

The **CANADIAN**
THRESHERMAN AND
FARMER

WINNIPEG CANADA
APRIL
NINETEEN SEVENTEEN

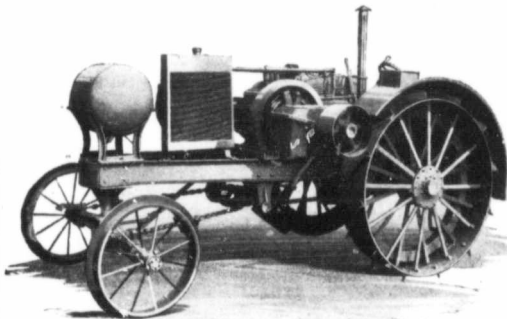
BETTER FARMING — BIGGER CROPS — HIGHER PRICES



Published Monthly by E. H. HEATH CO. LIMITED — Our Fifteenth Year

You Can't Go Wrong in Selecting

WATERLOO BOY MACHINERY



**KEROSENE ONE
MAN
TRACTOR 12-24**

Burns Kerosene. Saves \$2 to \$3 Per Day on Fuel Alone

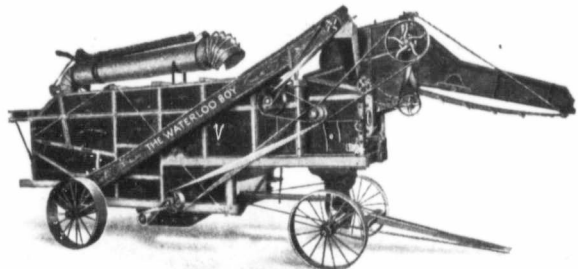
Scores of letters from delighted users back up every claim we make for the Waterloo Boy Tractor. S. Hanson, Dugald, Man., writes—"It has proved to be efficient in every respect. The cost of fuel, oil, cup grease for plowing would average 45c. per acre."

The Waterloo Boy will pull a light engine gang with three 14-inch plows in stubble any depth you wish. It will pull two 14-inch plows in any prairie breaking. On your summer fallow it will handle a disc with harrows behind at from 2½ to 3 miles per hour. It will drive a 24-46 thresher with all attachments.

The Waterloo Boy weighs only 4,800 pounds. It is a kerosene tractor, built specially to operate on this fuel—no makeshift attachments. It has twin cylinders cast en bloc. High tension Dixie magneto with impulse starter. Cooling system is of the most approved type. Will turn in a 25-foot radius, and when plowing is self-steering. Transmission—sliding gear with shifts for one speed forward and one reverse.

The Waterloo Boy Tractor performs its work with efficiency and economy that will please any practical farmer. It is a sensible, practical machine that sells at a price you can easily afford. Built by a company with an established reputation, and numerous machines at work in the fields of Western Canada prove its superiority.

WRITE TO-DAY FOR CATALOG AND PRICES



**100% EFFICIENT
SEPARATOR 24-46**

A Small Successful Machine that Operates at a Great Saving of Money and Labor.

The Waterloo Boy Thresher gets all the grain out of the head. Gets it clean for market and does its work quickly with the least effort on the part of man. Constructed for durability and stability and guaranteed to give you years of satisfactory service.

Feeder—Strongly constructed with angle steel frame and body of galvanized iron, same as the rest of the separator. Carrier is made of rubber and canvas, no sprocket chains being used.

Cylinder—Has 16 bars. Substantially built and perfectly balanced. Cylinder shaft is 2 3-16 inches in diameter. This means large capacity and great strength.

Check Plate—Immediately behind the grate insures greatest part of separation at this point, and the small amount of grain that gets past the separating check plate is thoroughly beaten out by the straw shaker that allows no grain to escape with the straw.

Grate—46-inch grate surface extending high up behind the cylinder, with separating grate check plate behind.

Beater—Spreads the straw evenly over the entire width of the deck, ensuring thorough separation of the little grain that gets past the check plate. Sheet steel deflector prevents flying grain.

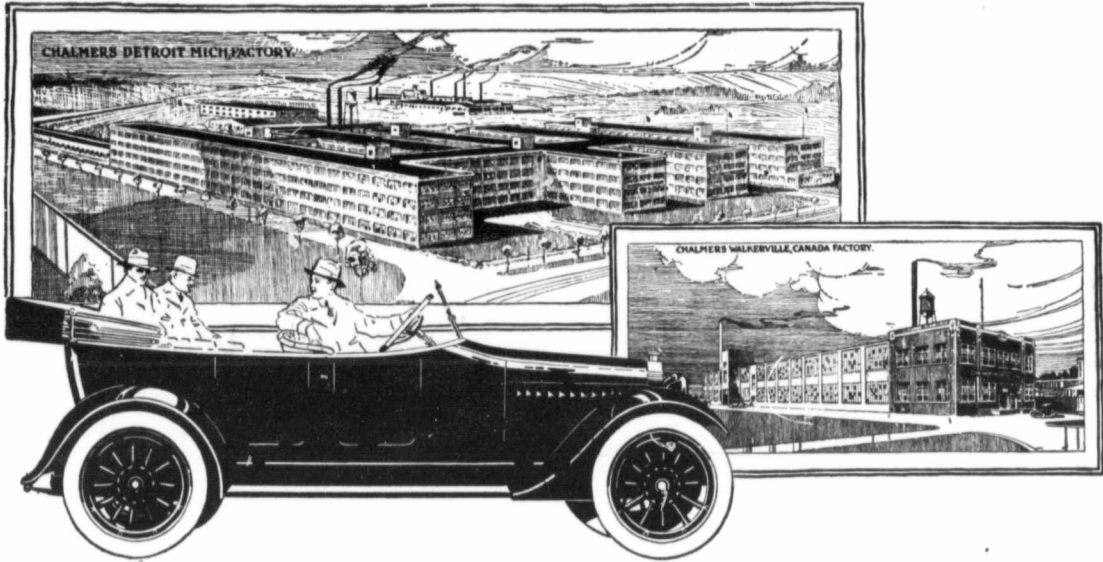
Straw Decks—Built in two sections; has four distinct motions, the straw is shaken, thrown up, struck from beneath, thinned out and driven forward. No grain can remain in the straw with this treatment. The few parts used in the construction of these decks mean lighter

running and less wear and strain that in other machines mean loss of time and repairs.

Let us send you descriptive folder which tells all about this efficient little separator.

**PROMPT DELIVERY
GUARANTEED**

Gasoline Engine & Supply Co. Limited
Dept. B WINNIPEG



Chalmers is a car, a man, an institution

Success drives to business in a Chalmers. For,

Chalmers is a symbol of success that attracts successful men.

Chalmers is a car, a man, an INSTITUTION.

The world knows this institution.

All men know this mounting Chalmers success to be the living product of an ideal. They know the man who had the energy, the will, the integrity, the honesty of purpose, AND the capacity to turn his ideals into reality.

Among business men, as among owners of cars, Chalmers is a name vibrant with action.

Where employers of labor study "Welfare" plans, Chalmers methods are adopted. Factories are built in every land—like the Chalmers factory. Wherever efficiency is the topic—Chalmers is the example familiar to all. In sales conventions, men are inspired by the sound business philosophy of Chalmers.

The Chalmers success is broader than motor-dom. It stands a beacon among the world's great industries. It is to be expected that business men should drive cars from the Chalmers institution.

Courage attracts. The pursuit of the Ideal is a magnet for leaders of men.

Other men with ideals, men of action, names to conjure with in the motor industry joined with Chalmers in carrying on his work.

Now to say of a man, "He is a Chalmers man" marks him for a big man.

Skilled workmen came to Chalmers keen to produce the ideal car. The Chalmers ideal placed them in surroundings that breed a healthy ambition to excel.

The factory, planted in what was then the sunlit prairies of Michigan, grew a monster plant, with floor space a million feet. Around it was built a city peopled by master car builders and their folks—30,000 or more.

Ever growing, ever succeeding, this giant industry rose a pattern for all industries, a landmark in motordom. The very bricks are alive with the power impulse of the Chalmers ideal.

Far afield this force is felt.

In every city local success joins hands with Chalmers success. Big men in every territory represent Chalmers.

Men with the good sense to serve well their customers, are linked to the Chalmers organization. The Chalmers spirit of service to the public reaches out through these men.

NOW, CHALMERS CREATES A CANADIAN FACTORY

The institution bridges the boundary. The Canadian Chalmers is made in Canada. Chalmers owners in Canada are served by a Canadian organization.

The Canadian factory is cast in the Chalmers mold. It is one with the Chalmers institution.

Chalmers in Canada—Chalmers in Detroit—one institution—one ideal. There lives in both the high purpose that conceived, created and maintains the Chalmers organization.

In Canada the custom grows to speak with pride of "my Chalmers."

Here, as throughout the world, Chalmers stands a name to be envied. Not only among motorists, not only among business leaders, but in the entire field of industrial activity.

Chalmers is a car, a man, an institution.

Chalmers 8-80 6-passenger	- - -	\$1625.
" 8-30 7-passenger	- - -	1775.
" Cabriolet	- - - - -	1995.
" Sedan	- - - - -	2555.

THE CHALMERS MOTOR CO. OF CANADA, LIMITED
Walkerville, Ontario

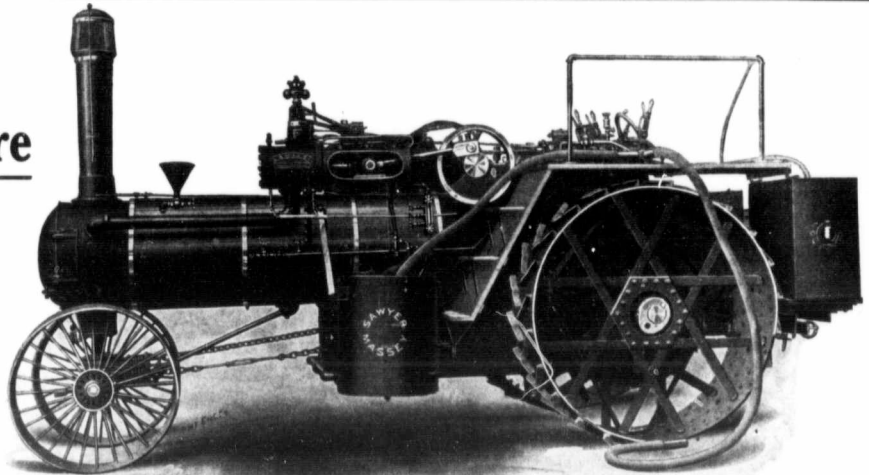
Chalmers

CANADIAN

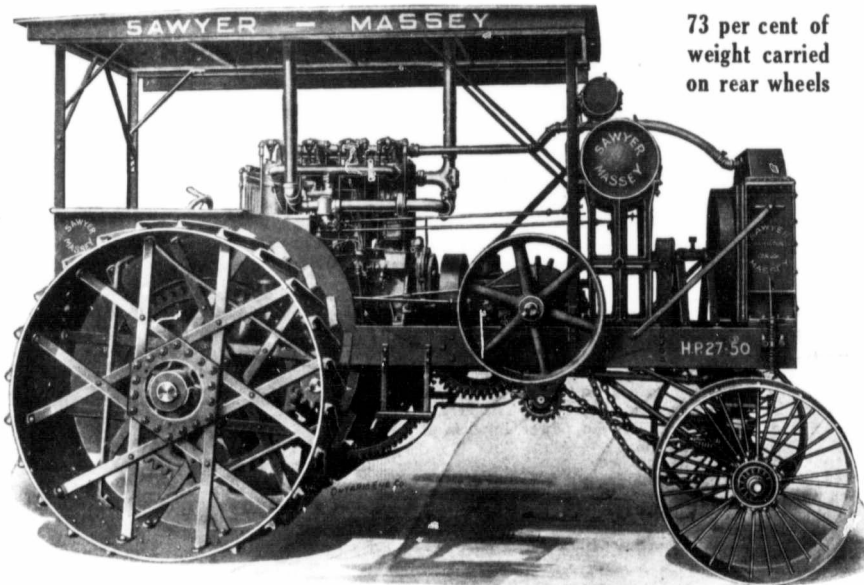


Canadian Manufacture

22 Rated 68 Brake
Horse Power and
25 Rated 76 Brake
Horse Power
Simple Cylinder,
Straw, Wood and
Coal Burning Rear-
mount Steam
Tractors



REAR-MOUNTED STEAM TRACTORS—These Canadian-built Steam Plowing and Threshing Engines, have been specially constructed to withstand the strain of heavy loads, both at the draw-bar and in the belt. The Boilers are built to conform to Saskatchewan and Alberta Boiler Laws, and carry 175 lbs. pressure. Water columns at both side and rear. Large peep holes at side of Boiler for cleaning off ends of flues when burning straw. Jacketed Boilers, large Steam Domes with Dry Steam Troughs running full length of Boilers. The Traction Drive on these Tractors is to both rear wheels, through exceptionally strong, wide master gearing. The large liberal size countershafts run in cannon bearings extending full width of boilers. Differential gears have four large pinions. Intermediate gear shafts extend right across Boilers with bearings on both sides. Main axles are through and through rolling axles running in large trundle bearings. The regular equipment with these powerful Steam Tractors includes balanced valve, rocker grates, straw burning attachment, Gardiner Duplex Steam pump.



73 per cent of
weight carried
on rear wheels



27 Drawbar
50 Brake
Horse Power,
4-cylinder
Gas-Oil
Tractors



We manufacture three sizes of Gas-Oil Tractors, 10-20, 16-32 and 27-50. The above illustration shows the 27-50 Tractor. The 10-20 and 16-32 are practically identical in general appearance and design; all have four cylinder motors, enclosed cooling systems with tubular spring-mounted Radiator. The Traction Drive is to both rear wheels through strong, wide-faced gearing, with two speeds forward and two reverse. There is no stub axle mounting on these Tractors. Every shaft goes right across the frame. The main axle is a through and through rolling axle. Differential and intermediate gears hung inside frame. One of the most important features in connection with these Tractors is the almost total absence of vibration; being four-cylinder, they have practically no more vibration than an automobile. All are equipped with Kerosene-burning attachment. Talk with our local agent in your town or write for free catalogue and detailed information.

WE MANUFACTURE SEPARATORS in sizes ranging from 20-inch to 40-inch cylinders; also a complete line of Road Making Machinery. Tell us the size machinery you are more particularly interested in, which will give us an opportunity to give you special information covering just what you require.

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Head Office and Factory: HAMILTON, ONTARIO

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SASKATOON

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Vol. XXII

WINNIPEG, CANADA, APRIL, 1917

No. 4

An Experience Worth Reading

Glendale, Man.,
January 4th, 1917.

Dear Sir—In the summer of 1908 I purchased my first threshing machine which was a 15 H.P. "Case" steam engine and a 32x52 separator. I was successful in operating this machine for threshing only for four years and found it a profitable investment.

In the spring of 1912 I traded my steam outfit for a 30x60 Hart Parr tractor with an 8 bottom Cockshutt plow and a 40x62 Case Steel Separator. This new outfit with kerosene tanks, wagons, etc., cost me \$5,500.00 and if it was to prove a profitable investment I considered it would have to pay for itself in three years as those were the terms on which the purchase was made.

For the first year I hired my brother (who had had some experience with gasoline engines) to run the engine and another man to run the plows at a wage of \$60 and \$35 per month, respectively.

During the spring and summer we plowed 1000 acres of stubble and broke 800 acres of prairie sod. For the plowing we received \$2.00 per acre and \$5.00 per acre for the breaking. It would be impossible for me to give you at the present time all the details of expenses, etc., but after the plowing season was over, we made a close inventory of all the expenses and struck a balance which showed a net profit of \$800.00 which we considered fairly satisfactory for beginners.

In plowing, our engine used 2½ to 3 gals. of kerosene per acre and two gals. of gas engine cylinder oil per day, or about five cents worth per acre.

Our daily expense would run about as follows:

Cylinder oil, 2 gals., at 50c...	\$ 1.00
Kerosene, 50 gals. per day at 18 cents.....	9.00
Gasoline, 5 gals. per day at 25 cents.....	1.25
Grease, 2 lbs. per day at 12½ cents.....	25
Sharpening shares, per day about.....	1.00
Labor, per day.....	4.50
Total.....	\$17.00

TRACTOR EXPERIENCE

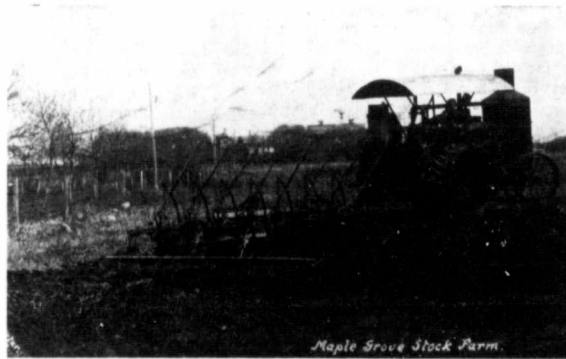
In response to our request, we have received a large number of letters detailing the actual experience of the writers with different types of tractors. All of these are good, some of them containing a wealth of counsel in hard earned experience that money couldn't buy. As they mean far more than the best an "expert theorist" can offer, we are satisfied that we cannot render our readers better service than in reproducing them in their own simple language.—Ed.

Average amount plowed, 20 acres at \$2.00 per acre = \$40.00, leaving a profit of \$24.00 per day to cover wear and tear and repairs, etc.

In breaking we did much better. The expense was about the same and we could average 12 to 15 acres per day, showing a profit of from \$45.00 to \$50.00 per day, which was a fair good profit. I considered the plowing business

double this amount. The first year we threshed for 44 days and made a net profit of \$1800.00, so at the end of the first season we had made our outfit earn \$2600.00 or nearly half the purchase price.

For the next two years which I owned the outfit we confined our work to an occasional breaking contract, some fall-plowing, breaking timothy sod and threshing.



Maple Grove Stock Farm.

A Fine Farm and a Spanking Outfit

was not a profitable one with the big tractor so did not take any more plowing contracts after the first season, but stayed with the breaking and threshing.

The threshing business proved the most profitable side of the business as we could average from fifteen hundred to two-hundred thousand bushels of wheat per day at 8c per bushel. The expense was \$80.00 per day, making a profit of from fifty to eighty dollars per day. In good oats at 6c per bushel we could nearly

I found the engine too heavy for spring plowing as it packed the ground so hard that it baked and spoiled the crop. It was very satisfactory for breaking timothy sod and I figured that it was cheaper than horse power.

At the end of three years I had succeeded in completing my payments and was in a position to come to a definite conclusion in regard to the farm tractor problem and will try and give it in as short a space as possible.

I own one section of land and

am convinced that no farm of this size should be without a power outfit and thresher. To me the big outfit fell down in several ways. The first cost was so great that the average farm could not pay for it without doing outside work and this took me away from my farm too much. Second, it was too heavy and too cumbersome for the average farm work. The only place to my notion where the big tractor really pays well is in breaking and custom threshing. With this experience before me I set out for a new deal and finally succeeded in trading my big rig off for a 12-25 Case gasoline tractor with a 28x42 Case steel separator and a four furrowed automatic lift Case plow. I might say that I was successful in making a fair good bargain on my old rig and got out without making too great a sacrifice. I am so well satisfied with the new one that if I was putting the deal through again I am afraid, I would be in such a hurry to make it, that I would almost give the old one away!

The first work I did with the small tractor was to break sixty acres of timothy sod, which I did, pulling four 14 in. plows on slow speed, and at a fuel cost of about 90 cents to \$1.00 per acre. In the fall I threshed for 34 days and threshed nearly 36000 bushels of grain which is an average of a little better than 1000 bushels per day. We did this with three stook teams and two pitchers and one man to haul away the grain, while I was able to take care of both engine and separator, with less hard work than it took to look after one end of the big machine.

In wet spells during the threshing season I would hitch on the plow and by the end of threshing between the engine and the teams we had nearly two hundred and fifty acres of the land plowed. I can easily operate both engine and plows myself and can plow about one acre per hour or a shade better on long furrows. I find that in plowing stubble it takes two gals. per acre and two gals. per day of cylinder oil. I do not use much hard oil as the gears

nearly all run in an oil tight case and the cylinder oil used lubricates nearly all the rest of the working parts of the engine. I like my plow very much. It is the Case auto lift with cast iron break pin. I have plowed nearly 300 acres and broke 60 acres of timothy sod in very stony soil and have not broken anything yet except about a dozen or two of pins.

As for the engine it is as near perfect in my estimation as a gas engine could be made. I have used it for 125 days or more and have yet to buy my first repair for it. It is easy to start in almost any weather and will run day in and day out without a kick. If I were suggesting any improvement at all I would have it built just as it is with a little more power, say a 15-30 instead of 12-25.

I find that in tough grain one man could feed it down if he liked, but when it is dry he can pitch as fast as he likes. In plowing it could also stand a little more power to handle the four plows on high speed, especially on rolling ground.

We used the engine for grading our lane which is about half a mile long and found it much steadier and better than horses. I find it very handy and convenient around the farm in the winter for crushing and sawing wood, cutting feed, etc., in fact I think it is much ahead of the average portable engine for this work, as it will move itself to an inch any time and does not need to be fastened down.

We have not had any experience at any other work on the land except plowing. But in my opinion the plowing is half the work of cultivation and if the engine does the plowing the horse outfits on the average farm can easily take care of the surface work.

In summing up my experience, I would say that the 12-25 or 15-30 tractor is the most practicable machine on the market. In threshing I claim that an engine smaller than this is not strong enough to take a full day's work out of the men and teams necessary to run them and a bigger outfit is too big to pay on a farm of less than two or three sections of land.

For plowing one man can just as easily handle a tractor that will pull four plows as one that will only pull two or three, and the extra weight is not sufficient to cause any injury from packing the soil.

As for the place of the tractor on the western farm I can truly say that they have earned a place. For my own part I would not consider the proposition of farming a section of land in Manitoba without one. I consider that on a farm

of that size a small tractor with a thresher and plow is almost a necessity, and certainly a great asset.

I am, your truly,
F. A. Sirett.

A Lot of Work in Two Bad Seasons

Munson, Alta.,
January 3, 1917.

Gentlemen—Replying to your circular letter of the 27th inst asking for data re gas tractor, we beg to inform you as follows: We are the owners of a 25-45 Sawyer-Massey gas tractor. We

poor weather this last fall we were unable to make use of the float but expect to use it in the spring work.

In the following description of operations carried out by this tractor, we will ask you to bear in mind the unusual character of the soil in this district. This is known as a (turtle-back) country, the formation resembling closely the back of a turtle, hence the name. The soil is a heavy black gumbo and is probably, of all soils, least suited to the use of tractors. We believe the soil conditions at Moose Jaw, Regina and Indian

keeping them clean as they will not scour when the ground is at all wet.

In spite of all these draw-backs this tractor is a wonderful wet weather engine and has a local reputation for being "wet footed". The great power for its weight (it only weighs 16,500) and the large bearing surface of the road which enables it to keep its footing where nearly all other types will cut through the soil and mire themselves in.

In breaking we use from four to five bottoms, depending on the surface conformation, and break to a depth of from five to six inches. In back setting we usually pull six plows, at a depth of six or seven inches, and, when conditions are favorable, also drag a set of harrows behind the plows. In a few places where the soil is somewhat lighter and contains a certain amount of grit, we can pull six plows in breaking.

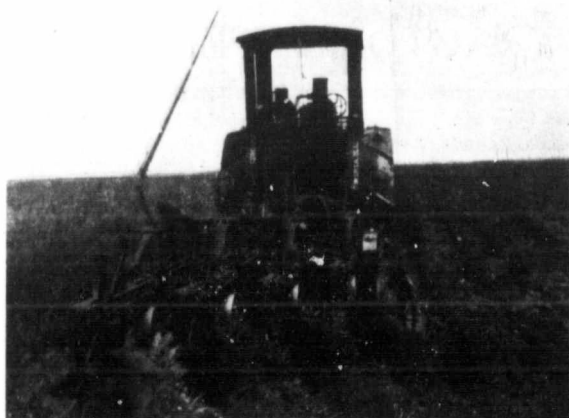
There is a strip of land of this nature along the river banks we fixed the two disks, which we usually weight with about 1000 lbs. each, are a load, though where the land is level we can add the harrows to the train. Re fuel consumption: breaking will use from 4 to 5 gals. of gasoline per acre in the heavy soil and 3 to 3½ in the light soil. In back-setting it requires 2½ to 3½ gals.

