the essential element in them is nitrogen, which is absorbed by the plant roots. There is a definite relation between the available nitrogen in the soil and the quantity of protein feed produced per acre. On pasture land a regular succession of grass crops must be produced throughout the season. This means that some special means must be taken to maintain the supply of available nitrogen in the soil. Whether a mixed fertilizer containing the other two plant foods—phosphorus and potash—will be needed, will depend on the type of soil and the state of fertility. On rich clay land nitrogen alone may prove sufficient.

For this purpose, nitrate of soda—which is directly available to the plant—has proved valuable, not only in the Old Country, where top-dressing of pasture is an accepted practice, but under Canadian conditions. The nitrate is applied at the rate of from 100 to 150 pounds per acre, given in two or three applications. Prof. C. B. Sissons,

writing of a 1927 pasture experiment on his farm at Orono in Durham County states that "the effect of the nitrate on the permanent pasture was quiet evident. The grass was a darker green and grew more rapidly. Of course the cows kept the growth down but I fancy the yield would be considerably greater—possibly twice as great.

In tests carried out on pasture plots at the Fredericton, N. B., Experimental Stations, in 1926, the plots that received 200 pounds of nitrate per acre averaged 4,953 pounds of clipped grass on a per acre basis; the plots that received 100 pounds of nitrate yielded 4,599 pounds of grass, and the unfertilized pasture plot yielded only 3,207 pounds. This was an increase of 1,746 pounds in the one case and 1,393 pounds in the other.

In British Columbia, where tests were carried out in 1927 by Prof. P. A. Boving of the University of B. C., it was found that for B. C. soil conditions a complete fertilizer, including nitrate of soda, was most satisfactory. It may be concluded that nitrogen

must be supplied in any case for good yields of pasture grass high in food value; what additional fertilizing may be necessary will be governed by differences in soil conditions that each farmer may determine by some comparative tests in the use of complete fertilizers.

the breeders to work for flock average more than for high individual birds, although the latter undoubtedly have their proper place both in advertising value and in breeding work. During the past year more than thirty per cent of the 32,178 birds entered won Record of Performance certificates by reason of laying upwards of 150 eggs each during the year, and of these about one-third won advanced certificates by laying 225 or more eggs during the twelve month period. High records in a number of cases were made by hens whose eggs averaged less than two ounces each in weight, and these records were not recognized. The thousands of birds which have been granted government certificates covering their production, egg weight, standard breed qualities, and other points of merit, are exerting an almost incalculable influence in not only increasing the egg production, but also the vigour and general usefulness of the Canadian hen.

Three Hundred Egg Hens

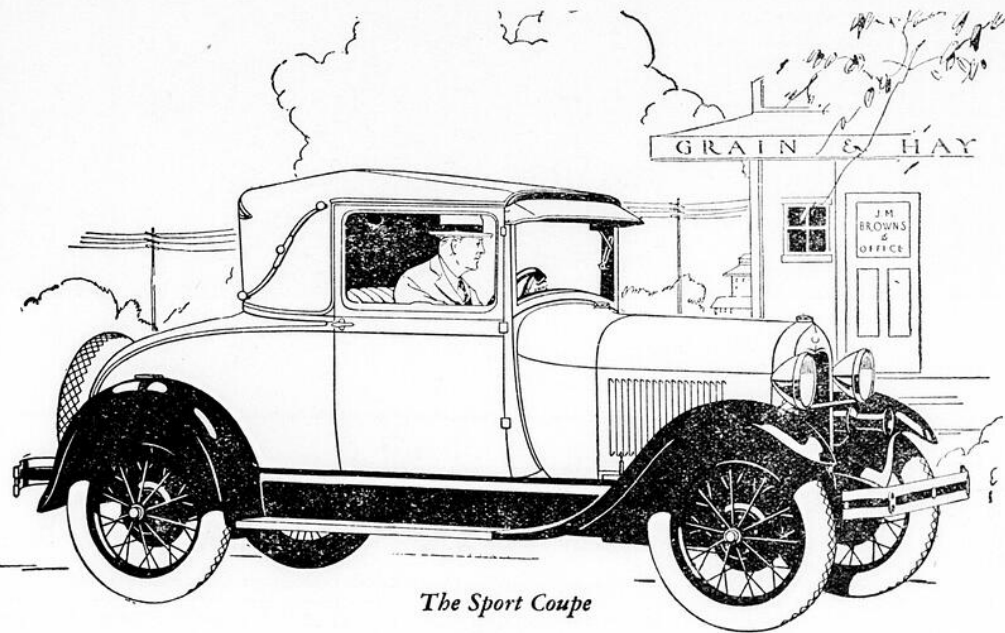
It is but a few years ago that the three hundred egg hen was something to marvel at. The time has arrived, however, when this distinction is by no means rare. In the Record of Performance work carried on by the Live Stock Branch of the Department of Agriculture at Ottawa, twenty-seven birds during the past year exceeded the three hundred egg mark, the highest being 338. Mr. R. W. Zavitz, supervisor of this work, reports that all but four of these records were made in British Columbia. The principal aim in the Record of Performance work, he says, is to get