The amount of lubricating oil required varies largely for some unknown reason, and runs from 2 to 4 gals a day of say twelve running hours. We are making changes in the oil overflows next spring which, we hope will reduce this amount considerably. In engine disking a gal. of gasoline per acre is usually sufficient.

We find ten acres a day to be a good day's work, though in the lighter soil, last summer, we broke 61 acres in three days and a half. The high speed of the engine (it will make two rounds per hour) compensating for the small number of plows pulled. In engine disking we usually cover about fifty acres in ten hours.

In our threshing operations we find that the separator is not large enough for the engine, it being usual to couple a 32-56 "Great West" separator to this size of tractor. We are contemplating a change for next season. As a threshing engine the tractor is very satisfactory, the four cylinder giving a steady motion and the motor governs closely. We are not in a position to give close estimates of fuel consumption in threshing as the length of the days vary greatly.

At the beginning of the run we used about thirty gals. of gasoline a day, this being in October and the days growing short, say eleven working hours. After "freeze up" we find that the con-



Even the Pup Gazes in Admiration at the fine Work

assume that you are thoroughly familiar with this type so will give no further details. We have used this tractor for breaking, plowing, engine discing and threshing. The plows consist of a six-bottom Cockshutt engine gang with breaker bottoms. The engine disks consist of two ten foot Emerson-Brantingham disks provided with pans for weights.

For threshing we use a 32-50 Sawyer-Massey "Daisy" separator. In addition to this equipment we intend to use, behind the disks, a four section float having a total length of twenty-two feet and a width of four feet. The float is of the saw tooth pattern, being made of two by eight dimension, and a harrow hitch is used to connect the sections to a two by ten evener, twenty feet long. This sectional float is an innovation in this district, but we believe it will be more effective than a rigid float of this length. Owing to the

Head, approximate those of our district.

To give you some idea of the power required in breaking, would say that it is customary to use six horses, weighing from twelve to fourteen hundred, on a fourteen inch sulky plow. This means from fifty to sixty per cent more power than the usual prairie loam. In addition to this the shaking caused by the turtle-back formation is excessively hard on the working parts of the engine and shortens the life of the same materially.

The unusually high speed of this tractor also counts against it as it is at times impossible to let it run at its normal gait with a resulting loss of power. Another very undesirable feature of the soil is its "sticky" nature. It is customary to use rods in place of a mould board in breaking and rotary plows are used for "back-setting". We use mould board plows but have great difficulty in



A Business-like Proceeding

sumption of gasoline increases out of all proportion to the work done, presumably the cold atmosphere is accountable for this. Our experience in threshing is that a gasoline tractor should be in for the season before the ground freezes. We have not found it profitable to operate after this time.

In conclusion we would point out that the two seasons 1915 and 1916 during which we have operated this tractor, have been very unfavorable for the use of engines. There were very few days in the breaking season when the tractor could get decent footing. This year we were out sixty days and in that time broke and plowed three hundred and fifty acres and engine disked over three hundred acres. This included time taken in adjusting and repairing.

We have a crew of two men, both in plowing and threshing. In the latter operation one of the men looks after the separator.

We remain,

Very truly Yours,
Bowey & Murray.



A Man who loves his engine never fails to keep it in tune

A Big Record With a Small Outfit

Gouverneur, Sask.,
January 3rd, 1917.

Dear Sir—My internal combustion tractor is a 12-25 J. I. Case, operating on gasoline only, guaranteed to pull four plows in stubble and three in breaking; also to drive a 24x42 separator.

The plows are 14 inch "Verity" make, and in ordering same I ordered four breaker bottoms as well as four stubble bottoms, figuring an extra breaker bottom for repair if need be.

During the plowing season I plowed 175 acres of stubble for crop, running engine night and day, averaging about 18 acres per day and night, average depth of plowing 4 to 5 inches, and the engine handled the four plows this depth running on high speed.

During breaking season I plowed 350 acres, pulling 4 plows at a depth of four inches, engine having no trouble in handling four plows this depth on low

speed. Average in breaking, 8 acres per day of 10 hours.

In breaking, the engine used 2 gals. of gasoline per acre and 2 gals. of lubricating oil per 8 acres, and one 22 lbs. can of hard oil lasted plowing season. In stubble, I used 1½ gal. of gasoline per acre and 2 gals. of lubricating oil per 8 acres.

One man handles this outfit with ease, as the plows are automatically lifted. The only trouble I have had with engine, was caused by the dirt catch screen plugging with dirt, shutting off the flow of gasoline and causing engine to backfire, but as soon as screen was located this trouble was avoided.

Engine is easy to start and requires no experienced man to handle same. Repairs for engine and plows was nil. Engine has sufficient power to handle 24x42 separator at all times.

My biggest day's work threshing this year was 925 bushels wheat in a day and 900 bushels of oats in half a day, average in

wheat about eight hundred per day, and I might state that in a good year would have no trouble in averaging 1000 bushels of wheat per day.

Threshed considerable wheat this year by day, charging \$90.00 per day. I threshed 33 days and average expense was \$42.00.

This engine is built for work and is in as good a shape now as it was when it left shop and I can highly recommend the outfit.

Yours truly,
Ray Allen.

Small Outfit Does the Work of 9 Horses and 2 Men

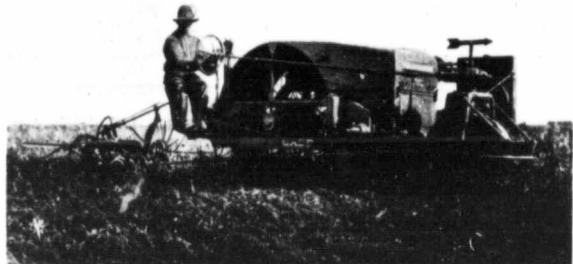
Macdonald, Man.,
6th January, 1917.

Dear Sir—Replying on your list of questions: I own and operate a 10-20 J. I. Case gas tractor and a three furrow plow by the same manufacturers.

I used this outfit last summer for plowing, and although good plowing or work of any sort with a tractor last summer was next

to impossible, I have my farm in excellent shape for next spring.

I did the greater part of my plowing with the engine and plowed up to the middle of November. My land is of the gumbo nature, being heavy for horses.



This plowing (six inches deep) and harrowing at same time was done in heavy gumbo

to impossible, I have my farm in excellent shape for next spring.

I used about twelve gals. of gasoline in a ten hour day. I have never used the tractor in any belt work as we have a large steam outfit for threshing, but our "Case" seems to deliver great power on the draw bar.

I think tractors of this class can be run to good advantage on land that is free of sloughs or hills and where there isn't a big crop of rocks embedded in the soil. My land is level and while there are some stones around, my breakages were nothing to speak of. This tractor does the work of nine horses and two men, so it is a big labor saver.

Yours truly,
Willert J. Askin.

Little Trouble—With No Experience

Buchanan, Sask.,
Dec 30th, 1916.

Gentlemen—Replying to your request for information as to my tractor experience; may say that I purchased a "Happy Farmer"

I have a 20"x36 Case Separator with all attachments but haven't quite power enough for that, especially when grain is tough. In plowing I used a three furrow La Crosse plow with 14-inch bottoms. It takes about 3 gals.

gasoline (White Rose) per acre for plowing at a depth of 5 inches. Have plenty power for sawing and chopping but have not used my tractor for seeding operations yet.

I have sand loam land and can plow from seven to eight acres in ten hours and have always operated the outfit myself without help. The tractor is rated at 8-16 H.P. and although I have had no experience with gasoline tractors, I have had very little trouble with it.

Yours truly,
Geo. Shrost-bitoff.

A Fine Start With no Previous Tractor Knowledge

Rosenheim, Alta.,
January 2nd, 1917.

Dear Sir—My tractor is an Avery, 12-25 size and I have used it in plowing, hauling granaries, threshing, grinding feed and in pulling up a windmill.

In plowing I used a four-bottom Avery Automatic self-lift set of plows. In trying out the engine and plows we went from 4 to 6



A Fine Exhibition of Belt Service

tractor from J. D. Adshead Co., Winnipeg, in August last. Have used it for threshing, plowing, sawing wood and running a 10" Fleury chopper.

inches deep in soil that had quite gone back to weeds for two years. In summer-fallowing I plowed ten acres in ten hours using ¼ gal.

Continued on page 14

THE CANADIAN THRESHERMAN AND FARMER

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∴ Mobilizing Machinery ∴

1917

OUR GUARANTEE

No advertisement is allowed in our Columns until we are satisfied that the advertiser is absolutely reliable and that any subscriber can safely do business with him. If any subscriber is defrauded by E. H. Heath Co., Ltd., will make good the loss resulting therefrom. If the event takes place within 30 days of date advertisement appeared, and complaint be made to us in writing with proofs, not later than ten days after its occurring, and provided, also, the subscriber in writing to the advertiser, stated that his advertisement was seen in "The Canadian Thresherman and Farmer." Be careful when writing an advertiser to say that you saw the advertisement in "The Canadian Thresherman and Farmer."

NEVER in our national life has a crisis been reached in which, with due reverence it is said, "the Lord" did not call up from the ranks the man who could deal with it. We think of all kinds of men in the history of the English-speaking people who, in their turn, became "the man of the hour." Not to go too far back in our own history, there was Drake and Cromwell, for example, and a host of lesser lights from Washington to Wilson, from Wellington to Lloyd George. When the hour struck for the appearance of these men of destiny, things had reached a point at which conventionalities and drill books were flung into the furnace. They no longer served any useful purpose, but became a menace to the commonweal. Something had to "get a move on," and just at the right moment, up bobbed **The Man**—"light as a cork, swift as a swallow, prompt as a tax-collector."

Industrial affairs in Canada have come to a point at which something stronger than any political party and of swifter volition than the "concerted action" of

any organization we know of in the State to-day will have to step in and not only start things, but keep them going with the constancy of the course of Nature. Something like **A Man** is wanted. He need not be a soldier, but if he has spent his life amid the machinery of war, that will be no disqualification providing he is otherwise fit. What seems to be wanted is a Superintendent of Inventions; one who can instinctively and swiftly see the good and the no good in any device, particularly in our basic industry of agriculture, that is designed to replace human labor, and in doing so do more and better work in less time than it can be done by human hands or brute strength.

Some time ago in this page the idea of an Inventions Board was ventilated, but the war came on and, very properly, everything had to stand aside that did not definitely and swiftly contribute towards the winning of the war. Briefly, our proposal was exactly what has been established under the iron heel of necessity for the conduct of the war—an organization of character and brains—to the single end, that everything human brains can devise in killing-machinery to replace or supplement man power shall be encouraged, tried out, and where successful become a permanent arm of the service. Witness the "Tank" and other things we may not yet write about. Why should not something of this feverish energy be imported into our domestic policy, which above all things is concerned with the growing of cereals and the breeding of live stock? The present state of the labor market

—its inadequacy to start with and its prohibitive price demands where available—points to the fact that **something has got to be done.**

* * *

Even on what are considered well-equipped farms can it be said that the method of handling the crop (especially in harvesting it) is entitled to high praise in point of efficiency and economy? It is not, and the fact that so much of the crop of the last two years remained in the stook on the fields all winter is conclusive proof of the fact that we are but wallowing in our opportunities. The wastage in much of present day methods is incalculable when it is considered how much of the process of cutting, stooking, stacking or threshing grain is of a purely mechanical nature, and how serious is the item of high-priced human labor and horse flesh that enter into this process. Skepticism will say: "Yes, but where can you replace human hands in those departments of the work in which machinery is not now employed?" The same whine was heard before the binder was finally delivered to the farmer, and just where would agriculture have been to-day if the binder (or its equivalent) had not been thought of?

* * *

Machinery is to be the key to all success in the future of agriculture in Western Canada. There's a slumbering power here that has hardly been paralleled by anything of the kind in the past. Private enterprise and genuine competitive effort have done it all so far, and may be found to be the one royal road in the long run. But we have a hunch that a very great deal could be done in the way of encouragement to meritorious private enterprise that is not now extended to it. Men are slow, desparately slow to give a sympathetic hearing to any man who comes along with any "new" thing. That has been the experience of every inventor or promoter of an invention since the first "new idea" in a garden spade was offered to Adam.

* * *

Instead of resurrecting the memory of those "dead 'uns" who pooh-poohed the binder long after it came, we earnestly beg of the living men of the West to study what is ready to their hand in mechanical help that can save them so much in toil, worry and treasure. Every agricultural journal is full of it. They have ideas of their own—trot them out. We can now say that irrespective of the new "Farm Credit" scheme no man who merits assistance need any longer fall down on his invention or have to go without a piece of farm machinery he sorely needs because he cannot finance it at the moment.

SUBSCRIPTION RATES

Postage prepaid, Canada and Great Britain,
\$1.00 Per Year.
Single copies 15 cents.
Postage prepaid, United States and Foreign Countries,
\$1.50 Per Year.

Failing to receive paper, you should notify the office at once, when mistakes, if any, will be corrected immediately.

All Subscriptions must be paid for in advance and no subscription will be accepted for a shorter period than six months.

Advertising copy in order to secure good position should be in our hands not later than the 15th of the month preceding date of issue.

Advertising rates furnished on application.

ADVANCE-RUMELY

Your Guarantee of Satisfaction

The name Advance-Rumely on your new threshing rig this year is your *guarantee of satisfaction*.

Buy any machine in the Advance-Rumely line—you get *more* than just plain machine. You get a machine built on over eighty years' experience in the threshing machinery business. That experience means *your profit*.

As for your separator—you simply can't buy more *real value and satisfaction* than a Rumely Ideal—no matter what you pay. For big capacity, long life, rapid, clean work,

low cost of upkeep—*satisfied customers*—you only have to ask an Ideal owner to see why it leads the field.

Take any steamer in the Advance-Rumely line—each has its special features, but all are alike in what you want in your engine—smooth, steady, even power, economy in fuel and water and the reliability that means a *full day's run every day*.

The 1917 Advance-Rumely catalog is the most complete we've ever published. It illustrates and describes our full line of threshing machines, tractors, engine plows, etc.

Just ask our nearest branch for the catalog.

ADVANCE-RUMELY THRESHER CO.

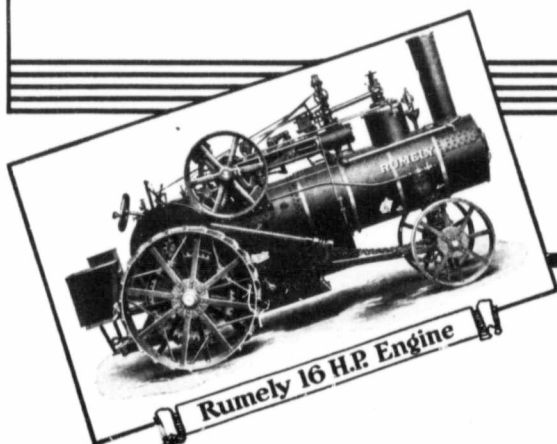
La Porte (Incorporated) Indiana

Calgary, Alta.

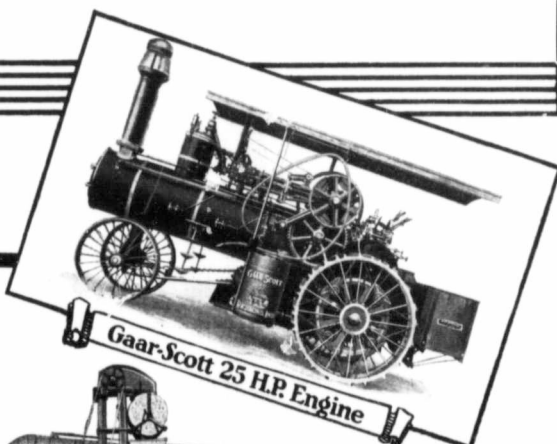
Saskatoon, Sask.

Regina, Sask.

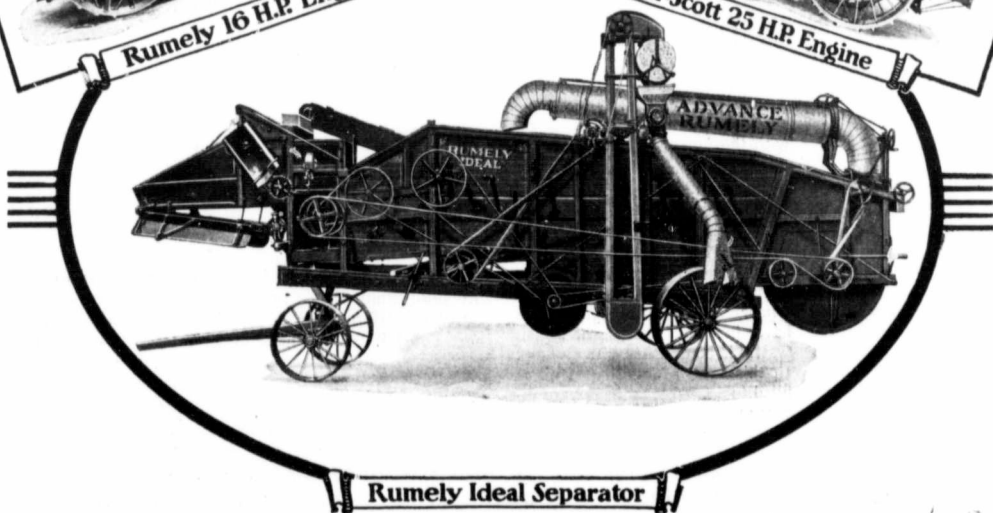
Winnipeg, Man.



Rumely 16 H.P. Engine



Gaar-Scott 25 H.P. Engine



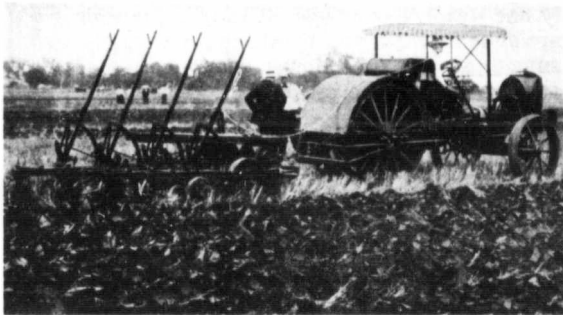
Rumely Ideal Separator

STUDIES IN SMALL TRACTOR DESIGNS

By
E. R. WIGGINS

VI.—Light Tractor Systems: Lubrication

PROPER lubrication for the tractor is one of the most important things to be watched for by the operator.



Plowing

Upon this depends the life and efficiency of the machine. To lubricate a part, a thin film of oil must separate the sliding surfaces. If this film be broken, or the oil be squeezed out, the two metal surfaces will come into contact and increased friction wear, and, possibly, destruction will result.

A farmer of my acquaintance had an experience very recently with an 8-16 h.p. tractor, that taught him a lesson in lubrication. On this particular tractor is a planetary transmission which is surrounded by a very tight case. The case was filled with a heavy steam cylinder oil, ideal for the gears but very poor for oil holes and for lubricating bearings. The various bearings for gears and shafts inside this particular case, are oiled by means of oil holes into which the oil in the case is supposed to run. One day while plowing, the tractor came to a sudden stop. Examination showed that one of the web castings that turns on the crank shaft and holds two pinions inside the gear case, had seized tight to the shaft.

Here is what had happened. The oil being heavy thickened greatly because of the cold weather and did not run into the bearing which therefore became hot; the shaft expanded slightly and the wheel stuck to the shaft. Thin oil should have been used so that it would have run completely around the bearing. The point is this, the oil did not get to a certain point where oil was needed badly. Thin oil should be used in transmissions of this kind in winter.

All of the lubricating systems used on light tractors to-day are very satisfactory as far as design is concerned; but the farmer must

use some judgment in regard to good oiling. A tractor will not oil itself unless the operator has put oil in the right place so that it can be used. Common sense should guide the operator. He must not, for example, oil one part regular-

rod ends, and also by pressure and splash from the same source.

In the all-loss system in small tractors, we find the full splash in which oil is fed directly into the crank case, or the force-feed system where the oil is pumped to each bearing as used or is drained into the crank case and is used up by being drained from the crank case, or burned up by splashing against the piston. The oil in most "all-loss" systems is at a certain level in the crank case. The lubrication of all the parts is kept up by splash and by feeding oil from the reservoir into the crank case, where it is used at about the same rate as it is fed in. It is claimed that the all-loss plan is less fool-proof than the circulating. The trouble with the all-loss system is that the operator may allow an excess of oil to run into the crank case which will cause carbon to deposit in the cylinders, or feed too little oil so causing the parts to wear too quickly. The line of demarcation between the two oil-

The best system and the most expensive, as far as first cost is concerned, is the force feed with oil under pump pressure to all the bearing surfaces. The pump is generally very expensive and with a cheap tractor means that a high percentage of cost is in the oil pump alone. The writer has noticed that tractors so equipped have given the best service to the farmer.

It pays to use a good grade of oil even if the cost is high because the better service the farmer will get from the tractor will pay in the end. Proper lubrication for the motor is most important, but we must not forget that the gearing, shafting, and axles of the remainder, needs attention. Where grease cups are provided, they should be filled often. When running day after day, the writer believes that they should be filled daily. Where a bearing can be lubricated by a grease cup there is no better means of lubrication available. A grease cup can be used either to great advantage, or not at all.

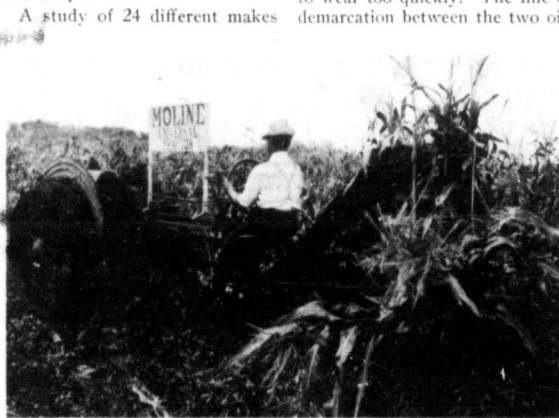
Cooling

In the matter of cooling, most makes of small tractors are alike. Out of eighteen makes of two plow machines, only one is air cooled. One is hopper cooled, and another is tank cooled. These two machines are different types of tractor made by the same firm. The remainder use the circulating system with radiators and either centrifugal or geared pumps.

Of fourteen makes of three plow tractors, all have radiators with pumps except one which has a radiator and no pump, using the thermo-siphon principle for circulation.

Water is used more than any other medium for cooling. There is one make of air cooled tractor

Continued on page 27



A Two Plow size Harvesting Corn

of two plow tractors reveals the fact that the motors are lubricated as follows: Sixteen have force feed, five use the splash system in connection with pump feed, two are splash, and one mixes the oil with the fuel.

Out of fourteen three-plow machines, six are force feed, five are splash and force feed and three splash.

Lubrication of motors can be divided into two general groups, circulating and all-loss systems. Under the circulating system, we have, in small tractors, the splash system in connection with a pump. In this case, a quantity of oil is filled to a fixed level in the crank-case pump from where it is pumped to all parts requiring oil. In some circulating systems, the oil is applied to moving parts by splash alone from the connecting-

ing systems is not very distinct and as can be seen they are closely related.



Disking with the Small Tractor pays

"The Great Minneapolis Line"

SUPERIOR POWER FARMING MACHINES

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It's not so much what you pay for what you get as what you get for what you pay.

It's not the first cost but the cost of upkeep that should be the important factor entering into your selection of a farm motor. See a Minneapolis Motor and compare with others.

A cheap motor is dear at any price. Why take a chance for the saving of a few dollars on the first cost and spend several hundred possibly in upkeep in a very short period of time.

It's better to be safe than sorry, and it's better to investigate before than after.

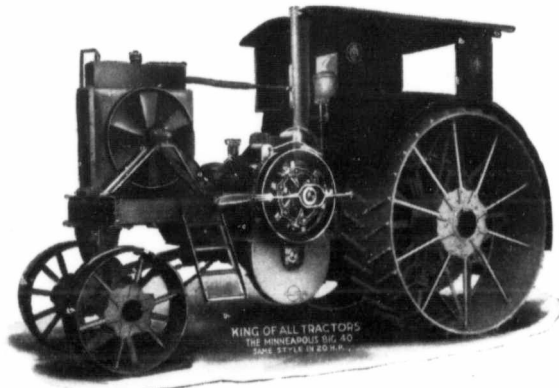
We will gladly mail you a catalog.

When you buy Minneapolis machinery you always get your money's worth.

Minneapolis Farm Motors are the kind that can be depended upon to work week in and week out, through season after season, doing all kinds of tractive and belt work at the minimum of upkeep expense and with an economical consumption of kerosene or gasoline.

Minneapolis Farm Motors are not built down to a price, but up to a standard. That standard is known to thousands of our customers, and vouched for by them as being of the very highest.

When you're convinced we suggest that you order your Minneapolis early.



Major, Alta.

We are to-day winding up one of our most satisfactory and profitable seasons threshing.

Your 40 H.P. 4 Cylinder Tractor has surpassed our expectations, as we have not had one hour's delay on account of engine failure or spent \$1.00 for repairs, and we have never been at a loss for power to handle your 36 x 62 Separator to its full capacity.

The Separator is giving all the parties we have threshed for SATISFACTION in every way. The outfit has made us money and we are well satisfied with the investment.

A. BEGGS & SON.

Kandahar, Sask.

I have had my 40 H.P. 4 Cylinder Minneapolis Gas Tractor for two years and I have had good success with it. It pulls eight plows and two nine foot discs. It is easy to keep in good shape and powerful. It is my opinion that no one can buy a better Gas Tractor than the 40 H.P. Minneapolis.

J. B. JOSEPHSON

Gouverneur, Sask.

We this year purchased one of your 40 H.P. Gasoline Farm Tractors and a Minneapolis Separator. We have been old threshers for over 20 years, and have run and operated all kinds of threshing outfits, but this rig beats them all for good work and fast threshing. The engine has ample power at all times, and we use four men pitching in the feeder with plenty of spare power. The separator is a dandy and cleans the grain to perfection. All the farmers we threshed for want this outfit for next year.

DENNIS O'KEEFE.

Sperling, Man.

I purchased from you this season one of your 40 H.P. 4 Cylinder Minneapolis Farm Motors, and have used it driving a 40-64 Separator. The Minneapolis Farm Motor has given me the very best of satisfaction, and I take pleasure in recommending it to any intending purchasers.

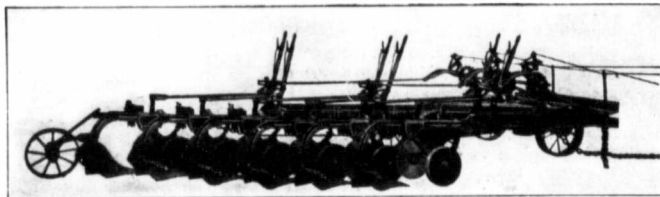
CHAS. W. STERNs.

AUTOMATIC POWER LIFT TRACTOR FLOWS

FARM MOTORS

- 15 H. P. 4 - Cylinder
- 20 H. P. 4 - Cylinder
- 40 H. P. 4 - Cylinder

Kerosene
Gasoline



FLOWS

- 2, 3 and 4 Bottom
Light Duty
-
- 4, 6, 8 and 10 Bottom
Heavy Duty

MINNEAPOLIS STEAM ENGINES ARE RELIABLE, ECONOMICAL AND DURABLE

The Minneapolis Separator is an easy favorite with all. "It Saves the Farmer's Grain"

THE MINNEAPOLIS THRESHING MACHINE CO.

HOPKINS (WEST MINNEAPOLIS), MINNESOTA

WINNIPEG, MANITOBA

REGINA, SASKATCHEWAN



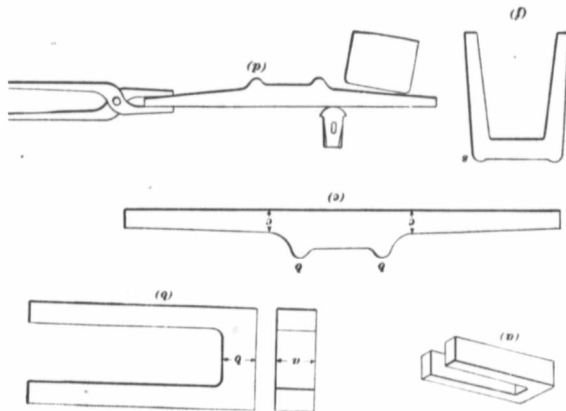
FORGING ROD STRAPS
Forging a Strap to Size

To make a rod strap of the form shown in Cut (A), select stock of the width shown at (a) in Cut (B) and thicker than (b) by a sufficient amount to form the corners (b) in Cut (C). Draw this stock to the form shown in Cut (C) leaving the sides slightly

other corner and side. It will be necessary during this operation to use the flatter on the strap, which is held as shown in Cut (H) in order to make the end of the proper shape.

Forging a Strap and Trimming to Size

Another way to make this strap is to use wider stock and forge it



thicker at (c) than they will be in the finished strap, as they will draw in the bending, and being careful that the hammer leaves no ridges, which would tend to start cracks, sometimes called gaulds, in the corners, which become deeper as the work progresses. Next take the stock in the tongs and holding it as shown in Cut (D), proceed to bend it, using a large fuller to start the bend, as by starting in this way the iron is not cramped at the corners. Any ridges left by the hammer may be taken out by the fuller when starting the bend.

After the bends have been started as shown in Cut (D), place the stock in clamps, or hold it in the steam hammer in the manner shown in Cut (E). This may be done by lowering the upper die (d) on the upper one of two blocks (b) and (c) between which the stock is held, and holding it firmly by means of the steam pressure. Next have two helpers, one on each side, strike simultaneously on the ends until the piece has the form shown in Cut (F).

Take a heat on one corner by placing the side (s) down in the fire; and by using the flatter, bring the side to the shape shown in Cut (G) and repeat this on the

to the form shown in Cut (K). The sides are then bent in the same manner as in the operation just described, and the strap brought to shape as before. The end is formed however, by cutting off the excess of stock that has been allowed there, as shown by the dotted line in Cut (L).

WELDING
CONDITIONS GOVERNING WELDING

Object of Welding

It is often necessary to join together two pieces of iron, or the ends of the same piece, so that the joint will form one solid mass. In such cases, the pieces are welded together. Each of the pieces treated thus far has been made of a single piece of iron, but very frequently it would be inconvenient or impracticable to make the forging out of one piece. If so, several pieces are welded together, and the forging is said to be built up.

Oxidation of Iron

If a piece of iron is heated in air, it will absorb oxygen from the air, thus forming a scale of oxide of iron on the surface. The hotter the iron, the more rapidly the scale will form. It does not adhere to the iron very firmly,

and surfaces coated with it cannot be welded. It is therefore very important to guard against oxidation of the surface of the iron, if a weld is to be made, because the scale of oxide will lie between the two surfaces of the iron and prevent their coming in contact; and under those conditions it will not squeeze out if the pieces are pressed and hammered together. Two methods are employed to guard against the oxidation; namely, the use of a reducing fire in heating, and the use of suitable fluxes. By both of these methods the hot iron is prevented from coming in contact with the oxygen of the air.

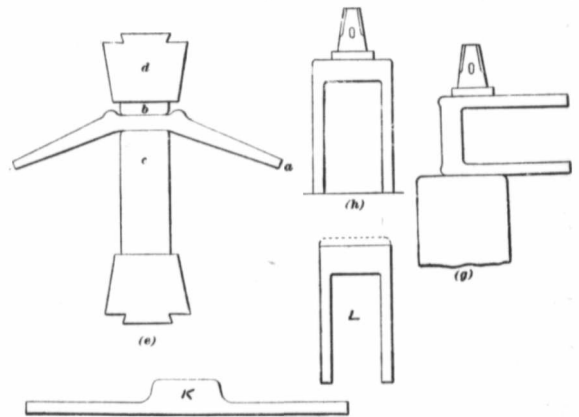
Reducing Fire

A reducing fire is one in which all oxygen is consumed in the combustion, so that the gases coming in contact with the iron do not contain any oxygen that can unite with the iron. Under this condition no oxidation can take place, and the surface of the iron will remain clean. This condition is obtained in a closed fire by having a thick bed of fire for the air to pass through before coming in contact with the iron and by maintaining a moderate blast. If, however, the blast passes through a thin bed of fuel or if more air is blown through

surface of the iron with some substance that will exclude the air. It must, of course, contain no oxygen that will unite with the iron. It must be fluid at a heat below the welding heat of iron and still not become so fluid at the welding heat that it will run off and leave the iron exposed as before.

Substances used for preventing the formation of scale on the iron when being heated for welding are called fluxes. Strictly speaking, most of them form a fusible mixture with the iron oxide, which offers the desired protection to the iron, but they use up some of the iron to make this mixture, therefore wasting it. This mixture, however, is so liquid that it will squeeze out from between the surfaces being welded, thus leaving clean surfaces of iron to be welded together. There are many kinds of fluxes. Some of these consist of a mixture of several substances. The most common flux for wrought iron is clean, sharp sand; this fuses readily on the surface of the iron and sticks to it during the heat, thus excluding the air.

A very good flux for iron, but one that cannot be used on steel because it tends to reduce the carbon, can be made by mixing 2



than the fire needs, the unused oxygen will oxidize the iron. Therefore, a thick fire should always be maintained, and the blast regulated so as to supply just enough air and not too much.

Fluxes

The other method for preventing the oxidation is to coat the

ounces of calcined borax and 1 ounce of sal ammoniac. Calcined borax is a good flux for steel. It is made by heating borax in an iron pot until the water is driven off. The mass is then cooled and pulverized. Calcined borax is also called borax glass. Sand and

Continued on page 26

Sold on its Value—Not on its Price

The Nichols-Shepard Steam Engine could be cheapened and sold for much less money.

It would make just as good an appearance and would go out and run and do just as good work---for a while. But the continuous service, day after day and year after year, would not be there.

Nichols & Shepard Company have been making steam traction engines for over forty years, and all their experience during that time and all that they have learned about building them is incorporated in each engine shipped from the Factory.

Notwithstanding the greatly increased cost of materials and labor, Nichols & Shepard Company have not cheapened their product in any respect.

Improvements have been made from time to time until to-day the Nichols-Shepard Steam Engine stands at the head of the list,---the ideal power plant.

Compare the specifications of the Nichols-Shepard Steam Engine with engines of other makes.

Note the heavy boiler plate, the heavy gearing and shafting, the extra precautions taken to provide adequate lubrication.

Note the massive steel rim drive wheels, which can be fitted with flat lugs for highway or city use.

Note the conveniences found on the Nichols-Shepard Steam Engine not found elsewhere.

Ask your neighbor who owns one and he will tell you how little fuel and water it takes to operate it.

Then bear in mind the Company whose warranty is back of this Engine, and the service given to its customers and you will realize the truth of our claim that the Nichols-Shepard Steam Engine is the only engine you can afford to buy.

Built in various sizes from 13-40 Horse Power to 25-85 Horse Power, both single and double cylinder.

Send for new 1917 Catalog, with complete description. Ask for your copy of the Home Edition of the Red River Special. These will be sent to you FREE.

NICHOLS & SHEPARD CO.

In Continuous Business Since 1848

Builders EXCLUSIVELY of THRESHING MACHINERY

Red River Special Threshers, Feeders, Wind Stackers, Steam and Oil-Gas Traction Engines

BATTLE CREEK, MICH.

BRANCH HOUSES (with Full Stock of Repairs) at

REGINA, Saskatchewan

H. P. NORTON COMPANY, CALGARY, Alberta

WINNIPEG, Manitoba

Continued from page 7

of gasoline and 2 one-third gals. of kerosene per acre; 1 gal. of lubricating oil per day. For gear grease, I used the waste oil from crankcase which was no expensive hard oil. A ten pound pail costing \$1.65 lasted 40 days. One man ran the whole outfit.

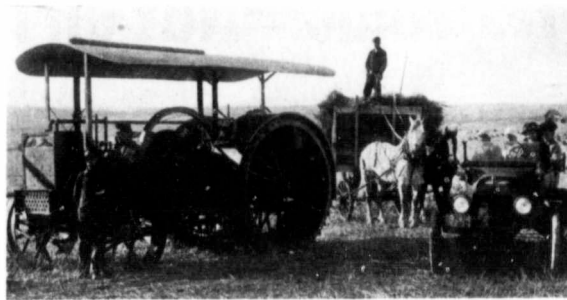
In threshing I drove a 24-inch thrasher with sufficient power on dry grain but in tough straw we needed more power from the engine to run the thrasher at sufficient speed.

We did not do any harrowing, discing or seeding with the engine as we only acquired the outfit after seeding was over last spring, and have only used it in the field so far for plowing. We ground ten loads of feed in ten hours at an outlay of 2 gals. gasoline at 34 cents, 23 gals. kerosene at 20 1/2 cents, lubricating oil, 1 gal (52 cents), engine oil, oil for grinder

and hard oil, 10 cents, or a total expense of \$6.00 for ten hours' run. I had previously had no experience with tractor work and had no idea that I might run up

the handiest thing to have on the farm. It takes the place of man and beast.

I pulled up a windmill with the engine for a motor, this fall, and



Everyone Proud to be seen in this fine Combination

against. I had had some experience in gasoline engines, working in an auto shop. In the end, however, I found that a tractor is

from that experience I judge that the engine is the only thing to do it with. It went up so steadily and sure, it quite excited the ad-

miration of my neighbors.

In plowing we had bad luck with the weather; so many rainy days last summer, but I kept at it as the willing man does and won out. In this way I got through more work than some of the bigger outfits with less zeal behind them.

I am Yours truly,
Henry Beckers.

The Real Outfit for a 300 or 400 Acre Farm
Loughheed, Alta.

5th January, 1917.

Dear Sir—Replying to your letter: I am using a 12-25 Avery double cylinder gas and oil tractor, and have done considerable threshing and field work with it.

We operate a 22x36 Avery "Yellow Kid" separator and find that our engine supplies it with power enough and to spare, and



THE
TWENTY-TWENTY
TRADE-MARK COAT

OLIVE KHAKI

"BUILT FOR WAR"

Under date of December 3rd, 1916, an Infantry Officer in France writes to a friend: "We find we cannot get Slickers here and have to write back to Canada for them, and if anyone needed a Slicker, believe me, we do over here. I want a "TOWER" make if I can get one, as they are by far the best."

BEFORE THE WAR

This was a Farm Coat, its special features, so necessary in farm work; the full skirt making easy walking; the overlapping front—thorough protection when driving. Its exceptional waterproof qualities which are guaranteed.

SOLD BY DEALERS EVERYWHERE.

Manufactured by

TOWER CANADIAN LIMITED
TORONTO

SELLING AGENTS

Alberta
Great West Saddlery Company
Calgary and Edmonton

Manitoba and Saskatchewan
Gutta Percha and Rubber Limited
Winnipeg

No Better Thresher Belts than These

Dunlop Thresher Belts have no superior anywhere.

There is no other factory in all Canada better equipped to manufacture Rubber Belting than the Dunlop plant.

Up-to-date facilities, expert workmen, and A1 materials, one and all point to an unexcelled product—

Dunlop Thresher Belts

"PRAIRIE" and "RELIANCE"

The duck used in the construction of Dunlop Thresher Belts is of the long, hard, closely woven kind.

The curing process takes place under a hydraulic pressure equal to 50 tons in weight.

There is no lost power when Dunlop Thresher Belts are used because they have the maximum of strength, durability and toughness and the minimum of stretch and slippage.

Dunlop Canvas Thresher Belts and Dunlop Agricultural Hose are thoroughly upholding the reputation of the "Two Hands" Line of Rubber Made Goods.

DUNLOP TIRE & RUBBER GOODS CO.,
LIMITED

Head Office and Factories: **TORONTO**

Branches: Victoria, Vancouver, Edmonton, Calgary, Saskatoon, Regina, Winnipeg, London, Hamilton, Toronto, Ottawa, Montreal, St. John, Halifax.



AULTMAN-TAYLOR



TURN YOUR ACRES INTO DOLLARS

Turn your acres into dollars with the power of an Aultman-Taylor Gasoline-Kerosene Tractor. With its power you have the means to get out of your farm all there is in it. By its use you'll make more money and do less hard work. It enables you to cultivate every available acre and insures maximum yield from each acre so cultivated. It is a time and labor-saver at every power job on the farm. Hook it to your plows—plow as deep as you like. If in a hurry, run it day and night. Do your discing, harrowing, seeding and harvesting with it and save time and money. Belt it to your thresher, shredder, silo-filler. Haul your crops to market with it. Do your saw milling with it during the winter months. You can find work for an Aultman-Taylor Tractor nearly every day in the year. Aultman-Taylor Tractors are every-day tractors, built for every kind of work. Because of their high quality — their sturdy construction, they show a profit for their owners on jobs where tractors of lesser quality prove to be absolutely worthless.

Aultman-Taylor Tractors are built in three sizes. There's a size particularly adapted to your needs. It matters not what your requirements are, if it's a question of power, there's an Aultman-Taylor Tractor that will do your work quickly and economically. Their remarkable working flexibility, durability and economy make them the ideal tractor for the farm, road or elsewhere. As road builders, Aultman-Taylor Tractors have been leaders for years. They do grading, leveling, scraping, haul road materials and run the crusher at such astonishingly low figures that their use is being sought by Contractors and Highway Commissioners in every part of the country. Their great power, linked with their extreme fuel economy and unusually low rate of up-keep cost, places them in a class by themselves, for this difficult and most important work.

It costs you nothing to learn in detail the construction of Aultman-Taylor Gasoline-Kerosene Tractors. It costs you nothing to learn what they are doing in every part of America and many foreign countries—and what they will do for you on your own farm, at road work, or at any job requiring power.

A post card with your name and address on it will bring you full information. Before you buy any tractor, you certainly want to know all about Aultman-Taylor Tractors. A few spare moments spent in getting real facts is worth your while. To know the truth about Aultman-Taylor Tractors is to want one, so start to-day to get the facts.

Don't forget our tractor catalog is yours for the asking.

The Aultman & Taylor Machinery Company

Lock Box No. 64, Mansfield, Ohio

Branches: MINNEAPOLIS, Minn.; GREAT FALLS, Mont.; REGINA, Sask.; CALGARY, Alta., Canada



this last season was a difficult one for a separator to do good work on account of long straw and frosted grain.

In plowing we use a 4-furrow Avery self-lift plow which does good work and the tractor pulls the plows easily at a depth of 7 inches. We have not used it so far in harrowing, disking or seeding.

Our experience has taught us in view of the scarcity of labor that a tractor of this size is more convenient than a larger one as it does not pack the soil so much. Besides the cost of operation is so much less.

We used gasoline exclusively—about a gallon per day per belt-horse power, and the same for plowing in which we averaged about an acre per hour. Our lubricating system is the oil in crankcase which takes about 1 1/2 gal. of heavy oil per week. This oil after being drained out of the crankcase is put into a can ahead of oil tanks and is then used to lubricate the gearings of the tractor. In this way the lubrication is low but this spring we are going to use half gas and half

kerosene as we know this will work very satisfactorily in the Avery tractor.

In short, we think that a tractor of 12-25 is the most economical power supply for a farm



A splendid picture from a One Man Show

of from 300 to 400 acres, with the assistance of about two 4-horse teams to do the side work and keep the tractor going with the plow.

Yours truly,
G. F. Albrecht.

The Success of a Self-made Man
Sceptre, Sask.,
3rd January, 1917.

Dear Sir—I am the owner and operator of an 18-35 Avery tractor (Model C). In the summer I did

Cockshutt breaker, plowing 3 1/2 inches deep and doing about 10 acres a day on 3 1/2 gals. of gasoline per acre, 4 gals. of oil on the 10 acres and one pound of grease. One man handled the whole outfit as you can see by accompanying photo.

I have had no experience with other machinery so I can't make comparisons with my engine. This tractor certainly works well but I would like to suggest that an improvement would be that the manufacturers equip the outfit with magneto instead of the Atwater-Kent ignition which is using up batteries all the time.

I had two months' experience in Regina (Hampill's) school of gasoline engineering and was working one year on an engine gang plow before starting out on my own.
Yours truly,
Mike Konosewich.

Thinks it the Lightest Built for its Power

La Salle, Man.,
30th Dec., 1916.

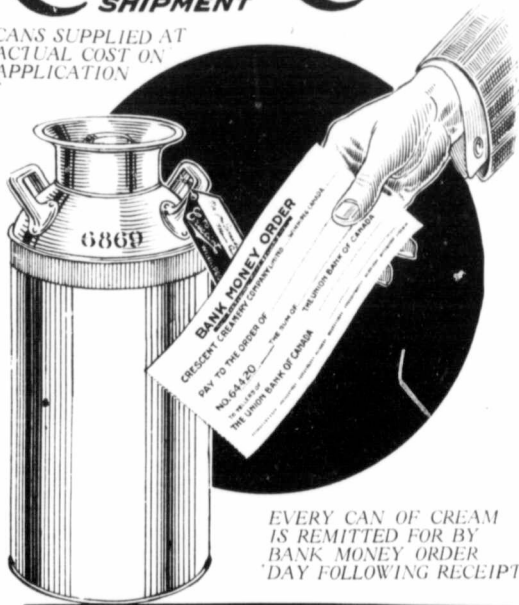
Dear Sir—Replying to yours for details of my experience with

Continued on page 18

CASH FOR YOUR CREAM

EVERY SHIPMENT

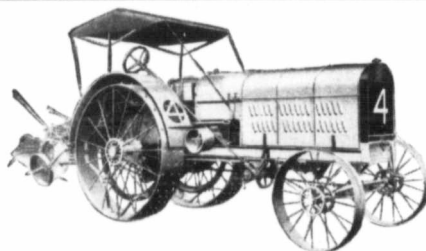
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A Great Combination

The Tractor is the Big Four with twenty H. P. at the drawbar
The Plow is the Emerson attached directly to the Big Four "20"-35

WHEN you get a Big Four Tractor, you get a dependable standardized four-cylinder Tractor—a proved success for ten years. When you get an Emerson Plow, you get the benefit of experience of men who have been building plows a lifetime. We have combined the two, and added the power hoist. The Big Four Motor raises and lowers the plows with one touch of your foot, whether tractor is moving or standing still. When plows are raised they are out of the way of everything, and when they are lowered they are adjustable to the depth you wish to plow. Don't waste room and time in turning. Back up and plow out the corners. When the tractor is to be used for other work than plowing, the plows may be quickly detached. The Big Four "20"-35 has two speeds forward and reverse—burns gasoline or kerosene—is adapted to practically all soil conditions. Handles readily harrows, disks, pulverizers, drills, mowers, etc., and all belt work.



EMERSON-BRANTINGHAM IMPLEMENT CO., Inc., Regina, Sask., Canada

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| Drills | Buggies | Corn Shellers | Emson "40" Tractor |
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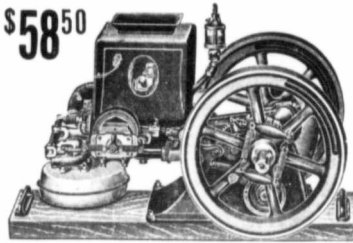
Your Opportunity To Solve Your Labor Problem

BY USING A JUDSON ENGINE AND POWER EQUIPMENTS

What the Judson Handy Boy Engine will do

Our 1½ Horse Power Gasoline Engine is high grade in every respect, water cooled, and we guarantee it to be equal to most 2 horse power gasoline engines on the market. This little wonder worker is always ready to do all the back-breaking chores. It is so easy just to feed it with a little fuel, turn the wheel and watch it do the heavy part of the work, while you simply do the directing. It will save the cost of a hand man entirely.