OPERATION LEFT HER VERY WEAK

Letter Tells of Wonderful Relief After Taking Lydia E. Pinkham's Vegetable Compound



Coniston, Ontario.—"After a severe operation and a three weeks' stay in a hospital I returned home so weak that I was unable to move a chair. For four months I was almost frantic with pains and suffering until I thought sure there could not be any help for me. I had very severe pains in my left side and suffered agony every month. One day when I was not able to get up my mother begged me to try your medicine. My husband got me a bottle of Vegetable Compound at once and I took it. I started a second bottle, and to my surprise and joy the pains in my side left me completely and I am able to do all my work without help. I am a farmer's wife, so you see I can't be idle long. In all, I have taken six bottles of Lydia E. Pinkham's Vegetable Compound, five boxes of the Compound Tablets, two bottles of Lydia E. Pinkham's Blood Medicine, and have also used the Sanative Wash."—Mrs. L. LAJEUNESSE, Box 103, Coniston, Ontario. c



The Sport Coupe

The NEW CAR

A car with speed that can be maintained mile after mile; power that takes you up a steep grade without effort; pickup that places you far ahead when the traffic signal flashes "Go". A car exceptionally easy to steer and stop, with riding qualities that carry you smoothly over the roughest road. (The new car embodies all these features, including automatically equalized four wheel brakes and four hydraulic shock absorbers. (Its marvelous record of performance is evidence of the correctness of its design and the quality of its manufacture. (And its perfection mechanically is equalled only by its strikingly graceful body lines and lustrous two color finish.



FORD MOTOR COMPANY OF CANADA, LIMITED, FORD, ONTARIO

The Breeding of Saddle Horses Profitable

THE demand for good saddle horses and hunters is keen and growing according to the Honourable Mr. Motherwell Minister of Agriculture. In his latest report of the work of the Department of Agriculture he states that the riding horse most in demand is one not less than fifteen hands, three inches in height and weighing upwards of 1200 pounds. Horses of Thoroughbred type of these dimensions and over command very high prices. The several breeding stations that have been established throughout the Dominion and headed by Thoroughbred stallions are helping greatly to establish reputations for the communities they serve for the quality of their saddle stock. The foal shows held within these districts are said to be proving particularly beneficial not only from the fact that they advertise the district of the outside world, but also they are steadily making the breeding of saddle horses more popular in the districts themselves. In some of the breeding station districts, colts three years old bring comparatively high prices, while extra good yearlings are readily picked up by fanciers who are always prepared to pay high prices for likely prospects. During the year under review by the Minister, two additional breeding stations were opened, one at Russell, Manitoba, and the other at Kamloops, B. C. bringing these stations up to seven over the Dominion. Three or more Thoroughbred stallions are centred at each of these stations. There are other districts in Canada where stations could profitably be organized, but there exists the difficulty of procuring the necessary good sires of hunter type.



Design illustrated is Dominion Linoleum Rug No. 6555 available in three different colourings



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The Viking is made in the largest hand separator factory in the world, and is guaranteed for ten years.

Write us today. Agents wanted where we are not represented.