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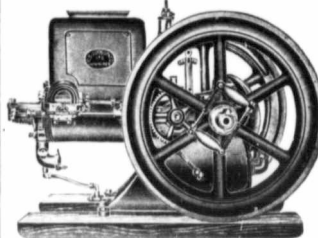


The magneto starts the engine every time on one turn of the flywheel, winter or summer. No batteries needed. We furnish a speed regulator on our engines which gives a wide range in speed without stopping the engine.

No. 277 Handy Boy 1½ Horse Power Magneto Equipped Gasoline Engine, equipped with speed reducing gear and pulleys. Weight, 125 lbs. Price **\$58.50**

2½-H.P. Magneto Equipped Gasoline Engine \$72.50

Judson Engines Deliver More Horse Power for Each Dollar Invested Than Any Other Engine Offered for Sale To-day



Our Magneto starts the engine every time on one turn of the fly-wheel, winter or summer. No batteries needed.

Note the Solid Iron Base of this Engine containing the gasoline.

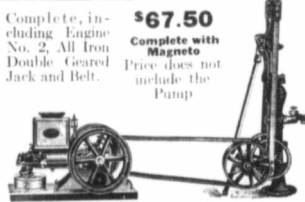
No. 212—2½ Horse Power Magneto Equipped Gasoline Engine, with 6 x 4 Pulley. Weight 150 lbs. Price **\$72.50**

No. 213 2½ Horse Power Feed Grinding Outfit. This Outfit consists of a 2½ Horse Power Magneto Gasoline Engine with 14 x 4 inch pulley and 6 x 4 inch pulley, a No. 5 Duplex Feed Grinder, and 15 feet of 3 inch belt. Shipped complete. Shipping weight, 720 lbs. Price **\$92.50**

1½-Horse Power Handy-Boy Pumping Outfit

This outfit consists of a 1½ Horse Power Gasoline Engine, complete with 6 x 4 inch Pulley, a No. 2 all iron double geared Pump Jack and a 10 foot Belt, all ready to attach to pump. The pump jack clamps to the base of any hand or windmill force pump. Pump can be run with engine or by hand. Jack has 5, 7½ and 10 inch strokes, running the pump forty strokes a minute.

Complete, including Engine No. 2, All Iron Double Geared Jack and Belt. Price does not include the Pump **\$67.50**



No. 214 1½ Horse Power Magneto Equipped Pumping Outfit, with Belt and No. 2 Jack, suitable for well up to 200 feet. Weight of outfit 450 lbs. Price **\$67.50**

A Real Good Cream Separator Takes Every Drop of Cream from the Milk

Do you know that a Judson cream separator is the first and most important step toward your prosperity? It increases your cash income, enables you to buy or raise more cows, and add still more to your profits. It cuts down the dairy work so it is easy to handle a larger herd. Bigger herds and larger profits mean larger farms, a more fertile soil, better crops, all around prosperity and more of the comforts of life. Over 450,000 of these Cream Separators in daily use.

SPECIAL CREAM SEPARATOR CATALOG ON REQUEST

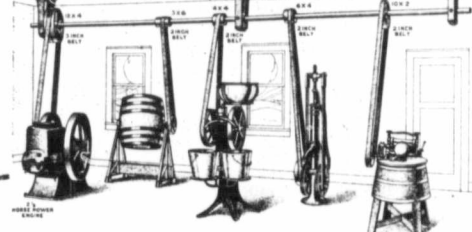
No matter what Separator you may favor or may be inclined to try, we ask you to test the Judson alongside of it. If this Separator does not clearly prove that it is the better in every way, and thereby win a place in your dairy, you can do us no greater favor than to return it and let us send your money back. We guarantee the Judson to be not only the best at the price but the best at any price.



One Piece Bowl Separate from Spindle Sanitary Loose Disc Bowl Cannot Clog Gives You Cream of Any Density

SELF-OILING SPLASH SYSTEM Two Adjustable Pail Shelves Tool Case for Wrenches Oil Can, etc. in Base Runs Easily and Quietly

Farm Power Equipment



No. 27200—Speed Governing Line Shaft, complete with Pulleys, for running Washing Machine, Churn, Cream Separator, and Pulley for Engine; 8 feet long; shipped set up as a plank ready to install, with friction governing pulley to start or stop independent of the engine. An outfit that any woman or boy can operate. Weight, 150 lbs. Price **\$20.00**

No. 27201—12 Ft. Line Shaft Outfit. With 6 pulleys. Price **\$25.00**

It is our business to solve your labor problems. Tell us what you want to do, and our experts will tell you how to do it and just what it will cost. It is more economical to run several machines at the same time than to run each one separately.

No More Washday Drudgery

Make life pleasant for the women folk by buying a Canada Power Washing Outfit, consisting of Canada Power Washer with Wringer, Belt, and a Judson 1 H.P. Self-Starting Magneto Engine, all complete.

Sale Price **\$69.25**

30 Days' Free Home Trial



The biggest labor-saving device ever invented.

No. T12—Skimming capacity 250 pounds, or about 120 quarts an hour. Shipping weight, 175 pounds. Price **\$39.50**

No. T14—Skimming capacity 375 pounds, or about 180 quarts an hour. Shipping weight, 190 lbs. Price **\$49.50**

No. T16—Skimming capacity 600 pounds, or about 280 quarts an hour. Shipping weight, 240 pounds. Price **\$59.50**

No. T18—Skimming capacity 800 pounds, or about 390 quarts an hour. Shipping weight 255 pounds. Price **\$68.50**

C. S. JUDSON COMPANY LTD. WINNIPEG CANADA
Send Us Your Order To-day Factory to Farmer

Continued from page 16

gas tractor: I own and operate an 18-35 "Goold Shapley & Muir" engine. With this machine I have plowed with a 6x14 inch. P. & O. gang and as to other work, I have only used my old 22 "Red River Special" separator but from the satisfactory work the engine did with this outfit I am sure it would deliver all the power for a 30 complete.

In plowing I struck at 4 1/2 in. deep, making 17 acres in 10 hours with 2 one-third gallons of kerosene. Lubricating oil 4 to 4 1/2 cents; grease and machine oil about 2 cents. I had the assistance of one man in the field.

The engine hauled a 3x9 ft. cultivator and it was just about enough as our land is very heavy. In disking I had a 2 section "Bissel" double disc 16x16 loaded with about 500 pounds of stone.

Summing up my experience I can say that I had less trouble with my engine than any other

handle the outfit as we do not possess a steering device or self-lift.

In discing and harrowing we used three 16-16 disc harrows and a 4 sec. lever harrow. We had plenty of power for that purpose and we earned a bit by hauling buildings for neighbors, one day about a mile haul for \$30.00 and another, about 1/2 a mile for \$20.00.

We use a 10-inch chopper for our own use and drive a 28-42 "Waterloo" separator and on the whole are very well satisfied with the outfit.

Yours Truly,
Ole Eberg & Sons.

A Fine Record—Only 6 Horses to 1440 Acres

Regina, Sask.,
1st January 1917.

Dear Sir—I am glad to see a farm magazine so good as "The Canadian Thresherman and Farmer" taking up the tractor



Great Power with Small Toil

outfits around here, but it is the first year I have operated a kerosene tractor. So far I am really very satisfied and, so far as I know, I think my engine is the lightest built tractor for its power. Still I believe there are none built yet that can be relied upon to run perfectly on a very cold day.

I am Yours Truly,
Joseph A. Cormies.

Very Well Satisfied

Blumenhof, Sask.,
January 3rd, 1917.

Dear Sir—In reply to your series of questions, we may say that we own a "Goold, Shapley & Muir" 15-25 H.P. oil tractor. We have used the engine for breaking, plowing and feed-chopping. In breaking we used a 4 bottom P. & O. plow, broke 8 to 10 acres per day and used about 2 1/4 gallons coal oil per acre. Of lubricating oil it takes about 1/2 gallon per day and we used about 10 lbs. of hard oil for every 50 acres plowed. As a rule, two of us

work on the farm as one of its main lines. I think if every farmer who has had experience with gas engines would turn in his honest opinion as to his machine, the size, make and what it can pull most economically, it would be the very best guide to the average farmer who contemplates buying an engine.

My experience began on 17th April, 1915, when I started out of Regina with a second-hand 25-45 "Minneapolis" gas tractor. I broke 900 acres of our Regina "gumbo", pulling five 14-inch "Minneapolis" power-lift breakers, and had finished before July 1st following. Then I summer-fallowed about 320 acres custom work at \$3.50 per acre for disc plowing, and got \$4.00 per acre for breaking. I pulled a 36-56 "Minneapolis" separator with it that fall, but is was too much of a load. Threshed 41,000 bushels in 18 days and than sold the outfit.

Last spring (June 1916), I bought a new 40-80 "Minneapolis"

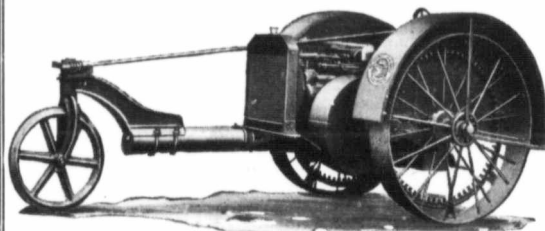
City Clerks, or a Happy Farmer Tractor?

A Question of Power Conclusively Answered

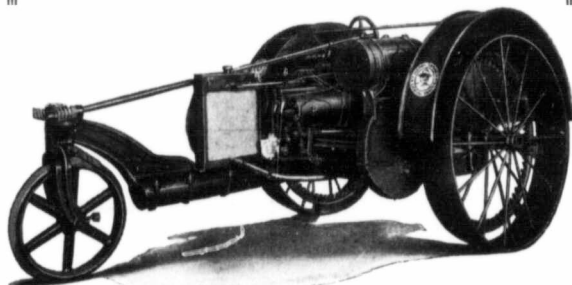
Are you one of the men who realize the utter ridicule of such a foolish suggestion, or were you without thinking led to believe by equally foolish press articles that the solving of the shortage of Man Power lay in transporting City Clerks wholesale to the farms to do Spring work? Think of trusting a team of horses and outfit valued over \$1,000.00 to a man who has never handled a pair of lines before. A certain public official said at the Parliament Buildings in February: "You cannot take town-bred men and put them on the farms at \$1.50 a day with wheat in the neighborhood of \$2.00 a bushel. The farmer will grow at the labor and the labor will resent the pay and unfamiliar work. Use a little brains and a lot of machinery is the solution to the production problem."

Two Trustworthy Servants

You CAN depend on EITHER to do Efficient Work



The little Model "A," 8-16 h.p., pulls two or three plows, according to soil conditions. Built on sane, practical lines. Especially designed to fill the small farmer's requirements. Small in stature but a giant in power. Low in first cost - low in upkeep. Highly spoken of from Calgary to Texas. We can furnish the evidence of satisfied users.



Model "B," 12-24 h.p. - our wonderful kerosene burner. Most perfect twin-cylinder motor. All parts easily accessible. Guaranteed draw-bar pull, 2,000 lbs. or three 14-inch plows. Hyatt Roller Bearings throughout. Weighs only 3,700 lbs.

There is a dealer near you for prompt and efficient service. Write for address of the nearest demonstrator; also demonstrated at Saskatoon, Sask., 323 Avenue A South. Regina, Denton Motor School, 1725 Broad Street.

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Happy Farmer Tractors. Huber Separators Light Tractor Plows

Send in coupon to-day for free literature.

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COUPON—J. D. Adshead Co., Ltd.,
Winnipeg, Man. Please send me free literature describing the "Happy Farmer" Tractor.

Name

Address

and a new 12-24 "Waterloo Boy." I summer-fallowed 1,100 acres in the 1916 season, plowing part of it once and part twice over. Twelve disc plows made a fair load for the 40; it could pull 18 but that was an overload so I took one section of 6 discs off.

The "Waterloo Boy" pulled a 4 disc plow easily and pulled 2 "John Deere" binders, each 8 ft., at about 3 miles per hour, working fine with a "Harsmann" binder hitch. It hauled 3 loads of grain at a trip over any kind of fields and roads and uphill that makes a team pull good to take a load up. These wagons had each a load of from 107 to 110 bushels oats.

We plowed about 9 acres on an average of about 2½ gals. of coal oil per acre with the "Waterloo Boy". The 40 horse I used on the 36-56 "Minneapolis" and it supplied power in plenty. The fall of 1916 was an exceptionally bad threshing season. I threshed about 60,000 bushels but we had to thresh enough straw for about 3,000 bushels to get 1,000 bushels of from number 4 to feed wheat. Oats and flax were good. I used gasoline during threshing as it is less trouble. It took about 6 gals. an hour and about 3½ gals. of cylinder oil.

In plowing I used coal oil about 8 gals. per hour and about 5 gals. of cylinder oil per day as coal oil makes the engine run hotter. I am farming 1,440 acres and this last season had only 6 horses on the farm and then was ahead of the men who used all horses. They are all coming to the gas engine sooner or later. For my own part I don't know how I could farm without these two engines.

I have practically no repairs or lost time. The engines are practically as good as new and I can recommend either of these types provided they are taken care of. I am going to pull 2 "Van Brunt" (20) drills when drilling and 2 ten-foot disc harrows when discing. I know the 12-24 can do the job.

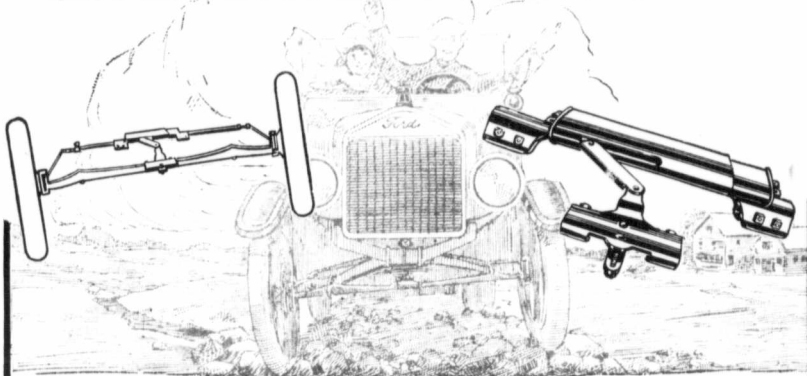
I am Yours Truly,
E. J. Terril,
Box 18, Regina.

An All-round Success
Rosthern, Sask.,
2nd February, 1917.

Dear Sirs—Yours to hand, and in reply will say that I have owned a "Waterloo Boy" size 12-24 for one season or year. I used this engine in spring for sowing and harrowing 150 acres of which the total cost of same cost me 15 cents per acre. This being for kerosene and oil. I did the engineering myself, but had I worked with horses, I would have had to handle them as well. In summer I plowed brush with same

Continued on page 46

IDEAL SAFETY STEERING DEVICE KEEPS YOUR CAR STRAIGHT ON THE ROUGHEST ROADS



\$5.00 The King of Safety for all Auto Riders \$5.00

Being obliged to grip the steering wheel of your machine with both hands all the time robs motoring of its pleasure. That's why you read every little while of some fellow losing control of his machine, having a collision, taking the ditch, perhaps turning turtle. Statistics show that 92 per cent of accident insurance claims paid on automobiles are due to the wheels of the cars hitting some obstacle and being jerked to one side or another of the road.

HOW ABOUT YOUR STEERING GEAR?

Even if you have no serious accidents, the slack in your steering gear causes sufficient 'sailin' of the front wheels to make excessive, expensive wear on your front tires. You can avoid the accidents, the unnecessary front tire expense, the loss of pleasure, and make your Ford, or any other car, steer as easily as a big car by installing an Ideal Safety Steering Device.

WHAT DOES IT DO FOR YOUR CAR?

It prevents accidents by holding to the road. It is a positive Steering Guide. It takes the shake out of front of car. It stops wobbling of the wheels, and therefore saves you many times its cost in tires. It stops shocks that have a wearing effect on your car, and therefore acts as a shock absorber. It prevents car from turning over, so it is a positive guide. It makes driving a pleasure. Thousands of owners of Ford, Electric, and other cars have proven absolutely that the improvement in steering, the safety, the comfort, the peace of mind afforded by the installation of an Ideal Safety Steering Device is worth many times the expense involved.

T. EATON CO. LTD.
WINNIPEG CANADA

Order by number 22 U 500. \$5.00

T. EATON CO. LTD.
WINNIPEG CANADA

NO BETTER PLAIN TREAD TIRE MADE IN CANADA AT ANY PRICE IN THE ROAD KING SIZE. WE BUY IN GREAT QUANTITIES, AND SO MAKE THE PRICE LOW.

The only difference between the Road King and other fine tires is the price—the quality is the same. This tire, especially made for Eaton's, has a base of 4-PLY sea-island cotton—but that you can absolutely satisfy yourself of the fabric and material used in Road King tires we make you this special offer:

Take advantage of this special offer to Canadian Thresherman & Farmer Readers.

"To show you how good this tire really is and how entirely convinced we are that it is all we claim it to be—one of the best plain tread tires for a Ford car that can be bought—we will send you an actual cross-section, as illustrated, immediately we receive your request, together with your name and address. You can then see, positively, how our Road King is made up, layer on layer, canvas and rubber, and canvas again, then the outer covering of white, tough, resilient rubber. Compare it, if you will, with other tires and you cannot but be convinced of what we say—it is as good as the best and noticeably lower priced."

T. EATON CO. LTD.
WINNIPEG CANADA

THE ROAD KING



THE "ROAD KING" TIRE IS MADE SPECIALLY FOR EATON'S BY THE LARGEST RUBBER MANUFACTURERS IN CANADA. THE GREAT QUANTITY WE BUY MAKES THE PRICE LOW.

State which size tire you wish cross-section of. To order the Road King at once, use order No. 22 U 120 for 30 x 3½ size, \$12.80, and 22 U 227 for 34 x 4 size, \$23.75

OUR AUTO ACCESSORY AND SPORTING GOODS BOOK WILL SAVE YOU MONEY. SENT FREE ON REQUEST. WRITE FOR IT.

T. EATON CO. LTD.
WINNIPEG CANADA

It Burns
KEROSENE
The Cheap Fuel

The "C.O.D." Oil Tractor

The All-Purpose Tractor that has Made Good in Western Canada

Not Too Expensive. Not Too Cheap. Not Too Heavy. Not Too Light!

Its 13-25 H.P. engine does the work of from ten to thirteen horses. Will handle a 24 or 28-inch cylinder thresher with self-feeder, windstacker, wagon loader and swinging conveyor. Built for a long life; easy to operate and easy to keep adjusted.

Demonstrated at Saskatoon—
323 Avenue A, South
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Tudhope-Anderson Co. Limited

"C.O.D." Oil Tractors—Huber Separators—Light Tractor Plows

The Master of All Farm Jobs. It Will Plow an Acre an Hour

WRITE FOR FULL PARTICULARS

J. D. ADSHEAD CO. LTD.

Canadian Representatives
221 Curry Building WINNIPEG, MAN.
References: Bank of Montreal

J. D. Adshead Co. Ltd. Winnipeg, Man.
Please send full particulars of C.O.D. Tractor.

Name

P.O.

Province

CARBURETORS Their Adjustments and Construction

By A. G. DEAN

THE use of carburetors has become so general that nearly everyone is familiar with the name, but few persons are familiar with the purpose of a carburetor and the points in its adjustment and construction. Carburetors are used in connection with gasoline engines to produce the right mixture of the fuel with the air, so that all of the fuel will be burned and converted into power.

The adjustment of the various types of carburetors may easily be understood by attention to the following facts: Shutting off the needle-valve supplies less gasoline and will give a weaker mixture. This may improve the running of the engine, but too little mixture will cause the engine to misfire or backfire through the intake manifold. Adjusting the needle-valve to give more fuel may easily be regulated by watching the exhaust, for too much gasoline will produce black smoke in the exhaust.

Many carburetors are supplied with an air throttle and by closing down this air throttle you will increase the suction on the gasoline and it will give a richer mixture. This is done in starting, for slow engine speeds and for hill climbing on high gear with slow engine speeds. If the mixture is too rich black smoke will show in the exhaust. If, on the other hand, too much air is admitted the engine will show lack of fuel and lack of power by missing explosions or backfiring.

Many machines are equipped with a mixture throttle, which operates only on the mixture. In throttling the mixture the amount of fuel admitted to the engine is cut down, but the quality of this mixture is very little changed. An engine is throttled in this way to cut down the speed when running at slow speed on the level, or, when the clutch is thrown out, to prevent racing. It is never a good plan to let the engine run at an excessively high speed under a light load or no load. The speed is cut down by throttling the mixture and by retarding the ignition.

Operating the carburetor with the throttle wide open will give the greatest amount of power, but in this connection the fuel needle-valve must be adjusted for the wide-open throttle; in general the needle-valve must be opened slightly to make up the decrease in suction on the fuel. Experiments will show that there is slight difference in the mixture whether the throttle is open or closed, and this is due to changes in the velocity and the volume of

the mixture and to the difference in suction on the fuel. These points are however semi-technical, and a little experimenting with throttling the engine under no load and under full load will readily demonstrate the best point at which the air throttle, fuel throttle and gasoline needle-valve should be operated. Make all changes in adjustment slowly and allow time for results to develop from the change. Watch the results carefully.

either by gravity feed or by pressure feed from a tank. In this reservoir there is a float which operates a small valve that shuts off the flow of gasoline and keeps it at a constant level in this reservoir.

It is important to keep the gasoline at a constant level and to prevent this reservoir from overflowing. A small rod or stem called the "tickler" will usually be found on top of the carburetor bowl, by which the carburetor may be

eral practice the nozzle should be very little above the level of the gasoline in the float chamber, because the gasoline must be sucked from this nozzle by the suction of the air as it passes through the air passage. One purpose of the nozzle is to spray or, in some cases, to vaporize, the fuel as it enters the air passage, and the fuel is more readily vaporized where heat is applied to the carburetor or to the incoming charge of air.

If on the other hand the fuel enters the air chamber without being broken up into small particles there is a chance of its condensing in the passage before it gets inside the engine cylinder. Several of the devices used on a carburetor are made to overcome this condensation.

If the carburetor is too large for an engine the velocity of the air will be slow and will not take up a sufficient amount of gasoline for fuel to give the proper mixture. If the carburetor is too small for an engine the velocity will be great, and the resistance and choking down of the fuel will result in a loss of power.

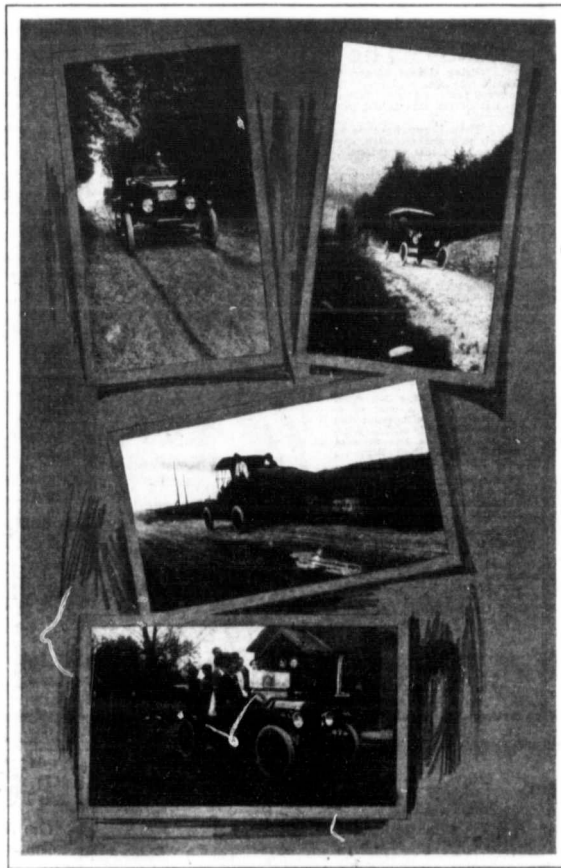
A carburetor must, therefore, be just the right size for an engine at the speed at which the engine will be run under average conditions, and you can readily see from this the necessity for the proper adjustment of the carburetor for an engine running at slow speed and for an engine running at high speed.

Manufacturers have used much care in selecting carburetors for engines of high power, such as are used in automobiles; hence when these engines fail to run properly the owner should consult an expert who is familiar with the particular auto he is using.

To regulate the proper mixture at slow speed and at high speed the manufacturer has used several devices. The best known has a throttle on the mixture just as it leaves the carburetor on its way to the engine. Throttling the fuel at this point has little effect on the quality of the mixture, but it has been found by experiment that a richer mixture is required at slow speed and with a cold engine than is required at high speed with a hot engine.

Devices That Save Gas

In order to accomplish the above results some carburetors are equipped with an automatic device for regulating the amount of air that passes into the carburetor. Increasing the suction on the fuel at slow speed by throttling the air gives a richer mixture, and decreasing the suction on the fuel by opening up the air



THIS IS THE LIFE

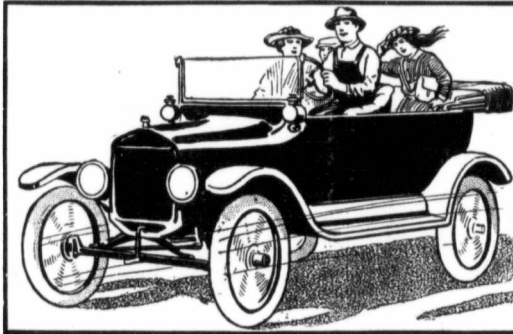
Rich Mixtures Aid in Starting

In high altitudes the engine should be run with a wide-open throttle. Everything should be done to provide the full charge of fuel inside the motor in order to produce the greatest horse-power and the most efficient operation per mile of road covered.

To accomplish this result under different weather conditions and with different grades of fuel has long been the object sought by engine manufacturers. A supply of gasoline is fed to a bowl or reser-

flooded. To supply an excess of gasoline at the needle-valve in starting, particularly in cold weather, "tickler the carburetor" and make the gasoline overflow from the bowl.

In connection with the float chamber or reservoir there is a gasoline needle-valve that regulates the amount of gasoline admitted into the air passage. This needle-valve outlet is called the nozzle. The shape and the position of the outlet from the nozzle are considered important. In gen-



Save the Horses for Farm Work

THE average farmer has enough work for his horses right on the farm. He can ill spare them to pull a buggy or a phaeton. And his own time is valuable, too. With farm labor so scarce, he cannot afford to spend half a day or a day to drive a horse to town and back, when he can do it in an hour or two in a Ford.

Costs Less

A Ford car soon pays for itself in the time it saves the busy farmer, costs less to run than a horse. It doesn't eat its head off when idle.

Mr. S. M. Smith, of Holstein, Ont., says: "I can run my Ford car more miles with less expense than a horse." His experience is typical of thousands of others.

Mr. W. A. Fallin, of Vermillion, Alberta, states that he has driven his Ford more than 13,000 miles over muddy roads, prairies and fields in every kind of weather. His entire maintenance expense for three years, outside of one set of rear tires has been only \$3.35.

With the cost of running a Ford less than driving a horse, it doesn't seem good business to drive a horse to town and tire him out so that he is not fit for work on the farm the next day, now does it?

Never Tired

That's the great beauty of a Ford! It never gets tired. It whirls you to town and back, or takes the children to school, or your wife to visit a friend, 15 miles down the line, without any slowing up for breath or any urging with a whip. You

don't have to say "gid-dap" to a Ford. And as for hills, well, it scurries over them like a squirrel climbs a tree.

It is as easy to drive a Ford as to drive a horse. It is just the car for country service. Narrow roads or sharp turns do not bother it. It can turn completely around in a very little larger space than a horse and buggy. It is not afraid of a traction engine, a street car, a train or another motor car. It never "shies." It stands without hitching.

The initial cost of a Ford is small—\$495 for the touring car. If you care to sell it at the end of one year, you will find many buyers who will offer you the first price, less \$125. Consider, therefore, how much pleasure you can have in a year for \$125; how many hours of tedious travel, and how much horseflesh you can save. Don't you think it is a good "buy"?

"Ford Times" Free

No progressive farmer can afford not to own a Ford. The more you look into this, and think it over, the more you will realize that it is so. Let us put you on the mailing list for "Ford Times"—our interesting magazine. It will help you in thinking it over.

Touring Car - \$495

Runabout - - \$475

F.O.B. FORD, ONTARIO

Ford Motor Company of Canada, Limited

FORD - - - ONTARIO

passage gives a thinner but more powerful mixture for high speeds and hot engines.

There are some carburetors that accomplish the same results by varying slightly the level of the gasoline in the float chamber. On general principles the carburetor should be placed as close to the engine cylinder and connected as directly as possible to avoid resistance and to overcome the tendency of the gasoline to condense and deposit in the passages, which causes trouble with the engine as the speed and the temperature become higher or lower.

The increasing demand for carburetors using low-grade gasoline has led to several equipments: A hot-water jacketed carburetor; a hot-exhaust-jacketed carburetor; a device for passing the incoming air round the hot exhaust from the engine. All of these devices have some merit when properly de-

signed, but the subject of a perfect carburetor is still occupying the thoughts of inventors and great improvements may be expected in the future.

There are a few simple rules that will help the engine user to get the best results from whatever carburetor is in use on the engine he purchases:

When starting in cold weather floor or prime the carburetor with gasoline. "Tickle the carburetor."

Use a richer mixture for low speed and cold weather.

Use less fuel for high speed, hot weather and a hot engine.

Be sure the fuel gets into the cylinder easily.

Too rich a mixture shows black smoke in the exhaust.

Too poor a mixture may backfire, or fail to fire.

Blue smoke in the exhaust means too much cylinder oil.

Waterproofing the Road with Plank Drag

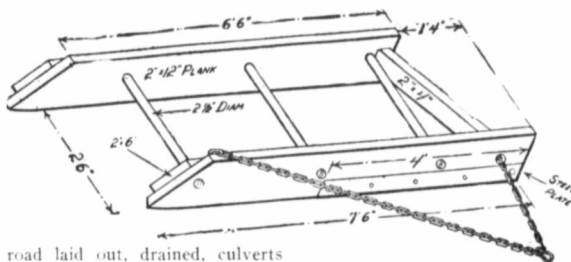
Dirt roads need waterproofing; and it is no valid objection to them to say that they can not be made perfectly waterproof. They can be made reasonably waterproof and increasingly waterproof from year to year, if the farmers living along the road will, under the direction of a road supervisor, go over the roads with road drags after every rain and convert the mud into paste, brick it, so to speak.

Of course it is not worth while to do this until you have a road to waterproof. By this we mean a

broad tires.

This is an old song we are singing. If we had to pay \$50 to \$100 for a drag, nicely painted and trimmed, and sold at a profit to the manufacturer, the wholesaler, and the retailer, we would probably use it to work the roads, in order to get our money out of it. But since we can make one for ourselves, and it is just as good as one that has been patented and painted, and given profits to three, four or half a dozen concerns, we do not value it so highly.

The more frequently this drag-

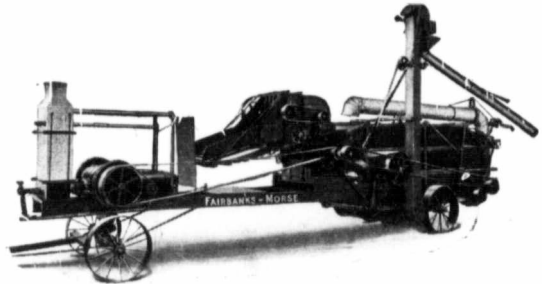


road laid out, drained, culverts and bridges of the proper material permanently put in, and graded up so that it is a road. But after this has been done, the road can be made about as waterproof as any garment you buy except rubber, by simply going over it with the road drag after every rain, just as it is drying off, and pasting the mud over the surface of the road. This will give a chance for the water to run off, the winds to blow over it and dry it, the sun to shine on it and evaporate the moisture. It will thus be converted from a condition like that of a well cultivated corn field, which it is when first graded up, to a road that will stand up under

ging is done, the more perfect will be the waterproofing, the more difficult it will be for the water to soak in and make mud.

Therefore, if you have not a drag, make one. If the road past your farm is not drained, see that it is drained. If it is not graded, see that it is graded. Then after every rain, get out that drag and smooth at least your side of the road. Your neighbor will in time learn to smooth his; and by and by we shall reach a point when the man who does not, either by himself or through the supervisor, have a well dragged road in front of his farm, will lose his standing in the community.

THRESH WITH CHEAP KEROSENE



FAIRBANKS-MORSE 20-H.P. COMBINATION THRESHER

Fairbanks-Morse Separators thresh clean—and save the grain.

They are easily operated and run smooth as silk, due to their perfect design and true balance.

The extra backbone built into them—the massive shafts—the strong steel body—the choice hardwoods—the liberal bearings—and the skillful workmanship—all these things join to guarantee you a brimful measure of enduring service. You'll appreciate the sincerity of purpose back of this better thresher.

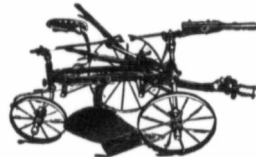
POWER—All you want, and more. A 20 H.P. Twin Cylinder Engine drives the 24 in. x 46 in. machine, with Self Feeder, Windstacker and Automatic Register. For Hand Feed the outfit is powered by the famous 15 H.P. "Z." Both are horizontal engines—both burn cheap kerosene—with smooth throttling governor—magneto ignition—friction clutch pulley—and the Fairbanks-Morse Radiator, which cools perfectly and uses so little water.

If you have a tractor of 10-20 H.P. or larger, you'll want this 24 in. x 46 in. Thresher mounted separately. There's a size for every need.
1917 Thresher Catalog will be ready April 1st. Ask for one—now.

The Canadian Fairbanks-Morse Co., Limited
Saskatoon WINNIPEG Calgary

A SNAP Eight Furrow Engine Gang Breaker Plow \$350.00

7 H.P. CRUSHING
OUTFIT
Complete \$223



Celebrated Eclipse Plow

1915 Prize Winner at Plowing
Matches.
12 inch Gang \$81.00
14 inch Gang \$83.00

GUARANTEED PLOW SHARES

Prices subject to change without notice.



If money is sent in good faith goods will be shipped.

Fully Guaranteed

12-inch Shares, each	\$2.45	14-inch Shares, each	\$2.70
16-inch Shares, each	2.90	18-inch Shares, each	3.10
15-inch Shares, each	2.90		

Give number and letters stamped on share, and name of plow. We do the rest.

Stover Power Washing Machine

All gears are covered. Has safety release on wringer. Reversible wringer. Pure rubber rolls.
Price \$22.00

HARROW TEETH

Harrow Teeth, guaranteed quality.
Each 6c

SAW BLADES

Saw Blades From \$6.50 up

STOVER GRINDERS

Low down and well built. Crushes every kind of seed; fine or coarse plates.
7-inch \$29.45
8-inch 32.95
10-inch 38.95
12-inch 49.95

GRINDER PLATES

7-inch, per pair	\$1.50
8-inch, per pair	1.75
10-inch, per pair	2.25
12-inch, per pair	2.50

WRITE FOR BARGAIN SHEET ON HARNESS, ETC.

The Canadian Stover Gasoline Engine Co., Ltd.
BRANDON, MANITOBA

The William Galloway Co., Limited

The Canadian Thresherman is pleased to call the attention of its readers to the announcement on this page of the William Galloway Co., of Canada, Ltd.

Mr. Galloway, the president of this company, is a unique figure in farm history in both the United States and Canada.

He was born a farmer and is still a farmer, both by occupation and ownership. In the States he owns and operates one of the largest and most modern dairy farms to be found anywhere. In Canada he owns and operates a 2,000 acre farm about seven miles from Lajord, Sask.

But Mr. Galloway is something more than that: He is a farmer's manufacturer and owns and operates the largest chain of factories in the world, manufacturing Gasoline Engines, Cream Separators, Manure Spreaders and other farm implements, which he sells direct from factory to consumer, thus cutting out the excessive profit systems made necessary when selling through the agents and dealers.

It started him thinking. "If I could only start a factory of my own and sell implements direct to the farmers with just one small profit added to actual costs of manufacture, what a business I could do." Thus he reasoned.

The thought haunted him. He dreamed of it night and day until it got on to his nerves to such an extent that he moved into the town of Waterloo, Iowa, and started a small factory in a carpenter's shop, and began manufacturing harrow carts and selling them to his farmer friends at a third less than they had ever paid before. Yes, and gave them a better article too.

His business grew to such an extent that he was soon forced to move into larger quarters where he added to his line the now famous line of Galloway Manure Spreaders.

Again, later, he was forced to larger quarters, and added still another line to his growing business. This time it was the great Galloway line of Masterpiece Gasoline Engines.

And thus the business grew until to-day, after fifteen years of earnest endeavor in behalf of his farmer friends, the wonderful chain of Galloway Factories stand the largest in the world, manufacturing and selling farming implements of every kind that are all sold direct to the consumer.

Still Mr. Galloway was unsatisfied:

He wanted to do for the farmers of Canada what he had done for his friends of the States.



Now Ready

FREE if you mail the Coupon



I'll Save You Big Money

Wm. Galloway, President

Galloway's Price Wrecking Spring Catalog

Friends, listen! If you want the secret of lower cost of living, send for this book today. It is a masterpiece of war time price-making and is filled to overflowing with everything possibly needed on the farm. It is a **QUALITY** book of the highest order, and not to be compared with the ordinary mail order catalog.

Wearing Apparel Merchandise

For Women, Misses and Children—Exclusive styles—latest New York models in Coats, Suits, Dresses, Skirts, Shirtwaists, Underwear, Whitewear, Hosiery, Gloves, Etc.—and all at prices that, quality considered, will mean an actual saving in cash of many dollars to you.

For Men, Youths and Boys—Just what you are needing in Spring and Summer wear—overcoats, Tailored Suits, Trousers, Hats and Caps, shirts, Underwear, socks, Gloves, etc. Anything and everything in great variety for your choosing. We promise you a big saving on quality guaranteed merchandise.

Boots and Shoes for All

Yes, for everybody—Men, Women, Misses, Boys, Girls, and the Babies. Shoes of the highest quality, both American and Canadian made. Work shoes, Dress shoes, school shoes, shoes for Walking, Dancing, Riding, Plowing, for Barn Yard Use and every other imaginable purpose. Not the ordinary kind, but **Specials**—made for Galloway—and all at the usual Galloway price saving.

Don't Delay—Send the Coupon Today

The Wm. Galloway Co. of Canada Limited
PRINCESS AND BANNATYNE STS., WINNIPEG, MANITOBA



Galloway Close Skimming Sanitary Cream Separator

The machine that brings a pay check every week of the year. The peer of them all. Let the big free book tell you all about it.

It also illustrates and describes the great Galloway Line of Masterpiece Gasoline Engines, Manure Spreaders and many other farming implements that you must have to get the full returns from your soil. I will save you money and give you besides, the highest quality ever obtained in farm machinery.

ENCLOSE THIS COUPON IN YOUR LETTER

Wm. Galloway Co. of Canada Limited, Winnipeg: Please send me absolutely **FREE**, postpaid, the big Catalog illustrated above, as advertised in the Canadian Thresherman and Farmer.

Name

Address

And he did it! He started three years ago, and the business has grown by leaps and bounds until to-day he offers his Canadian friends his big Spring 1917 Price Wrecking Catalogue that you see illustrated on this page—the equal—and superior in many ways—of the one he issues in the United States.

This book contains not only the complete line of Galloway Implements, but everything in the way

of wearing apparel, for men, women and children.

The boot and shoe department is especially complete, and contains as fine a line of both American and Canadian made footwear, as can be found anywhere.

As Mr. Galloway says "You can't fool the farmers. Quality and price speak for themselves, and when they get my book and make comparisons, the orders come to 'The House that Divides

the Melon with its Customers.'"

The Book is free if you fill out and send the coupon, and it will pay every living Canadian farmer to have one in his home if for no other reason than comparison.

The Book will be sent you post-paid. Just fill out the coupon and enclose it in your letter and mail it to the Wm. Galloway Co. of Canada, Limited, Department 17, Winnipeg, Manitoba, and you will receive it by return mail.

How Far North Can We Farm?

By AUBREY FULLERTON, in "Canadian Countryman."

THE time was not so very long ago, when the average Canadian farmer looked upon the wheat belt of the prairie provinces as the limit-country. It was far away from Nova Scotia and Ontario, to be sure, and the pioneers who went there seemed venturesome if not foolhardy; but in a comparatively few years we have outgrown that end-of-the-earth idea about the West. Everybody knows that now the agricultural belt has widened out still more to Peace River and thereabouts, which is considerably further from Manitoba than Manitoba is from Bruce County. Peace River farmers are, in fact, shipping wheat now to the outside market, and milling flour of their own; and there seems to be a likely prospect that in that northern district, a thousand miles north of the international boundary, will be soon one of the finest and richest farming countries in Canada.

But there is a beyond even to this. Farming in Canada will not reach its limit of latitude when Grande Prairie and Peace River have filled, for still farther north is the untouched Mackenzie River country, whose agricultural possibilities are seldom recognized because they have not yet been needed. The facts are these: In the valley of the Mackenzie, from Lake Athabasca to the Arctic Ocean, is a tract of land a thousand miles long and at least thirty miles wide on each side of the river, much of which is potential farming country of a very good kind. Its soil is fertile, and is practically the same alluvial loam that characterizes the heavy-crop lands of the southern prairies. Generally speaking, it may be assumed that the areas now covered with natural forest will make good farming land, and the wooded tracks east of the Mackenzie which extend to a width of from twenty to forty miles, to the edge of the Barren Lands, and west of the Mackenzie to the mountains. Like most other wooded country, this valley belt is varied with occasional open spaces, not all of which are promising from the farmer's point of view, but some of which undoubtedly are.

Markets are Distant

It is not to be understood that this tract of sixty thousand square miles of sub-Arctic farming country will ever figure very largely in Canada's farm export business. Whatever else happens, the distances must remain, and far-North crops would have a long way to market, even if the railroads pushed in. Moreover, the area is

of limited extent, and subject undeniably to severe or uncertain weather conditions, which would work against the production of surplus crops. But the point is that the agricultural possibilities of the Mackenzie valley are sufficient to make it reasonably certain that its crops could support a substantial population of its own when the time came. That time will be when the vast mineral resources of the Top Country are developed, as some day they surely will be. There will then be a local market for home-grown produce, and with such a market farming in the arable parts of the long northern districts will be entirely feasible.

No one seriously expects that the wheat belt will be extended into the Mackenzie country very soon or very far. The chances, it must be admitted, are against it. Nevertheless a good deal of experimenting is being done with that possibility in view. For the past ten years wheat has been grown on the Peace River, six hundred miles north of Edmonton, and at about the same latitude as Lake Athabasca. Recent reports show that nine varieties of wheat sown at the Dominion Government station matured in from one hundred to one hundred and twenty days, and yielded from thirty-nine to fifty-eight bushels per acre. From these several varieties there will in time be produced a wheat sufficiently hard for the country another remove beyond.

As a matter of fact, some wheat has already been grown at Fort Providence, above Great Slave Lake, and for a period of years has ripened about the last of August. At Fort Simpson, however, which is the next point north, it will not ripen. A little past latitude 61 may therefore be taken as the limit of wheat culture, unless the Government's experimentation yet produces some new Arctic variety.

Barley is more properly a far-North crop. It grows well at all points along the Mackenzie as far up as Fort Norman, latitude 65, and has even ripened at Fort Good Hope, close to the Arctic Circle. At this latter height, however, the frost belt comes dangerously near. Barley is sown from Athabasca to Fort Norman about May 20, and is ready for harvesting by the middle of September. Almost invariably, in normal years, the quality is equal to Ontario's best.

The Mackenzie valley is a mixed farming country, and gives excellent vegetable crops con-

In 1917 as Never Before You Need a

STEWART SHEAF LOADER



This machine has no equal in replacing human hands and horse-flesh at harvest time. It is driven and controlled by one man, and does the work of all field pitchers. It does so much and saves so many hands, it often **PAYS FOR ITSELF IN ONE SEASON.**

HUNDREDS OF TESTIMONIALS LIKE THIS FROM F. J. COLLYER, WELWYN, SASK.

"The machine has given good satisfaction, enabling us, with four stook teams and a spike pitcher, to do what previously required seven stook teams and four pitchers in the field. In addition to these advantages there is appreciably less waste from loose sheaves and shelling than with hand pitching."

Think of the Price of Farm Labor and

Write for our big book of testimonials and read for yourself what hundreds of prosperous farmers think of the

Stewart Sheaf Loader

WHEN PLACING YOUR ORDER FOR A

Grain Separator in 1917

You will find it to your advantage to order one that is made by the

Stewart Sheaf Loader Co. Ltd.

We are builders of Separators in several sizes, which are sold by a number of the leading Western Canadian jobbers and distributors. These machines are all built in our own factory, and are marketed under the name of the concern selling them. They are a standard product, built on the most approved lines to meet the conditions of the Western Canadian Farmer and Thresherman.

BEING LOCATED IN THE WEST, WE UNDERSTAND WESTERN CONDITIONS AND ARE BUILDING SOME HUNDREDS OF THESE MACHINES THIS SEASON.

In purchasing a Separator that is made by us, you are getting a machine that for **light running, durability and grain-saving qualities** is among the best. Being built in Western Canada you are assured of **better delivery and service**, both on new machines and on repairs.

Be sure to ascertain whether the Separator you buy is made by the

Stewart Sheaf Loader Co. Ltd.

WINNIPEG - MANITOBA

siderably beyond its grain limits. There have been only slight attempts to raise potatoes at Fort Macpherson, which, it must be remembered, is within seventy miles of the Arctic Ocean, but at Fort Good Hope potatoes, cabbages and such-like are grown quite successfully. It may be said, in a general way, that the Arctic Circle is the northernmost limit of farm produce vegetation—but that is saying much, is it not? To know that our agricultural possibilities reach that far point on the map is to size up farming in Canada on a larger scale than has been.

At practically every point between Athabasca and Fort Good Hope are vegetable gardens, the range of crop in which is very much the same as on the down-east farms. Not potatoes and turnips only, but onions, lettuce, peas, rhubarb, and even tomatoes figure on the home-made menus of the people up north. These usually grow to a good size, and are well flavored, though unfavorable conditions in a particular season may give a set back to all the garden stuff. Normally the growth is rapid, prolific and fruitful.

The explanation of all this far-northern vegetation is the excessively long sunlight of the Top Country. In this region of almost all-night days, where there is hardly any darkness, and one day runs into another with scarcely a break between, the sunlight is persistent. Actual records show that at Fort Simpson there are 570 hours of sunlight in June and only twelve hours less in July. Fort Macpherson has 720 hours in June, which means that at that topmost point it's day all the time. In the four months from May to August, there are at Simpson, which may be taken as a fair medium, 2,147 hours of sun, as compared with 1,805 hours at Ottawa. It is little wonder that growth is quick.

There is still another region of the far North that has some agricultural possibilities, though admittedly of a much more doubtful kind. East of the Mackenzie,

away over toward Hudson Bay, and Hanbury, flowing through are two good rivers, the Thelon what is known as the Barren Lands, but bordered nevertheless with stretches of timber land and potential farming country. No attempts to farm this country have been made, for it is quite unsettled, and in any case only a very limited degree of agriculture could ever be possible in it.