VIKING CREAM SEPARATOR

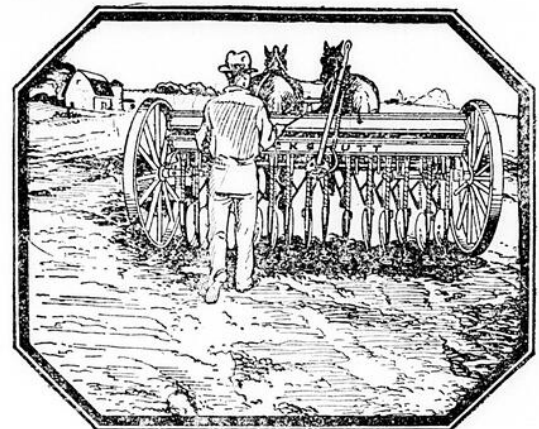
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COCKSHUTT Seed Drill

BIGGER YIELDS ASSURED!

Bigger yields — every farmer wants them! Then start right. Start with good seed and a Cockshutt Grain Drill and you'll get maximum returns from your land. Choose a Cockshutt Drill because it has proven itself thoroughly reliable and efficient and a great crop getter.

Securely rivetted frames of strong carbon steel; multiple-disc gears that automatically sow the desired amount of seed without waste or loss; efficient shoes that plant and cover the seed thoroughly; perfect lubrication and easy operation are features that will commend themselves to you.



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MONTREAL, Que.

"Cockshutt Implements Make Farming Pay Better"

Forest Fires and Canada's Railways

ARE the railway lining up in the improved scheme of forest protection in Canada today? The facts indicate that they most certainly are. Since 1912 when the Board of Railway Commissioners organized a fire inspection department, protection along the railroads has been operating as a triangular co-operative organization, including Railway Commission, the Dominion and Provincial Forest Protection Services, and the Railways

of the country, to reduce forest fire losses along the railway lines. Today there are 126 field inspectors throughout the Dominion acting as local officers of the Board. In 7,203 miles of line through forest sections 871 special fire patrolmen are engaged. On another 6,214 miles of line through forested territory regular section forces and other employees are organized to take care of fires starting on the right of way.

Annually about one million dollars is being spent by the railways to safeguard Canada's forests along the 97

per cent of the seam railway mileage in Canada under the Board's jurisdiction.

What has this co-operative organization accomplished?

Instead of railways holding a leading place as cause of forest conflagrations, the records of the four years from 1923 to 1926 inclusive show that only 16 per cent of the fires and but 5 per cent of the area burned is attributable to railway origin.

Let us compare these results with two States to the south of us. We find that Pennsylvania railways are

responsible for 30-35 per cent of the number of fires and area burned. Again in the State of New York, 14 per cent of the fires and 20 per cent of the area is attributable to railways. In other words, 30 and 20 per cent as against 5 per cent of our Canadian Railways.

Railways today are not included in the major causes of forest devastation. The crown goes instead to the travelling public and the settler. Education, and Education only, will accomplish here what has been done with Canada's railways.



COACH
\$1480
F.O.B. Factory
Taxes extra

At a Record Low Price

NOW—at the lowest price in history—thousands of new owners may enjoy the important advantages of the patented Willys-Knight six-cylinder sleeve-valve engine—its silent power, velvet smoothness, simple design, quick starting, rigid economy.

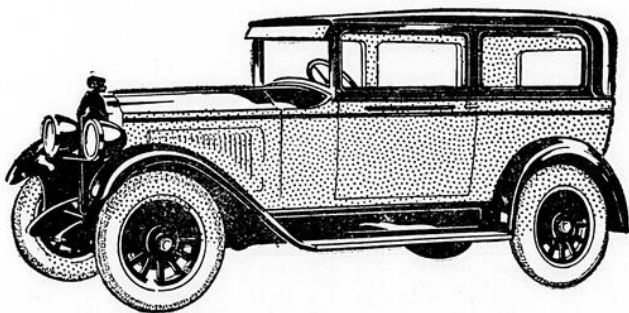
The new Standard Six is notable for the same qualities which are praised so enthusiastically by its 300,000 present owners.—the same flashing activity, ease of control, freedom from carbon troubles and repairs.