It is worth noting, however, that the great Arctic prairies around and beyond these two rivers have a productive value in a way of their own. Though they are the so-called Barren Lands, they are barren only in the sense that they are treeless, for immense tracts of their total half-million square miles are covered with a heavy growth of wild grass, to say nothing of flowers and berry patches. Just as the plains of the Peace River and Grand Prairie countries are spread with a rich profusion of native hay, from which abundant crops have been harvested, and upon which thousands of cattle and horses have grazed, so the empty lands to the east are richly spread with as fine a grass crop as can be found in America. Their natural pasture grounds would be the envy of any southern packer, for that vast stretch of hay land would support and fatten almost countless herds of beef cattle. As it is, the caribou or Arctic deer have it all to themselves, and roam at will over its limitless plains in bands of sometimes a dozen or two, sometimes many thousands. Even if the cattle raising idea should never prove to be feasible in this great pasture land, the time may not be so very distant when we shall need to draw upon the animal resources it already has to make up our national meat supply. We shall see then, if not sooner, that Canada has little waste or useless land.

Ethel—"You make love like an amateur."

Jack—"That's where the art comes in."



Shearing Time in Scotland—Packing the Fleeces.

THERE IS AN ENORMOUS DEMAND

—FOR—

R

SPRING
Everybody is growing Rye in 1917. Farmers are buying it this season in place of Barley as it costs less per acre to seed. There is a more profitable market for Rye. Per Bus
Brandon 1.85
Calgary 2.00
Bags 30c extra

Y

WINTER
This is the year to grow it. Cheaper than wheat. Fine for eradication wild oats. Affords abundant fall pasture if sown in June, and yields heavier grain crop the following year. Oats is the true stock. Per Bus
Brandon 1.90
Calgary 1.80
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E

We are the Largest Distributors of this Grain in the West. Farmers are also going in strong this year for OATS, FLAX, CORN. We have the Stocks. We have the Quality. The Prices are Right.

Our 21st Annual Seed Catalog—"The Red Guide Book for the West" tells about the choicest and most suitable seeds for Farm and Garden. Write for copy TO-DAY.

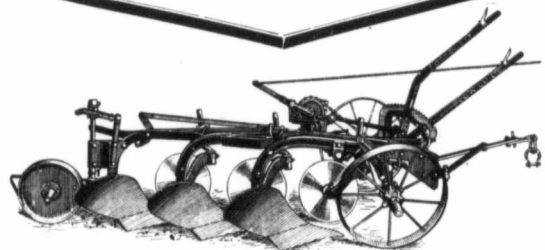
A. E. MCKENZIE Co., Ltd. BRANDON, MAN. CALGARY, ALTA.
Western Canada's Greatest Seed House



"It pays to pay for Cockshutt Quality."

COCKSHUTT
Light Tractor Plow

It's not a makeshift. It's BUILT for Light Tractor work. Our engineers have long foreseen the need for just this type of plow and here it is—we've done the experimenting—not you. That's the Cockshutt way.



All You
Do Is Drive the Tractor

Two, handy, easily-worked levers—one regulates the depth and one levels the plow—and a rope by which you raise or lower the bottoms are all the "works." A boy could run it if he could run the Tractor. The Cockshutt Light Tractor Plow will handle any Western soil, with any make of Tractor. It has simplicity, light draft, compactness and the giant strength you need for good, sure work.

Let us send you our new, illustrated folder. You'll be delighted with this Plow. Write to-day to our nearest branch.

Cockshutt Plow Co. Limited

WINNIPEG REGINA CALGARY SASKATOON

For Names and Winners of our Big Automobile Contest just closed turn to page 61 this issue. Count just completed. Full particulars May number.

Blacksmithing

Continued from page 12

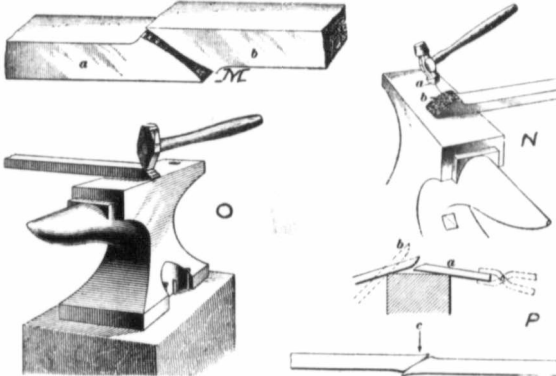
borax are very good fluxes for iron alone; but it is well to have a flux that can be used when welding steel to iron. A very good flux for welding steel to iron is made of potter's clay, wet with strong brine. This dried and powdered and used like sand or borax. Another good flux that is not too fluid, and does not injure steel, is made by mixing 3 ounces of carbonate of potash also called pearlsh, with 1 ounce of dry clay. This is heated in an iron pot, and when hot, 4 ounces of calcined borax is added. When cold, it is powdered, and is then ready for use.

CLASSIFICATION OF WELDS

Names of Welds

The different kinds of welds are named according to the manner in which the pieces are put together; the principal ones are scarf welds, butt welds, lap welds, cleft welds and jump welds. The selection of the weld to use depends on the form of the piece, the forces it is to resist, and the equipment for making the weld.

The scarfed ends of both pieces having been brought to a welding heat, and fluxed if necessary, the welding is made as follows: holding the shorter piece with the tongs in the right hand and the longer piece in the left, the scarfed faces of both being downwards in the fire, draw both out of the fire and give each a sharp rap on the edge of the anvil to remove any coal or other substance that may adhere to the heated surfaces. Next bring the shorter pieces to the position on the anvil shown in at (a) Cut (P) and follow with the longer piece, bringing it to the position of the dotted outline (b) then, without losing contact between the longer piece and anvil, bring (b) down on (a) as shown in Cut. The contact of (b) with the anvil assists in controlling its movements. When (b) is placed on (a), a slight pressure on it will hold both in relative positions while the tongs are dropped and the right hand relieved so that the hammer may be taken and a light blow delivered in the direction of the arrow (c). As soon as the pieces stick together, the ends of the scarf



Scarf Welding

In the scarf weld, the two pieces are scarfed; that is, they are thinned down, as shown in Cut (M). If the iron is of uniform thickness it is first upset at the point at which the weld is to be made in order to gain a little in thickness; after this, it is scarfed.

To do this, the upset end is thinned down, generally with the peen of the hammer, drawing it out thin at the point and crowding the metal back at the stock by drawing the hammer as shown (a) in Cut (N). Sometimes the end of a flat bar, after being upset, is tapered or scarfed by using a fuller, as shown (b) Cut (O). This is a quick and effective way of doing it. The faces to be welded should be rounded and made higher at the center, as shown in Cut (X) so that the pieces first come in contact at this point, in order to give the slag and impurities an opportunity to squeeze out as the weld is being closed.

may be brought down by delivering a few light blows on one side, and then the piece turned over and the other side struck in the same manner before it has cooled below the welding heat. If the scarfs are made too long, it increases the surface to be welded and entails useless labor.

Benzine and Alcohol

Even before the war considerable attention had been given to the substitutes for gasoline in Germany, but the scarcity of this fuel of late has compelled the use of other fluids, with the result that at present benzine and alcohol are very generally used, motors having been altered so that they use one, or both, of these fuels successfully. The results have been so satisfactory that it is predicted that after the war the use of these fuels will be very generally continued, especially in commercial vehicles.

BARGAINS TRACTORS AND PORTABLES

LOOK at these for Bargains that cannot be duplicated anywhere.

GASOLINE TRACTORS

45 h.p. 4-Cylinder Tractors (rebuilt) like new.

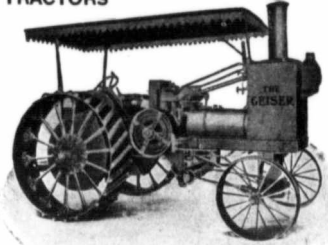
Cash... \$1200

45 h.p. 4 - Cylinder Tractors, second-hand, good order.

Cash... \$1000

8-16 h.p. Single Cylinder Tractor, Manitoba Universal (used for demonstrating only).

Cash... \$600



PORTABLE GEISER GASOLINE ENGINES

22 h.p. Single Cylinder, on strong truck (new).

Cash... \$600

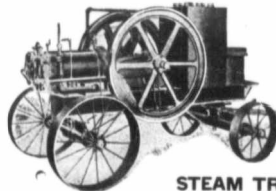
22 h.p. Single Cylinder, on strong truck (rebuilt).

Cash... \$550

20 h.p. Single Cylinder, on strong truck (rebuilt).

Cash... \$500

Also have a couple of 20 and 22 h.p. Portables which will rebuild and sell at about \$350 each.



STEAM TRACTORS

35 h.p. Double-cylinder Geiser (rebuilt). Cash... \$2000

25 h.p. North-West (rebuilt). Cash... \$1000

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15 h.p. Standard (new) \$328.75 12 h.p. Standard (new) \$306.50

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36-56 Geiser Separator, with Feeder and Blower (rebuilt like new). This is a great bargain. Cash... \$800

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The Townsley System

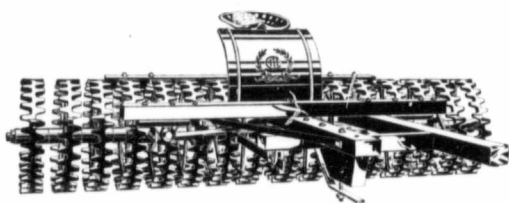
Will Guarantee Protection From Electric Storms

You will also save the cost of thorough protection by reduction on Insurance Rates, if your buildings are rodded by the TOWNSLEY SYSTEM of Lightning Protection.

NOW is the time to make inquiry as to how, at an infinitely small cost, you can safeguard the lives of your family, your live stock and your property. Write us for full particulars—refer to "The Canadian Thresherman and Farmer."

See page 50 of this Issue of this Magazine for some Startling Particulars

Canadian Lightning Arrester and Electric Co., Ltd.
BRANDON, MAN.



International Land Packer

A Simple But Necessary Tool

A LAND PACKER, simple as it appears, must be built right if it is to last and do good work. All the details of good construction are carefully worked out in **International** land packers. The rims of the wheels are so shaped that they pack the soil firmly around the newly planted seed, yet leave a loose granular mulch on the surface that holds the moisture in the ground. The frame is exceptionally strong. Each wheel is independent of every other, allowing the packer to be turned easily on the corners of the field. The oiling system is simple and easily handled. Each wheel has

its own removable bearing bushing which is easily replaced when worn, keeping the bearings like new all the while.

The **International** land packer is a necessity on many Western Canadian fields because it does at one operation what nature requires days to do—it firms the soil around the field, and encourages early, strong germination. The tool is made in two sizes, 16 and 22-wheel, for use with three and four horses. Can be equipped with fore-carriage. Sold by local agents.

Catalogues giving full information will be sent out promptly on request to the nearest branch house.

International Harvester Company of Canada, Limited

BRANCH HOUSES:

West—Brandon, Man.; Calgary, Alta.; Edmonton, Alta.; Estevan, Sask.; Lethbridge, Alta.; North Battleford, Sask.; Regina, Sask.; Saskatoon, Sask.; Winnipeg, Man.; Yorkton, Sask.

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Studies in Small Tractors

Continued from page 14

in the small sizes and none that use oil. In large sized tractors, oil has been used quite extensively. Oil is not so good as water to draw heat from the cylinder, but it has the advantage of not freezing or depositing scale.



Road Making with a 2-plov size

Only one company, in the small sizes, makes hopper or tank cooled motors. However, this one company has put out more of this type than the combined output of three companies. It is the simplest system of tractor cooling and has been used a great deal in stationary farm gas engines. The hopper cooled tractor has many advantages, and it is a safe prediction that more of this type will appear on the market. From the experience of a number of farmers, it has been found that approximately four gallons of water are used for every horse power in ten hours with hopper cooled tractors.

The hopper cooling system is simple and, because there are no pipe connections nor pumps, no

trouble is caused. It, also, has the advantage of being cheap, yet efficient.

The system more commonly accepted by manufacturers is the radiator system such as is used in the automobile. Under this plan we have the thermo-siphon and the forced circulation. Thermo-siphon cooling is used by only a few companies. It is claimed that this method of circulation is not so rapid as to cool the cylinders and hinder ignition.

In the forced circulation system, the radiator is located near the motor as in auto practice. Pipe connections lead from the bottom of the radiator to a pump, either geared or centrifugal, thence to the cylinder jacket at the bottom, and from the top of the jacket to the top of the radiator. The pump



A Small Tractor doing a good job.

forces the cooled water up through the water space around the cylinders back to the radiator.

Most radiators on small tractors

FROST KING
HOYT METAL CO. TORONTO

BEST
ANTI-FRICTION
BABBITTS
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With forty years' experience in manufacturing alloys for all classes of machinery, the HOYT METAL CO. has evolved two alloys which are unsurpassed by anything of the kind now in use.

HOYT'S NICKEL GENUINE Babbitt is especially designed for heavy duty gas tractors.

HOYT'S FROST KING Babbitt is especially designed for threshers, separators and stationary engines of all classes.

If your dealer does not carry these metals in stock, send your order direct to us. In order to insure prompt delivery, send postal money order.

<p>Nickel Genuine</p> <p>Less than 25 lbs. 75c per lb.</p> <p>25 lb. box 70c per lb.</p> <p>55 lb. box 65c per lb.</p>	<p>Frost King</p> <p>Less than 30 lbs. 40c per lb.</p> <p>30 lb. box 37c per lb.</p> <p>60 lb. box 35c per lb.</p>
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FACTORIES—London, Eng.; Toronto, New York and St. Louis.

Steam or Gas Tractors

Equipped with



give greatest efficiency

FITTED TO EVERY BUILD OF ENGINE

Patent Ball Ranger Speed Changer Supplied on all Genuine Pickering Governors.

Will increase speed 50% or more.



THE PICKERING GOVERNOR CO.

PORTLAND

CONN, U.S.A.



are similar to automobile radiators except that the fan and radiator are much larger. This is called the closed type of radiator because the cooling air is separated from the water by metal walls.

Pure water should be used if possible for cooling. In many sections of Canada and the States, there are mineral salts in solution and in many places these salts are precipitated by heat at temperatures lower than the boiling point. Then, there is lime that forms, hampering the circulation and decreasing the efficiency of the radiator because scale is a poor conductor of heat. If possible use rain water. If good water cannot be obtained, the water at hand should be analyzed by a chemist who can advise how to purify it. Freezing of hoppers and radiators is very common and serious. Alcohol is very good for making an anti-freezing solution.

The cooling system demands attention, the same as the rest of the tractor. Many tractioners forget about the fan belt to keep it tight

and forget to carefully oil the fan bearing. Slippage of the fan belt will cause the cylinders to heat excessively in a short time.

Proper cooling is of great importance and the purchaser should assure himself that on the machine he is buying this important item has been carefully worked out.

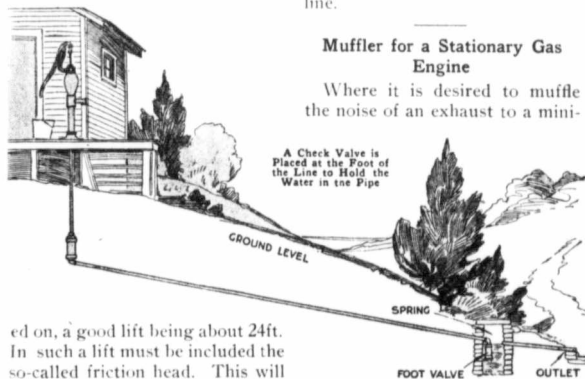
Summary of the Light Tractor

Notwithstanding that many writers have said that the small tractor is a failure, the writer believes that it is a success. It is a new machine and there are many problems yet to be worked out. The modern farmer knows what he wants and he demands a successful small tractor. The way they are buying small tractors in large numbers, now on the market, proves their confidence in those already offered. The large and medium sized tractors have their places in farming, but the need of the small tractor is greater because it affects more. This need and demand is being met by a large number of very successful machines.

Pumping Water from a Distance

Considerable time and labor can frequently be saved if, in supplying water from a well or spring, the pump is placed in a convenient spot near or at the place where it is to be used. It is necessary in figuring on such a location to determine the probable lift of the pump. In a perfect vacuum, a column of water can be lifted 34 ft. at sea level, but as it is impossible to create such a vacuum in a pump barrel, a smaller lift must always be figured

tight, for if air enters, the vacuum of the pump will be spoiled, and its operation interfered with. Every pump suction line should be provided with a foot valve near the extreme end, to prevent the water from leaving the line when once drawn into it. For short, straight lengths, a foot valve may be dispensed with, but in longer lines, especially those over 20 ft. the pump cannot be operated without a foot valve close to the bottom of the suction line.



Muffler for a Stationary Gas Engine

Where it is desired to muffle the noise of an exhaust to a mini-

A Check Valve is Placed at the Foot of the Line to Hold the Water in the Pipe

ed on, a good lift being about 24ft. In such a lift must be included the so-called friction head. This will cut down the actual height the water can be raised, depending on the size and length of the pipe, and the number of bends and fittings. A small pipe and numerous fittings can cause sufficient friction to cut down the available lift to practically nothing where, if a straight line of large pipe were substituted, a considerable lift might be obtained. It is necessary to have all connections

mum, use a barrel set in the earth and filled with small stones about the size of cobble-stones. Dig a hole and set the barrel—an oil or sugar barrel—below the surface, then run the exhaust into it from the bottom. A short piece of pipe at the end is capped and the body drilled full of small holes. A large opening should be provided at the top for the discharge of the burnt gases

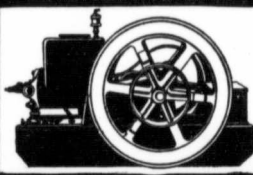
TALKS ON TRACTOR FUELS

By The Imperial Oil Company, Limited

MANY tractor farmers had good success using kerosene for fuel last year. Kerosene is cheaper than gasoline, it is more powerful. If you have not used kerosene before, try it this year. Ask your manufacturer for suggestions. Whether you use kerosene or gasoline, the best place to get your fuel is at an Imperial tank station.

500 prairie stations, one of them near you, will sell you SILVER STAR KEROSENE, ROYAL-ITE COAL OIL or PREMIER GASOLINE.

DREADNAUGHT



ENGINES

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Sirs—
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Have your broken or worn out ones made as good as new by our process. Your blacksmith or repair expert can do this work for you. See him about your broken castings. If he does not own an Oxy-Acetylene Welding Plant write us, giving his name. We are the pioneers of this process, and we will show him how we can save him both time and money.

L'Air Liquide Society 1207 PINE STREET, WINNIPEG, MAN.
Largest Manufacturers of Oxygen and Welding Plants.

Leaky Piston Rings

The named power of an automobile or gas engine defines the amount of work it is able to do.

Properly operated, the engine may be expected to produce this power, but only for so long as every component part of it is faithful and efficient in the performance of the particular function for which it was designed. A defect in any part is a defect of the whole and no better or plainer proof of this fact can be found than in its application to piston rings. Faulty rings will counteract the highest grade fuel, the best carburetion and the most exact valve action.

Where compression is poor the explosion is weakened and the horse power of the motor reduced. There is no escaping the consequences of poor compression, and you cannot get good compression where badly fitting, improperly designed piston rings are used any more than you can hold air in a punctured tire.

The comparison is perfectly logical. Compressed gas in the cylinder heads acts just as compressed air in an inflated tire. The weak point is discovered and the attack concentrated upon it. The results of this are more vividly brought to your attention in the case of the tire—in the case of the motor they are apt to be overlooked until the leakage reaches such proportions as to seriously cripple it.

The weak point in the engine is the piston ring. The ordinary type of ring most in use is not much more than a makeshift after all. It is wrong in design and inefficient in action. Only when perfectly new when its spring is at its best does it really succeed in obtaining proper compression. Its bearing on the cylinder wall soon becomes unequal and the gas begins to blow past it. This ring, known as the one-piece ring, has another serious defect in that the openings of a set of rings on one piston head will often shift around into alignment which provides not only another way for gas to escape but permits surplus oil to get up into the combustion chamber, causing carbonization with all the troubles that result therefrom.

Piston rings should be inspected not alone when the general car overhaul takes place, but whenever engine trouble, due to faulty compression, develops.

Lovers used to serenade a girl by standing under her window and playing a guitar; but nowadays they merely sit in front of the house and call her by tooting an automobile horn. And she comes just the same.

Massey-Harris Service

Talk No. 1.—The Value of Permanence

THE name "MASSEY-HARRIS" stands for Stability, for Permanence, for Reliability. From a very small beginning *seventy years ago*, the business has steadily grown until now four large Canadian factories are kept busy supplying High-Grade Farm Implements to thousands of farmers all over the grain-growing world.

This steady growth has been due entirely to the fact that Massey-Harris Implements have given satisfaction not only for a few years but for many years. We have in our office testimonials and photos of Massey-Harris Implements which have been in use for twenty to twenty-five years and *still doing good work*.

The experience gained in these seventy years of supplying progressive farmers of Canada and other lands with implements, and the knowledge secured by our large force of field experts who are constantly studying the farmers' needs, combined with our splendid facilities for manufacturing, enable us to produce a line of Farm Implements known the world over for their reliability.

In buying Massey-Harris Implements you not only get the

best value that long experience, the best of materials and unsurpassed facilities can produce, but in addition you get *Service* backed by an organization whose permanence is unquestioned.

The advantages of dealing with an old reliable Company selling its products through its own representative in your neighborhood, are many. There is no freight to pay, the machine is carefully erected, and a responsible machine man sees that it is properly started and is doing the work for which it is intended.

You pay no money until the machine is in your hands, and you have the satisfaction of knowing that there is a representative of the Company within easy reach to render prompt and efficient service such as can only be furnished by the manufacturers.

Our extensive Factories and ten Branch Offices located at strategic points throughout Canada, are a guarantee of service, both now and for the future.

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Applications should be sent immediately to the Circulation Manager,

E. H. HEATH CO., LIMITED, WINNIPEG, MANITOBA

Road Drainage and Foundations

By GEO. W. COOLEY

State Engineer and Secretary of the Highway Commission of Minnesota.

MOST foundation troubles are caused by difficulty of drainage and although the value of proper drainage is admitted by all, it is a fact that road engineers—and superintendents will in many cases fail to provide for the elaborate drainage necessary to a proper foundation, for the reason that funds are limited and expensive drainage work reduces the amount of available funds for providing a suitable surfacing. This applies particularly to the great mileage of main rural roads on which there is an insistent demand by road users for surfacing, with impatience at delay or restriction of work on account of the cost of providing proper foundations.

So much has been written on the subject of road foundations that the whole field of investigation has apparently been covered, but in any work of construction, there may appear some detail or condition for which there is no precedent and which must be met by the ingenuity or ability of the engineer or superintendent in charge. As such problems are generally encountered on the improvement of county and local roads, and are apparently of such minor importance that the information is not published or disseminated, a better general knowledge of this work can be obtained by a meeting at least once each year of those in charge of road work throughout each state. It is the lack of attention to details of drainage and foundation work which causes many of the failures of road surfaces, and the relating of experiences at a meeting of those actually in charge of work, with technical advice from proper authorities, would go a long way toward securing more permanent construction.

We hear a great deal about permanent road work, meaning particularly the different kinds of road surfaces, but experience has taught that the most necessary part of road construction is the foundation and that the adequacy of the foundation controls to a great extent the life of the pavement or surface.

The drainage of a road must be complete. While the cost of carrying water away from the side ditches of a road often seems prohibitive, the expense is always warranted by the better construction obtained. When impossible to provide complete drainage the elevation of subgrade of the road should be at least 2½ ft. above possible high water.

In the Middle West, surface

drainage will generally suffice, and a proper design of road section in such cases requires gutters from 1½ to 2½ ft. below subgrade, the variation depending upon the character of the soil. Gutters on grades exceeding 5 per cent should be paved, and in any case, water should not be carried in road gutters farther than is absolutely necessary.

In providing for cross drainage only permanent, substantial material such as concrete should be used, for the failure of a cross culvert will not only block drainage, but will damage the road surface and may cause accidents.

In heavy soil, which appears to be saturated, or in which there is seepage, it is advisable to place drain tile. Tile should be so laid that it will intercept the ground water, and it is frequently necessary to place a line at each side of road with leaders or branch lines from the center of road at 50 ft. intervals. This construction is required on sidehills which develop springy conditions. Rock filled drains are also used successfully on sidehill work, but are not as efficient as tiling on account of their liability to become partially clogged by sand deposits.