A FEW STANDARD SIX ADVANTAGES

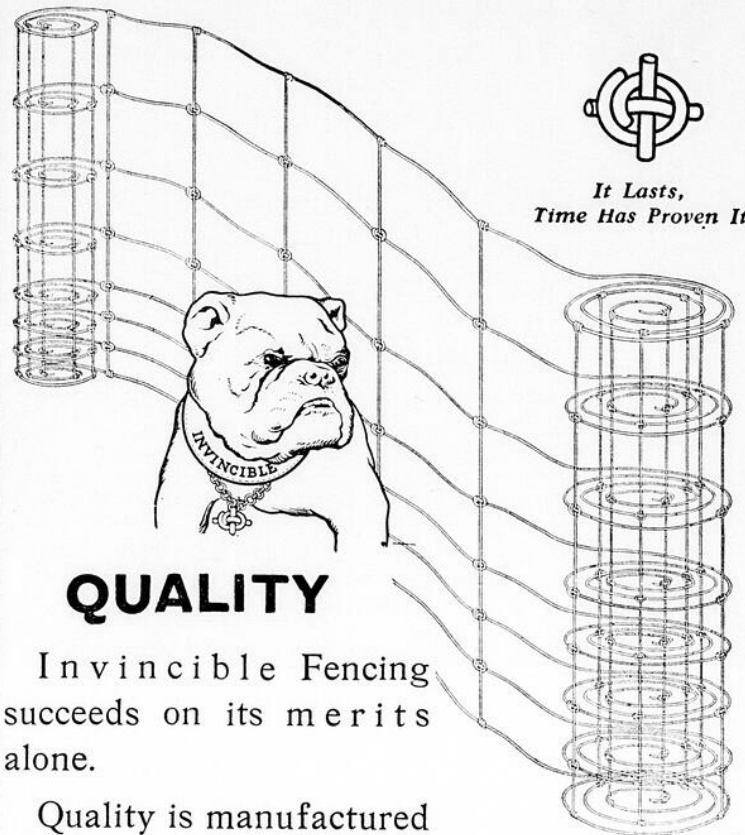
Patented, sleeve-valve engine, 45 horsepower; 4-wheel brakes; 8 Timken bearings in front axle for easiest steering; roomy interiors; wide, form-fitting seats; light control for dimming on toe board at left; remote controls on doors; thermostat—air cleaner—oil rectifier.

Willys-Knight Price Ranges: Standard Six Coach \$1480. Sedan \$1610. Special Six \$1625 to \$1895. Great Six \$2365 to \$3695. F.o.b. Factory, Toronto. Taxes Extra.

Now! A full range of Willys-Knight and Whippet commercial cars and trucks at attractive prices.



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Please send copy of Invincible Farm Fence Catalogue illustrating all Styles.

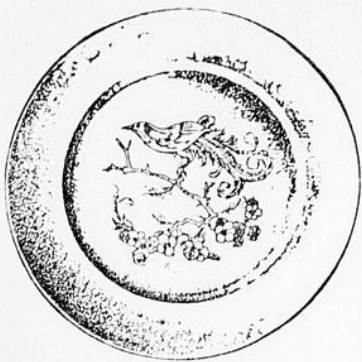
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Town

County

Province

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We are interested in spring MUSKRAT and RED FOX skins.

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Every Farmer Knows

—that the best crop insurance is early seed-bed preparation. No man controls the weather and every day's delay in Spring may be fraught with evil consequences.

So with life insurance! No man holds any surety of health. You may be insurable today, ineligible tomorrow. Life itself may cease.

Life insurance is the only sure provision for the protection of your family or for your declining years. You can never obtain it cheaper than at your present age. Let us send you particulars of our low cost, profit earning policies.



Great-West
ASSURANCE **Life** COMPANY
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Better Light

Brighter Than 20 Old-Style Oil Lamps

HERE'S the lamp that assures plenty of pure-white, steady brilliance for every use throughout your home. It's the Coleman Quick-Lite. Economical—over 40 hours brilliant service per gallon of fuel. Clean—saves work. No daily filling necessary. No wicks to trim—No chimneys to wash. Cannot spill fuel even if tipped over.



Coleman Quick-Lite

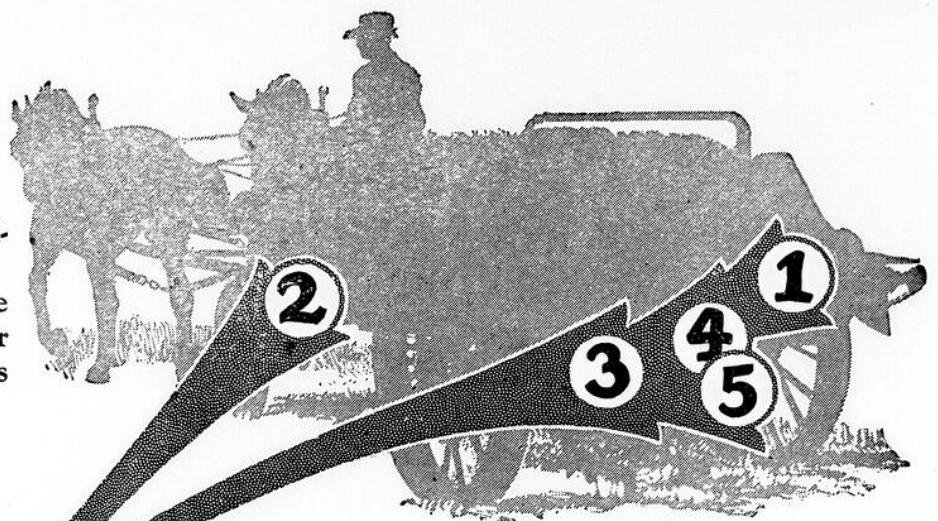
Makes and burns its own gas from common motor gasoline. Lights with matches. Carry it anywhere. Beautiful in design. Made of brass and steel, heavily nickelled and polished.

"The Sunshine of the Night"

Over 30,000 dealers sell Coleman Lamps and Lanterns. If yours is not supplied, write Dept. 807. Made in Canada By The Coleman Lamp Co., Ltd. Queen St. East and Davies Ave. District 8 TORONTO, ONTARIO

(257)

The McCORMICK-DEERING is Supreme in the Spreader Field—for Very Good Reasons



Study these FIVE FEATURES

—They Save Time, Lighten Draft, and Add Years to the Life of the Spreader!

- 1** PATENTED Wide-Spread Spiral—An all-important feature, in which the metal is cut and shaped scientifically so as to form a continuous spiral that increases in diameter from the center to the ends. Spreads manure uniformly and over a wide area. No running over freshly spread manure on succeeding trips.
- 2** PATENTED Auto-Steer Front Truck—A combination of the short-turning features of the auto-steer and the patented oscillating construction of the front frame and axle. Perfect three-point suspension. No pole whipping or excess neck weight.
- 3** PATENTED Double Ratchet Drive—An exclusive, patented operating mechanism regulates the distance traveled by the ratchet wheel, which in turn governs the speed of the apron and the volume of manure spread.
- 4** PATENTED Spring Chain Tightener—Automatic in action. Takes up all slack, whether the chain is on or off the large sprocket.
- 5** PATENTED Drive Control—Raises or lowers chain from sprocket. In operation it either clears the links from all of the sprocket teeth at once or, when the chain is lowered, engages all of the links at once.

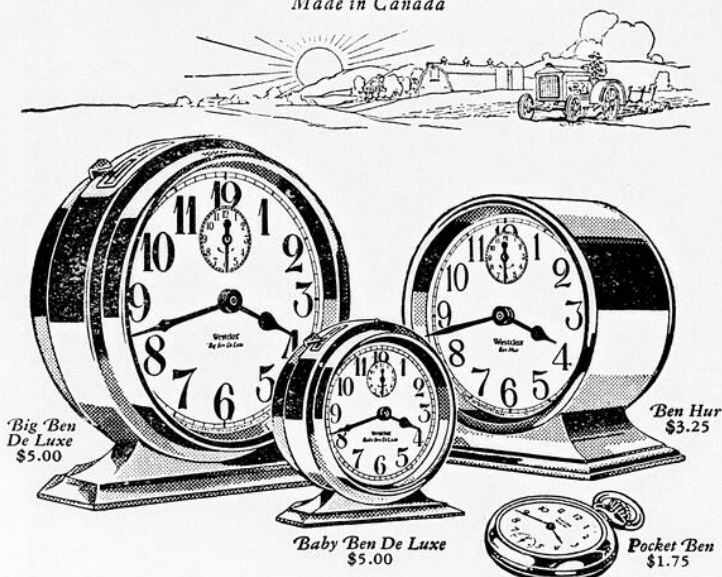
Ask your local agent to show you this efficient spreader, or write direct for complete information.