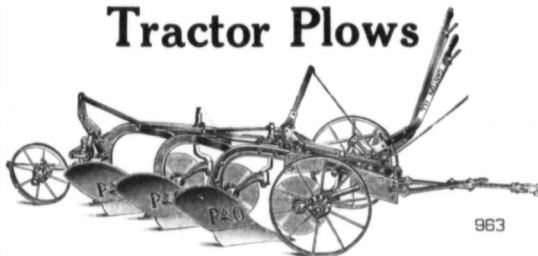
In undeveloped swamp country, the most permanent work is obtained by building the embankment from excavation of a dredge ditch on the upper side of road with an auxiliary road ditch on the lower side. When swamps have soundings of from 2 to 5 ft., the grade line of dredge ditch may be disregarded, excepting as to minimum depth.

In the construction of swamp roads, the top soil is spread first and then sufficient firm material is excavated to provide a substantial foundation. These ditches are dug with practically vertical sides in order to secure the maximum amount of firm material from the bottom, and are of sufficient size to allow for necessary drainage after the breaking down of slopes. The low points in the ditch, where deeper excavation is required to secure material, will fill with sediment after a year or two. It sometimes appears extravagant to make such large ditches on road work, but in new country, lateral drainage is always carried to the road ditches, and should be provided for in advance. There is not much difference in cost, however, between hand ditches and a large dredge ditch on account of the lower unit cost of machine work.

After drainage is secured, the important points in road founda-

P & O

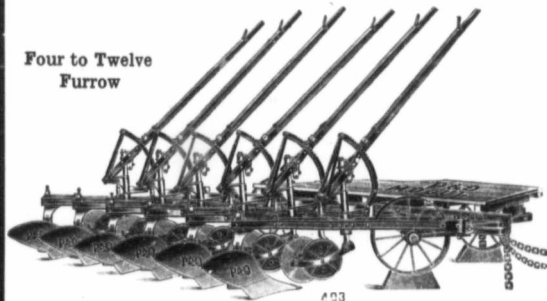
Little Genius Power Lift Tractor Plows



The P & O Little Genius can honestly claim first place as the ideal plow for small tractors. It is light in draft, constant under extreme conditions, easy to handle, durable, and above all, efficient. Tractor plowmen all over the world are enthusiastic in their praise of the P & O Little Genius. Made in 2, 3 and 4 furrow. Any of the standard P & O types of bottoms can be furnished.

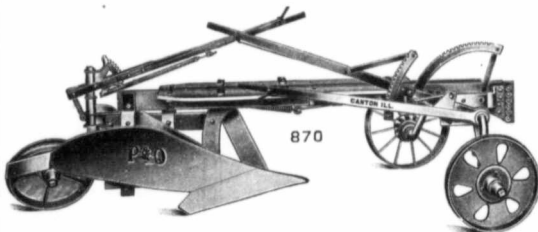
Mogul Lever Lift Plows

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For the larger outfits the P & O Mogul Traction Engine Plow in six sizes, to suit your power. These plows are known all over Canada for their great strength, easy handling and efficiency. If you are looking for a large plow you owe it to yourself to investigate this one.

P. & O. Power Grub Breaker



A great big plow for a great big job. Cuts a 24 inch furrow, 12 inches deep. Weighs over a ton. It will help you to reduce that brush swamp, or reclaimed land, to a state of cultivation. Cuts through heavy roots, and has even gone through fair sized stumps. No engine will pull this plow to pieces—it is built to stay together and it stays.

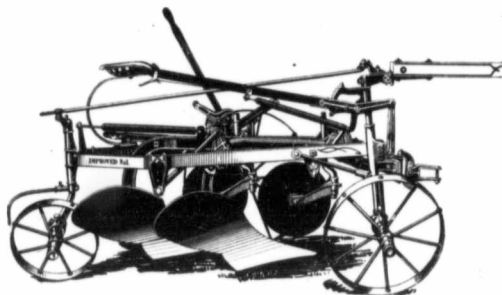
Write for catalog "P. & O. Tractor Plows."

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LIVER plows led the rest as long ago as the "50's" in the last century. Ever since they have been kept at the top level, building up plow confidence in the farmer. These words are to remind you that **Oliver** plows are, as usual, the latest and best, improved types, of great strength, light draft, of close adjustment, and easy to operate.

Oliver Improved No. 1 Gang should have your close study—it is the important plow for the coming season. It is shown here. You will need our new catalogue to appreciate its many good points—these for example: The beams are landed, distributing the pull equally on both beams, avoiding twisting strains, making plow steadier, giving more room for horses to walk abreast. The lift device, quick and powerful in action, raises plows or forces them into hardest ground instantly. Perfectly straight furrows and straightening of crooked furrows insured because rear wheel is free to caster and to follow absolutely the landside, even though the tongue is turned to extreme right or left. The front wheel support is except-

ionally strong; the bar steel frame is double, and a bracket reinforces the frame. The rear furrow wheel is made to resist extreme landside pressure. It is made with a wide adjustment right and left to hold plows in position under all frame wear and strain. The Oliver No. 1 gang is more satisfactory than ever before.

For every buyer there is the right plow in the **Oliver** line. At your disposal are Oliver sulkies of several types, walking plows, disk gangs, breakers and cultivators. **Oliver**—a plow for any soil and any sized farm, as successful as they have been for many years.

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East—Hamilton, Ont. ; London, Ont. ; Montreal, Que. ; Ottawa, Ont. ; Quebec, Que. ; St. John, N.B.

tions are to eliminate all vegetable or perishable matter and to build up the foundation uniformly. Dragging and planing the subgrade as it is being built will prevent the waviness of surface which develops occasionally after the completion of a road, and it is advisable to place such requirement in specifications.

Surfacing with gravel constitutes the greater portion of rural road work, and a great deal of money is wasted in not properly preparing the foundation for this surface. Common practice has allowed the placing of gravel to a depth of from 6 to 8 ins. on clay or heavy soil, frequently on a newly shaped roadbed. Until compacted, this coat of gravel serves as a sponge, holding the water until the subgrade is softened, thereby allowing the material to be cut through and much gravel lost, with a consequent rutted and uneven condition of surface.

Foundations for gravelling should be firm and hard and on new work this may be accomplished by forming a crust with a mixture of 2 or 3 ins. of sand or gravel with clay subsoil, rolled to a smooth surface. On sand subsoil, it is equally necessary to have a foundation to prevent loss of gravel and in such cases clay mixture is required.

To prevent loss of surfacing gravel on sand a subgrade, where no clay was available a blanket of vegetable material has been used with complete success. In some cases this has been provided by spreading about 4 ins. of loose straw for the full width of the proposed surfacing, but care must be exercised to prevent the straw from mixing with the gravel. Muskeg or pulverized peat has also been used to advantage under like conditions.

The foundations for higher types of road surfacing, such as concrete, require even more attention than for gravel or macadam roadways. The material must not only be firm, with adequate provision for drainage, but the subgrade must be thoroughly drained out before the pavement is placed. Most of the cracking and failure of concrete roads has been due to moisture in the subgrade at the time frost sets in, and this has frequently occurred where tiling was laid and the road built during the latter part of the season.

The success of any road is dependent upon the complete drainage and uniformity of material in the subgrade or foundation, and it would seem that road authorities could well afford to devote special attention to educating the public along this line.

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The Long Straight Furrow

In round numbers there are 25,000,000 acres of land devoted to grain crops in Canada this year. Placed in one block what an immense field this would make, some 200 miles square, with an army of men and horses to first prepare for seeding then to harvest and thresh. For plowing alone there is necessary nearly a day's work for each acre. The length of furrow for the twenty-five million acres is almost beyond comprehension.

New systems of cultivation are being introduced to meet the peculiar needs of heavy or light soils, dry or humid climates, yet none of those can dispense with the plow. It is the one implement that has been associated with soil cultivation since the days of the ancient Egyptians and it bids fair to continue serving its useful purpose for many centuries to come.

The ambition of the farm boy is to be able to handle the team and turn as straight a furrow as his father. If he lives in a locality where plowing matches are held he looks forward to the day when he can compete for the prize offered. To be a poor plowman is to rest under the stigma of being a poor farmer; hence the care taken by most men in striking out the lands and keeping an even width to the furrow that will bear the criticism of neighbors.

Fine plowing does not bring its fullest reward in better harvests, though it may show considerable advantage in yield. Its most noticeable result is the self-respect it develops in the farmer himself and the added pride which he takes in his occupation.

Revival of Plowing Matches

A renewed popularity is being given to the plowing match in the past few years, which is an encouraging sign for the improvement of rural life. It has probably a deeper significance than the back-to-the land movement, although not attracting so much attention. Farmers are finding in their own work a stimulus for their best efforts.

Forty years ago large and substantial grants were given for plowing matches by the Federal and Ontario Governments and under the Agricultural and Arts Association grants were given to societies which held competitions. Under the present Act it is permissible for the agricultural associations to award premiums for matches, but for a number of years advantage was not taken of this, and not until 1911 were any definite steps taken to revive interest in these splendid educational competitions that did so

much good in the past to encourage clean farming and proper cultivation of the soil. As a result of this neglect, many districts in Ontario became overrun with noxious weeds, and farmers began to realize that something should be done to improve conditions in this regard. A large and enthusiastic meeting of agriculturists was called in Toronto in January, 1911, and the Ontario Plowmen's Association was organized. A small grant was made by the Ontario Legislature and a constitution adopted, setting forth among other things that the object was the encouragement of annual provincial, county and township plowing matches.

Since the date of inauguration three provincial plowing matches have been held, an average of 2000 people being in attendance each year. Eighty plowmen entered the competition at the provincial match last year, at which valuable prizes were offered. Only the prize winners in each class of the branch associations are allowed to compete in the provincial match.

In Manitoba about one-third of the seventy agricultural societies of the province hold annual matches during the month of June. The matches are, however, not confined to the organizations, and the Government does not hesitate to lend assistance to any organization of farmers that will comply with the rules governing plowing matches.

Ride Instead of Walk

The rapidly changing methods of farming in Manitoba and the West generally have led to changes in the rules. The walking plow has almost ceased to exist and is only used in the garden, and as a result the competition in this class is getting so small that next year it will probably disappear from the prize list altogether. The number of competitors in the sulky and gang plow classes, and for the best fitted team and plow, is steadily increasing.

Saskatchewan has also taken the matter up and under the auspices of agricultural societies or grain growers associations not fewer than forty-four matches were held in 1914 and up to June 12th of last year over sixty had been arranged for. The legislative grant that may be earned by a society for use in connection with a match is two-thirds of the prize money actually paid out, but not exceeding \$65.

To obtain the greatest benefit from these gatherings of plowmen there should be a meeting at the

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conclusion of each event at which plowing in all its relations to crop production could be discussed. Each district is likely to have a problem of its own which can be met by some modification of the general practices. For most of the Canadian West early plowing is recommended yet there may be localities where it is not so advantageous. Then there is the problem of disposing of the stubble whether by turning under or by burning.

Moisture control is in most sections the one great concern of the grain grower and this must be planned for in the preceding season. If the farmer plows late and turns under coarse manure or stubble, and the fall is a dry one, with a deficiency of snow and rain in the winter, and he undertakes to seed this land to spring wheat or other spring grain the next year, he may find that it will dry out simply because he has put rank, coarse vegetable matter between the turned furrow and under soil, and the upper soil has lost its moisture. Hence his wheat does not germinate. Whereas, he should have simply disked it and allowed it to remain until there was sufficient moisture accumulated by capillary action in the winter to enable his wheat to germinate promptly when plowed in the spring, or even if thoroughly cultivated.

The question of early or late plowing, therefore, is largely a question of the management of water in the soil. On this matter it is important for the farmer to do a little careful thinking. He must remember that there is always water in the soil, if it is fit to farm at all, if he goes down deep enough. He must remember that this water is constantly trying to move upwards to supplement the evaporation. He must remember that the thing that he is trying to do is to get enough moisture in the upper five or six inches to germinate his grain promptly, and have nothing to interfere with his getting water from below as needed.

There are times and seasons when this is not a matter of prime importance. No man in the humid section where the ground freezes deeply in the winter need hesitate to plow deep in the fall, and thus get the advantage of the winter's freezing to mellow it down; but if he intends to plant corn in his field, he makes a mistake if he allows it to lie undisked until he is about ready to plant his corn. The men who understand how to manage water in the soil are the men who succeed in western farming, whereas the man who does not understand it sometimes fails even when he has an abundance of rainfall.

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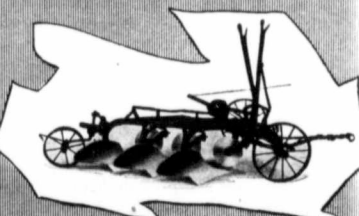
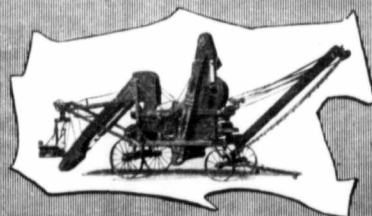
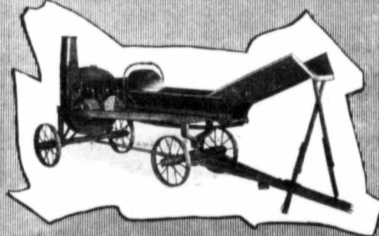
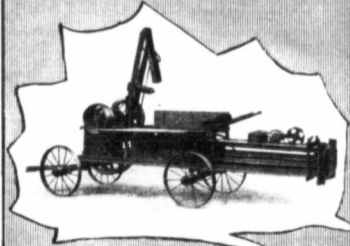
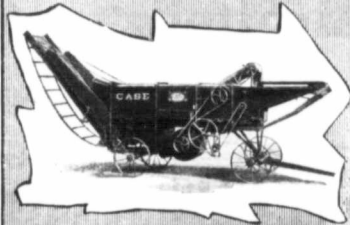
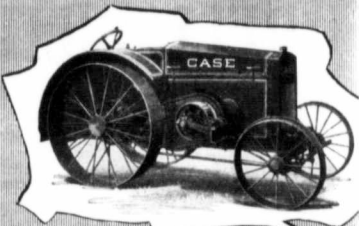
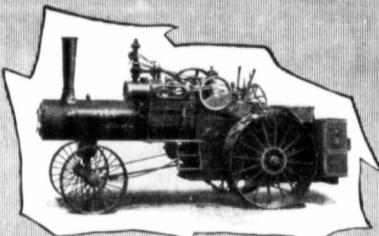
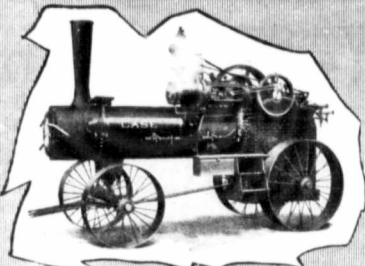
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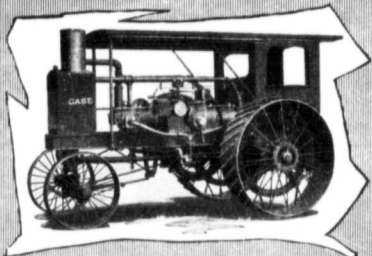
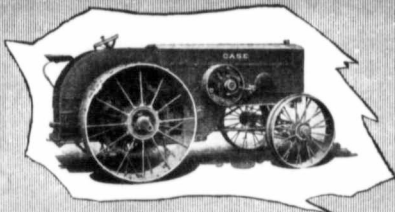
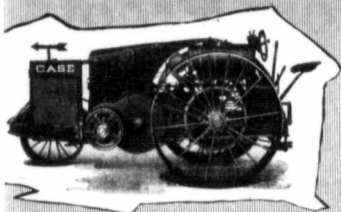
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So for those who cannot take such a trip we ask you to accept the judgment of thousands of Case users who for four generations have placed their unviolated trust in Case machinery. The best salesman is a Case owner, for Case owners are enthusiastic boosters and the good word is generally passed from farm to farm. The Case reputation is built on quality.

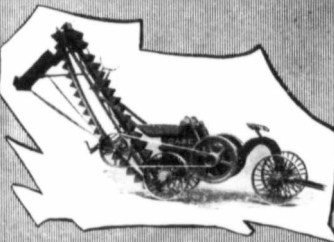
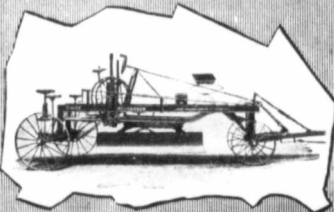
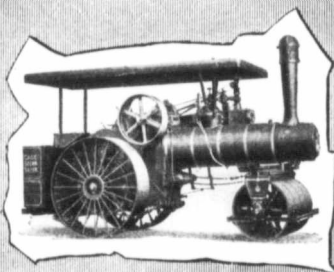
If you are interested in any of the products illustrated on this page we shall be glad to send you complete details on request. We believe it will be to your advantage to know all about Case machinery. Thousands of others have found it profitable to know all about Case products.

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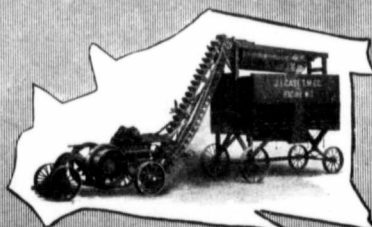
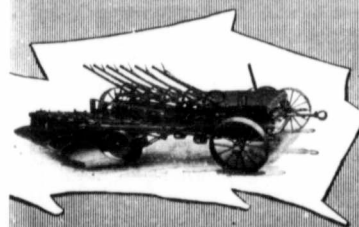
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CASE





Examination of a Horse for Soundness

By N. E. McEwen

SOUNDNESS is freedom from disease of either a temporary or a permanent character, but to recognize the various maladies and accidents to which a horse is prone requires experience, and this can only be acquired by continual practice.

When examining a horse for soundness the question must be taken into consideration as to whether he is suitable for the purpose for which he is to be used, i.e., saddle, coach, roadster, light or heavy draught. When it has been decided what class of animal is suitable for the work, it must be determined if he is sound and capable to do such work without injury to himself. To always secure a sound horse is impossible, but some horses, though not sound, may under certain circumstances be serviceable for the purpose intended.

There should always be routine in an examination; commence at the head, then the fore limbs, body and hind quarters. Never jump from examining a horse's mouth to his hock, for by doing so some

slight deformity may be overlooked. The following method of examination is very satisfactory. When the horse is led out stand off about 10 feet, walk around the animal, taking in with the eye each region and making a mental note, and confirming what has been seen by the sense of touch. Such an examination shows many weak spots and suggests what unsoundness is likely to be found. For example, a horse with a sickle hock is predisposed to curb; a straight pastern points out deformity, weakness, over-strain, or else it is a forerunner of a spavin.

The horse should next be examined for age, at the same time noting any irregularities in formation of the mouth, such as over shot or under shot, for horses with such deformities cannot be turned to pasture. Glance upward and see if there are points on the molar teeth, as these have a strong tendency to interfere with digestion. Next examine the nostrils, observing their shape and the color of mucus membrane. Pass the hand over the horse's eye to see that the sight is not impaired. Now examine the poll for fistulae and the glands of the throat for the presence of abscess. Press on the region of larynx sufficiently to



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keeps piling up every day. Seventeen years' constant use on Canadian farms have established beyond the shadow of a doubt that the "MAGNET" with its square gear drive and ball-bearing adjustments has shown no wear and proven that it will surely last a lifetime.

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TWO "MISERIES" A DAY

In the south there are a number of people who when called upon to do a disagreeable job, dodge it by saying "I am not well to-day, I have a 'misery.'" If those people lived in Canada and had to spend from 10 to 20 minutes to properly wash the bowl and bunch of tinware called a "skimmer" found in some dairies they would reply: "Say boss! I have 'two miseries' to-day."

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because its bowl is supported at both ends, cannot wobble and therefore will do perfect skimming for a life-time. Dairy men and women can avoid all "misery" by buying the up-to-date "Magnet" Cream Separator.

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produce a cough, the character of which will show whether the animal is suffering from any throat or chest trouble. Examine the jugular veins and grooves for scars, the presence of which would indicate that the animal had been bled for some reason or other.

Examine the withers and shoulders for sores. Next proceed to the extremities; first the near leg and then the off. Stand in front of the animal and compare both legs. Pass the right hand down the front of the near leg, and the back portion with the left hand, and reverse this on the off leg until the foot is reached, noting at the same time the quality and size of lines and tendons. Press the thumbs over the region of lateral cartilages and see if there is any tendency to side bones. Pick up the foot, and while the leg is bent feel the tendons and the under thigh for splints. Note also the condition of foot, heel, frog and sole. Never give a positive opinion on the soundness of a horse without removing the shoes and examining the feet for corns, suppurating heels, bruises, etc. The body is examined on each side for fractured ribs, rupture and proper castration. While doing this count the respirations and note their character.

To examine the hind legs stand directly behind the horse and compare both external points of the hips, as they are liable to be injured or broken down, then follow the same procedure as for the fore legs. Spavins, luxation of the stifle, curbs and ringbones are among the worst diseases likely to be found there.

In the examination of the hock note carefully its size, formation and any tendency to roughness. If there is any doubt it is well to hold the hock flexed a few minutes and then trot the horse away; if there is spavin the animal will go away lame.

Now have the horse trotted to see if he travels sound. While watching the animal observe and determine whether he is sound. If he is not, find out in which leg he is lame. When the horse comes towards you watch his head and ears; when going away watch his hips as well as his legs. Remember that a horse always drops on the sound leg and goes up on the lame one. After locating the faulty limb try and locate the seat of lameness. It has been proved that about seventy-five per cent of lameness is in the foot, a large percentage of horses have feet that are imperfect in conformation, and as a consequence of these imperfections, combined with improper shoeing and the liability of the foot to injury, they are especially pre-disposed to disease. Make a thorough examination of the foot, remove the shoe, tap the wall, feel for heat and tenderness.

Failing to locate the lameness there we must look elsewhere.

In shoulder lameness the animal while at rest will point the toe, flexing the leg directly under him; when driving or trotting there is limited action with a tendency to a swinging gait; he is lamer up hill than down, and also when turned short. There is heat and pain over seat of injury. The region between the knee and foot of fore limb has a host of diseases, strained tendons, ringbone, splints founder, crack corns, contracted heels, etc. It is easier to mention these diseases than to locate some of them, so we have to reach a conclusion by a process of elimination. Stifle lameness retards the carrying of the leg forward and shortens the stride, excepting in the case of luxation, where the leg is fixed in a stationary position. The hock is one of the most complicated as well as one of the most abused parts of the horse's anatomy. There are many conditions, such as bog spavin, thoroughpin, curb, etc., that are self evident, but the occult or blind spavins are more difficult to deal with. It is easy enough to determine when there is a well marked bony development, but when small or in the incipient stage difference of opinion is liable to occur. We have, of course, the history of the warming out of the lameness, that is the lameness passing away after the animal is exercised, and returning as soon as he is cooled. Very often heat can be detected on the affected limb, or sometimes a jerky movement while travelling, and there is also the strain test which is very satisfactory. The remainder of the leg from the hock down is examined in the same way as the front leg, except that we seldom find navicular disease or corns in hind legs. In the front feet we have quarter cracks and in hind feet toe cracks.

Always be extremely careful in the small things, making the examination systematically so that no deformity will be overlooked.

Nursing Sick Animals

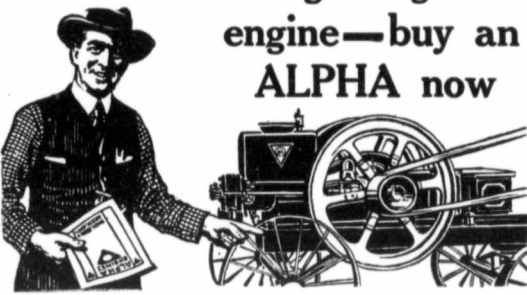
You Should Have a Box-Stall Hospital for the Patients

By E. T. Baker

THE stockman should have the same relation to a sick animal that the trained nurse has to the human patient. Often nursing is the more important factor in combating disease, and it should be done thoroughly.