INTERNATIONAL HARVESTER COMPANY
HAMILTON OF CANADA, Ltd. CANADA
Western Branches—Brandon, Winnipeg, Man., Calgary, Edmonton, Lethbridge, Alta., Estevan, N. Battleford, Regina, Saskatoon, Yorkton, Sask.
Eastern Branches—Hamilton, London, Ottawa, Ont., Montreal, Quebec, Que., St. John, N. B.

Patented!
McCORMICK-DEERING
Manure Spreaders

Westclox

Made in Canada



Working against time

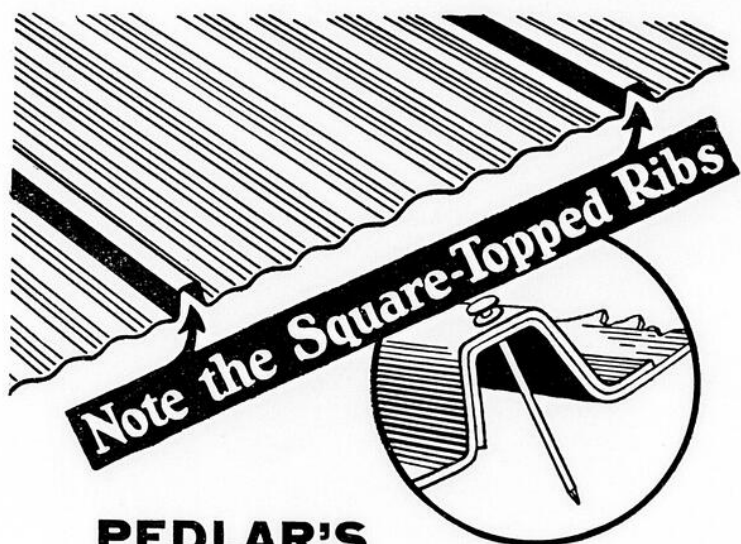
People who live on farms work against time. Whatever you're doing, there's something else always waiting to be done. Making the most of daylight hours is what counts.

So have a reliable alarm—a Westclox—in the house. And carry the new model Pocket

Ben watch. You can rely on any time-piece with the name "Westclox" on the dial.

You have a variety of Westclox alarms to choose from—some with plain dials, others with night-and-day dials. Prices range from \$1.75 to \$6.25. Sold everywhere.

WESTERN CLOCK CO., Limited, PETERBOROUGH, ONT.



Note the Square-Topped Ribs

PEDLAR'S Nu-ROOF

Put Pedlar's Nu-Roof on your barn and you will have a *new roof* for many years. No corrugated material possesses the rugged strength of this better roofing with its ingenious reinforcing ribs and wide parallel bead. No nailing strips required—lay it right on the purlins—no sheathing required. We make NU-ROOF in both ordinary and "Council Standard" grades. A Pedlar Ventilator on your barn prevents spontaneous combustion and fire loss.

Before you buy any roof, send us the dimensions of your building and we will quote you on material enough for the job—and save you money.

THE PEDLAR PEOPLE LIMITED

HEAD OFFICE - OSHAWA, ONT.

FACTORIES: Oshawa, Montreal, Winnipeg, Vancouver.

BRANCHES: Montreal, St. John, Halifax, Quebec, Ottawa, Toronto, London, Winnipeg, Regina, Vancouver.

PEDLAR'S METAL-BUILT PRODUCTS

\$1000 Cash

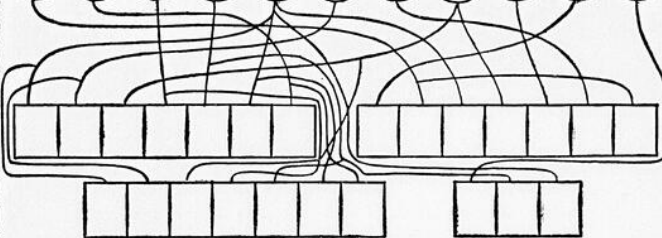
IN PRIZES

Solve this Puzzle



COLUMBUS DISCOVERING AMERICA

EGHINORTUUVW



What is the Message?

THAT KEPT COLUMBUS STRUGGLING ON WHEN OTHERS HAD ABANDONED HOPE

\$1000 Cash in prizes

| | | |
|--------------------|--------|------|
| 1st Prize | -\$500 | Cash |
| 2nd Prize | -\$150 | " |
| 3rd Prize | -\$75 | " |
| 4th Prize | -\$25 | " |
| 5 Prizes \$10 each | -\$50 | " |
| 10 Prizes \$5 each | -\$50 | " |
| 75 Prizes \$2 each | -\$150 | " |

NOTE

Any person who solves 2 or more words correctly will receive an IMMEDIATE award in addition to any other prize they may win.

A Few Pointers on Solving Puzzle

If you succeed in getting the correct letter in each square, you will be able to solve the message. There are four words in the message.

Start at the left hand square in the top row and try to trace the line until you come to a letter; put that letter in the square. Do the same with each square until you have a letter in each square.

Rules of Contest

- Use sharp lead pencil; make your letters as near to the shape of the letters in the circles as you can.
 - Write your name and address plainly in lead pencil at the bottom of this advertisement. Say if Mr., Mrs. or Miss.
 - Cut advertisement out on dotted line and send it to us.
 - Be neat; remember points are also awarded for neatness.
 - Employees of Atlantic Mills and their relatives are barred from this Contest.
 - Only one entry will be accepted from a household.
- Extra copies of this advertisement can be had by sending us a stamped addressed envelope.

Nothing to Sell

YOU WILL POSITIVELY NOT BE ASKED TO SELL ANYTHING FOR US in order to win any of the Big Cash Prizes offered above.

When we receive your entry, we will advise you of the number of points you have gained and ask you to make a small purchase from our catalogue to qualify.

YOU DO NOT OBLIGATE YOURSELF TO DO ANYTHING FOR US BY SENDING IN AN ANSWER TO THIS PUZZLE.

GIVEN

Every contestant who qualifies WILL BE GIVEN samples of our merchandise valued from 50c to \$2.00.

My Name is.....
 Street or Box No.
 Town..... Province.....
 Write name and address plainly in lead pencil; state whether Mr., Mrs. or Miss.

ATLANTIC MILLS Dept. No. 112
 145 Wellington W. Toronto 2, Ont.

A GOOD INVESTMENT

You are deeply interested in the increase production of your farm. You must then keep yourself well posted as to the best means to do it.

The Journal of Agriculture contains valuable information in every issue and it costs only \$1.00 per annum.

Send your subscription to Mr. O. Lessard, secretary of the Council of Agriculture, Parliamentary Building, Quebec, Que. On request we send a sample copy.



A supply that has never failed.

Three generations of Canadian Farmers have been served by *Imperial Oil Limited*.

In the eighties—a quarter of a century before automobiles and tractors were dreamed of—the name *Imperial* already stood for high quality and dependable supply. In those days coal oil and axle greases were the staples of the *Imperial* trade.

The development of the internal combustion engine multiplied the uses of petroleum products and created an enormous demand in



every part of the Dominion.

To meet this demand six large refineries have succeeded the one small plant of the early days, and 1600 *Imperial* stations have replaced the few scattered distributing points of 1881.

A new day, with developments that have changed the whole fabric of farm operation and farm life, finds *Imperial* true to its original aim—to make quality products of petroleum available always to every farm in Canada.

Products for the Farm

PREMIER GASOLINE
IMPERIAL ETHYL GASOLINE
ROYALITE COAL OIL
MARVELUBE MOTOR OILS
MARVELUBE TRACTOR OILS
POLARINE MOTOR OILS
POLARINE TRACTOR OILS

POLARINE TRANSMISSION
LUBRICANTS
POLARINE CUP GREASE
CAPITOL CYLINDER OIL
PRAIRIE HARVESTER OIL
GRANITE HARVESTER OIL
CASTOR MACHINE OIL

THRESHER HARD OIL
MICA AXLE GREASE
IMPERIAL CREAM
SEPARATOR OIL
EUREKA HARNESS OIL
IMPERIAL INCUBATOR
OIL

IMPERIAL OIL LIMITED