A box stall about 12 by 12 feet, facing the south, will make a good hospital room. The floor may be of any material, although concrete is rather cold. A row of baled straw along the walls is useful in

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There is nothing mysterious about the superiority of an Alpha. The better design of this engine, the quality of material and workmanship that go into it, are easily seen. Every feature of this engine has in it some sound reason why the Alpha will give you better service and last longer.

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Alpha Gas Engines are made in eleven sizes, 2 to 28 H.P., and each size is furnished in stationary, semi-portable, or portable style, with hopper or tank-cooled cylinder.

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colic cases, or similar disorders which cause the animal to throw itself violently. Windows are important, for in such diseases as pneumonia fresh air is more than half the battle. A wide door should open to the outside, so that in case of death the body can be easily dragged out. It is a poor policy to use this stall for foaling or calving as it may be infected with pus germs that cause navel



The Pulse in a Horse or Cow is in the small artery, just under the lower jaw

During sickness, as a rule, a very small amount of food is required. In acute stomach and bowel disturbances no food at all should be given. In lingering cases, however, easily digested and nutritious food, such as bran mashes, raw eggs, bright hay and good oats may be fed. As in health the feeding should be regular.

To make a bran mash, scald a pail, put in a gallon of bran with a tablespoonful of salt and two or three pints of boiling water. Stir the mixture well, cover up with a thick sack and let it stand for fifteen or twenty minutes. By this time it will be cool enough to feed.

In practically every case an abundance of cool, pure water is necessary. When there is much abdominal pain the water should be warmed just enough to take the chill off. If the animal refuses to drink, but can swallow, it should be given several quarts of water frequently as a drench.

Medicines should be given, if possible, under the direction of a veterinarian. Do not give drugs indiscriminately, nor use the same medicine for every kind of illness.

A Fever That's Not a Fever

The pulse is the external symptom of the heart action. It is ascertained by feeling the small artery just under the lower jaw in the horse and cow, and on the inside of the thigh in the dog. The normal pulse of a medium-sized horse is about forty beats per minute. The larger the animal the slower the pulse, and vice versa.

The respiration is a sure index of lung diseases such as pneumonia or pleurisy. It may be rapid, labored and superficial. Pain, of course, always accelerates

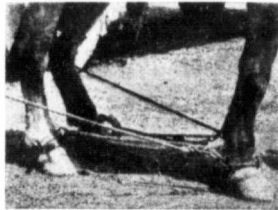
the breathing. A normal horse breathes from twelve to twenty times per minute, a cow from twenty to twenty-five.

Every stock raiser should understand the use of the clinical thermometer. The most convenient for veterinary purposes are those having pear-shaped bulbs. First, shake the mercury down, then moisten the bulb with glycerine or some like substance, and insert. Tying a string to the thermometer and attaching this to a clip which can be fastened to the hair will keep the animal from shaking it to the floor. When there is no hole in the thermometer wrap a small rubber band round it several times near the end. This will prevent the string from slipping off.

The normal temperature of a horse is about 100 degrees Fahrenheit. When any inflammation is present the temperature may rise to 103 or 105 degrees. Oftentimes an animal may not exhibit any violent symptoms of pain, and the owner does not consider the patient very sick. Inflammation of the bowels may be just setting in. The thermometer would reveal this in time for a veterinarian to administer successful treatment.

The body heat of a cow is between 101 and 102 degrees Fahrenheit. In "milk fever," which is a misnomer, the temperature often falls to 98 or 99 degrees. Pneumonia or inflammation of the womb will always be accompanied by a high fever, often reaching 105.

A hog has a rather high temperature, running from 102 to 103. The thermometer is the surest detector of cholera known. When hogs do not act "just right," and they have a temperature of 104 or 105, suspect cholera.

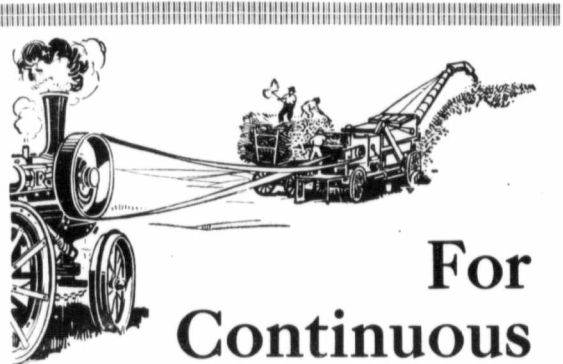


Method of roping a horse's feet to prevent injury to himself or the attendant during Delirium

Beware the Visitor's Advice

A dog has a normal temperature of about 102 degrees. In the first stages of distemper the fever is very high, sometimes reaching 107. When one is not sure whether the disease is distemper or poisoning, the thermometer will tell the tale, for in poisoning there is no intense fever.

Poultices are often useful, but very "messy" to apply. A good stimulating liniment will answer the same purpose. Injections into the lower bowel are often bene-



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ficial. The water should be blood warm and soapy. Salt, turpentine or glycerine may be added in small quantities. In cases of lockjaw or the like, the food may be given in an enema.

When the illness extends over several days and the animal is unable to get up an abundance of bedding should be given and the patient should be changed from one side to another six or eight times every twenty-four hours. Rubbing the body with salt water or spirits of camphor is good. The legs, especially on the inside of the thighs, should be well rubbed to assist circulation. If the eyes or nostrils are inflamed they may be bathed with boric acid solution. If bedsores appear, swab them with tincture of iodine and dust with tannic or boric acid. In case of delirium rope all feet together to prevent injuries. Remove all sharp shoes. Keep the head well pillowed to prevent injuries to the eyes. Never attempt to drench an animal unless you are sure the patient can swallow. In cold weather cover the patient with a blanket. Do not attempt to exercise a weak animal.

Use judgment in restraining an animal frantic with pain—one funeral is better than two. But keep a sick animal as quiet as possible. Before bandaging always cover the area with a liberal thickness of cotton or oakum. This will prevent constriction of the circulation.

And in all cases follow the instructions of the attending veterinarian faithfully. Do not heed the suggestions of every visitor or disaster may result.

Keeping to Essentials

Many Fads as to Color Have No Real Dairy Value

This business of breeding dairy cattle is an important one in many ways. It is therefore very important that the men who engage in it should have sound and correct ideas concerning it. What are the essentials? First, dairy quality; by that we mean a well defined heredity through ancestry for the giving of milk. Milk is the fundamental question in a dairy cow of the milking breeds. It is an internal and not an external proposition. It is not indicated by color of the hair, or nose, or tongue, or tail. It is something deeper than these meretricious surface characteristics. Yet for all that we see men every day paying more attention to such shallow considerations than they do to quality, constitution, and soundness of health.

These latter are the fundamentals, the true essentials, and we are to be guided towards them not by mere faddistic notions but by a process of knowledge and rea-

soning based upon live experience.

The solid color craze, with black tongue and switch that prevailed so long with Jersey breeders and seriously handicapped the dairy development of the breed for so many years, is a conspicuous example of what faddism will do. No sensible man believes that such notions were in the least essential to the growth and development of a superior Jersey cow or bull.

On the contrary, they obstructed such growth and development because they had nothing to do with the problem in any manner whatever. No Jersey cow was any the better as a milk and butter producer because she was of solid color and had a black tongue and switch. Yet this tendency to wander off into more faddistic notions has prevailed to a certain extent among breeders of all breeds.

Fads With No Value

The dark nose with Guernseys is counted to be a blemish and at once detracts from the essential merit and value of the animal in the estimation of buyers of purebred Guernsey cattle. There is no sound reason for this notion. It is a mere fad, and a silly one at that. On the Island of Guernsey no regard is paid to it whatever for the reason that those people are sensible enough not to throw non-essential obstructions in the way of the true development of their cattle.

And now this faddistic disease has broken out among Holstein breeders and their cattle are bought and sold and calves sent up or down in proportion to the amount of white the animal possesses. A dark Holstein loses value, a white Holstein gains in value, regardless of their quality from the dairy standpoint.

The Ayrshire breeders of Scotland ran away with themselves on the stupid fad of breeding their cattle with short teats, and so set a most worthy breed back for years most seriously in public estimation. Everywhere that these faddistic ideas prevail in the breeding of dairy cattle it hurts and hinders the prosperity of such enterprise. They would not exist for a moment in the minds of sensible men if they were governed in their breeding operations by true ideas of what is essential in the production of a good dairy cow. They exist only because of silly and stupid ideas of what is fashionable.

Purchasers allow themselves to be governed in their selection by a lot of mistaken notions of what is really essential to the purpose for which they are investing their money. The mischief comes from not having clear and intelligent ideas of what is essential in the breeding of dairy cattle.



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[Signed] V. W. JACKSON, Professor of Biology.

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How To Make Farming Pay

By H. A. BEREMAN

DOES farming pay? Every little while someone asks the question—someone longing to get back to the soil or away from the soil. There are three correct answers: "yes," "no," and "it is not a proper question."

We all know men who began with little and now own splendid farms and have money in the bank. They have made farming pay.

We also know men who have spent their money and mortgaged their farms. They have not made farming pay.

The final answer is that it isn't a proper question because farming pays when the right man does the farming. It is altogether a personal affair—a matter of good business management. One man gets ahead because he has a knack of doing the right thing at the right time. He can't tell how or why. He just naturally does it. We say, "he has good judgment," meaning perhaps that he sees clear through a proposition and chooses the road that leads to profit.

"There is more in the man than in the land," is true but incomplete. There is everything in the man, for the shrewd farmer does not settle down on barren clay hills, he picks good land and then keeps it fertile by sound systems of soil treatment.

The Business Type

Mankind is divided into those who have a natural aptitude for making money, and those in whom commercial instinct seems lacking. The former are conservative and centripetal—they would rather save than spend. The opposite type are explosive and centrifugal—they get more joy in spending than saving.

When we know that men are "born long" or "born short" with business ability, the next question is "what am I?" When a person discovers that he is not a Napoleon of finance it is natural for him to wonder if he can do anything consciously that will put him in the winning class.

You can't make a draft-horse out of a greyhound, and it would seem a waste of energy for a natural-born machinist, physician or teacher to try to make farming pay, particularly when his heart is not in it. Such a man should get into his real vocation and quickly.

I know one who has not made a success of farming after five years' trial, and I am sorrowfully wondering if he ever will. He is an artist. His mind is attuned to the beautiful. He thinks in terms of form and color. His mind is not on his cattle and his fields, except

as they are picturesque. In the matter of money he is an infant. He is so generous and innocent that when he tries conclusions with some clever fellow my artist friend is always the goat. This actual case of unfitness serves to illustrate the point that round pegs in square holes are woeful failures.

But the farmer who plugs along for years without making headway need not despair if he feels that he is a true son of the soil. If he has common sense he can improve with conscientious self-analysis and hard study.

We Get What We Really Want

First there is the element of interest. "We get what we most wish for" is a true saying, for it must be remembered that what we think we want superficially is quite different from what we most wish for deep down in our hearts. For example, I once knew a young chap who said he wanted a million dollars more than anything else in the world. He really believed it, but what he most wished for was to lie abed in the mornings and it is needless to add which he got.


So anyone who most wishes to make the farm pay and keeps his mind persistently on this idea, will surely win out in the end. People do well at what interests them. A boy who is interested in "having a good time" will generally succeed at the undertaking. One who is interested in books is apt to turn out a scholar. One whose chief interest is to make two hard dollars grow where but one grew before will achieve his desire as certainly as that harvest follows seed time.

It has been said that good management makes farming pay. It is easy to say that good management is made up of industry and economy, but it is not enough merely to slave and save—one must work efficiently. He must make every lick count without any false motions. He must take care of things and stop the small leaks, for taking care of property is no more than safeguarding cash. In a trade he need not deceive, but he surely must not allow himself to be cheated. He must look out for Number One, or he may enrich a shrewder man at his own expense.

Often a man fails when he works along lines of great resistance. "One example is worth a thousand arguments," so here is a true story of long deferred success:

A Story That is Illustrative

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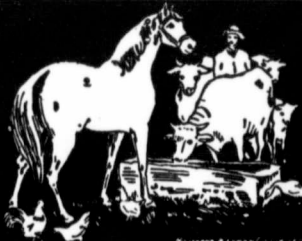
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moved to a western state thirty years ago. He tried ordinary crops and culture methods for fifteen years and failed. That was before the days of dry-farming in the semi-arid. Then he said, "Let's go where they get their weather by turning a faucet," and forthwith the family moved to an irrigated ranch in an adjoining state. Here they found that late-comers on that project could not get enough water unless there had been an excessive snowfall in the mountains the winter previous.

After five years of disappointments they decided to move back to the Hawkeye state. It was a blow to their pride, for they had vowed not to return until they had made good. But prudence won the day, and now after ten years of fruit, corn, hay and livestock including some good dairy cows and a large flock of poultry, this family is wonderfully prosperous. They have just built a new house; they own a big touring car; their six children have been well educated—the older ones are college graduates. They are enjoying life with unusual zest because of the long, hard years of self-denial. They might have won out in any location; the significant thing is that they have been industrious and thrifty and now they are reaping the reward of wisdom and patience—or "getting a good thing and sticking to it everlastingly."

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The man familiar with cows makes a fairly close estimate of what any one in a given herd will give, possibly per day, per month or per year. Does it follow she is the "best" cow? It depends somewhat on what the owner is after; he may look for a large flow of milk, he may require plenty of cream, or, wisely, he may expect a substantial profit above the cost of feed. So your cows, as a herd, may 'average' 6,000 pounds of milk and 200 pounds of fat, but is each one earning a good profit? Cow testing, checking up each individual, will answer this and many other questions. It will also help, as it has helped many dairy-men, to add at least fifty per cent to their income from the same number of cows, because they keep those that are known to be efficient. Your average may be 7,000 pounds, but in three years perhaps you can make it over 10,000 pounds, but it won't be unless each one is up to a good standard. Write the Dairy Commissioner, Ottawa, for milk record forms. Your letter does not need a postage stamp.

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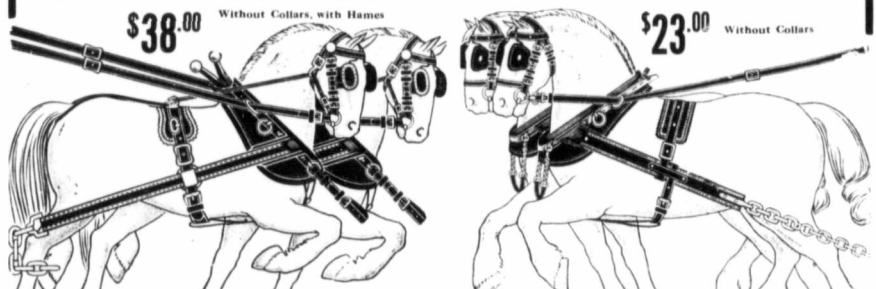
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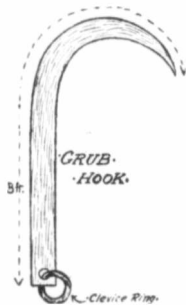
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Clearing Scrub Land

By W. D. ALBRIGHT, Grande Prairie, Alta.

I NQUIRIES are often made for a means of clearing scrub land in such a way as to avoid the nuisance of renewal growth after breaking. The accompanying cut illustrates a hook that is very useful for the purpose and an excellent aid in clearing brush land. It was made to order for a neighbor of the writer, who has had the privilege of borrowing it and finds it a decided advantage in removing small stumps and willow roots.



It was made from the landside of an old brush-breaker lay, drawn by a blacksmith to the shape indicated in the sketch. The total length around the curve from hook ring to point is about three feet. The even clevis may be hooked into the ring, or a couple of extra links may be used. A pair of oxen or a strong steady team of horses will handle it to advantage at such work as we have chiefly in Grande Prairie. Of course it is hard on hames, harness and whiffletrees, as stamping always is. So, for that matter, is scrub breaking.

Where something of this kind is not employed, the usual plan in breaking scrubby land is to "bust through" willow and poplar stumps, using a sharp lay and coultter. It is surprising what large crowns can be thus split up and turned out, but it takes power and runs up blacksmith bills. Even then a somewhat imperfect job is accomplished, so that much grubbing has to be done after the plow, tearing up many of the furrows and, in the end, leaving many long black rat-tail roots which are capable of sending up shoots later and which are supposed by some to exert a "poisoning" influence upon the land in which they grow.

From the standpoint of economy of labor, ease and quality of plowing, complete inversion of sod and permanent eradication of willows, it is very desirable to have the grubbing done before the plowing. The hook illustrated

enables one to do this with a considerable degree of thoroughness and expedition. Poplar stumps often have two main roots, one on each side of the stem. Hooking under one of these we can often tip a stump over and thus get it out of the way both of doubletrees and share. The willow occurs commonly in clumps and after the tops have been chopped away, the half-dead crowns remain with a network of tough roots ten to thirty feet long, radiating from them. By getting the hook under one of these crowns, unless it is too rotten, one may frequently catch the fork of two or three big roots and rip out the long black-snakes, then turning the team about or backing up and repeating till the nuisance is removed, leaving a clean sweep for the plow and incidentally loosening the soil to the depth at which the roots had lain, thus opening it up the better to receive percolating moisture. I have at present a piece of winter wheat maturing on last year's breaking in a field where two or three bad patches of willows had been eradicated by the much slower though equally effectual process of dragging out with a logging chain, and, whatever may be the explanation, some of the best wheat is on these patches. I fancy the subsoiling proved beneficial.

Where the plowing has already been done, this hook may be advantageously employed for the necessary after-grubbing, but it does better work ahead of the breaker and leaves the field in nicer condition, besides greatly reducing the strain of plowing; for at the best, breaking scrub land is no picnic for men or teams.

I am told that in parts of Central Alberta a favorite way of breaking scrub land is to use a big steam plow, turning a furrow about three feet wide and twenty inches deep, uprooting everything and afterwards working only the loose upper layer of the deep inverted furrow slice, until the scrub has decayed. That method has not been practicable with us as yet, and moreover we would hesitate to adopt it here for fear of burying the lack soil and turning up the raw clod clay. With us, consensus of opinion favors shallow breaking.

"Pa, what is a snob?"

"One who has had a humble beginning and has not become great enough to be able to point to it with pride."

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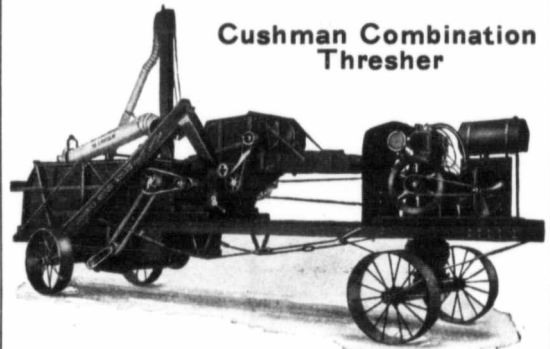
No. 3 machine handles 30-50 bushels per hour; No. 4, 50-75 bushels. Sold on a positive guarantee to prevent smut.

This machine separates smut balls, wild oats, king heads, and all light seeds from wheat, also wild oats and all light seed from barley. Grain is thoroughly pickled, dried and elevated to wagon box. Automatic skimmer is an exclusive feature. Strong, heavy construction. Rustless solution tanks of large capacity.



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Cushman Combination Thresher



Equipped with the famous Cushman 2-Cylinder Engines.

8 H.P. with Straw Carrier and Hand Feeder.
15 H.P. with Wind Stack and Hand Feeder.
20 H.P. with Wind Stack and Self Feeder.

Cushman 4-Cycle Engines are the All-purpose Farm Engines, built to run without trouble and to do things no other engines will do. They represent a great advantage over ordinary stationary engines, in verticle balanced design, material and workmanship. Highly efficient because of light weight, higher speed, reduced friction and lower operating cost.

The 4 H.P. Cushman is the Original and Successful Binder Engine. Its light weight and steady power permit it to be attached to rear of Binder.

Cushman Motor Works of Canada, Ltd.

Dept. A, Whyte Avenue and Vine Street, Winnipeg

Builders of Light Weight Engines for Farm and Binder use.

Distributors of Reliable Power Driven Machines, such as Fanning Mills, Grinders, Saws, Power Washing Machines, etc.

Also Barn Door Hangers and Mountaineer Neck Yoke Centers

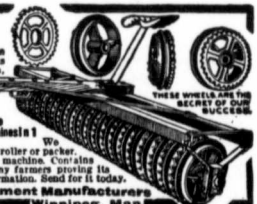
WHEAT AND OATS

ALFALFA, FLAX and other crops yield more if the Western is used in preparing seed but it has no equal for this work. Pulverizes, sacks and machines at one operation, without extra horsepower. Saves time preparing seed bed—saves seed. Especially adapted for rolling small grain when two or three weeks old—makes a perfect mulch to hold moisture without burying the grain.

Western Pulverizer, Packer and Mulcher Three Machines in 1

Made in 8 sizes, 1 and 3 sections. See our catalog before buying a roller or packer. It will prove we can save you money and have far the best machine. Contains full description and price direct to you. Letters from many farmers giving its advantage over other makes, and much other valuable information. Send for it today.

The Western Steel & Iron Co., Ltd., Implement Manufacturers, Winnipeg, Man.



OIL FOR GAS ENGINES

Cylinder lubrication is most important and least understood. Gasoline engine cylinders require oil having special qualities, and different kinds and makes of engines, as well as different working conditions, often call for different oils. Likewise an oil that may work well in an air-cooled engine will not be best for a water-cooled one, nor is an oil that is best suited for summer use likely to meet winter requirements.

The gas engine cylinder works under high temperature conditions, and the first requirement of an oil is that it be one which will not vaporize or decompose and leave a deposit of carbon or other solid matter on the walls of the combustion chamber and the head of the piston. An oil to meet gas engine cylinder requirements must therefore have sufficient "body" to be able to withstand the heat conditions without losing its lubricating properties.

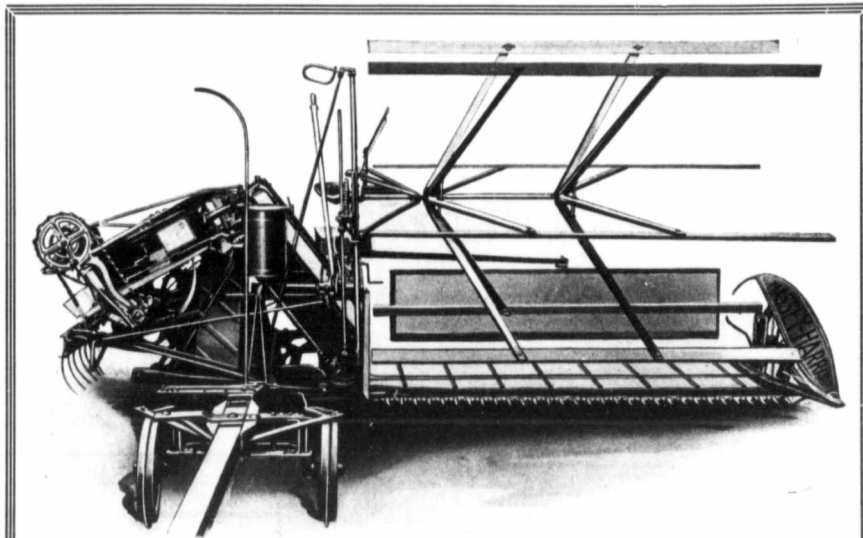
Certain grades of oils invariably leave a carbon deposit on the cylinder. Others, when heated to a certain point, are decomposed and leave a sticky deposit that gums up piston rings. Carbon deposit tends to cause overheating and preignition. Preignition produces a pounding or knocking in the engine because the explosion takes place before the stroke of the piston is completed.

Most manufacturers agree that from 70 to 75 per cent of all motor troubles can be traced directly to faulty or improper cylinder lubrication.

Engine bearings also have individual lubricating requirements governed largely by the different systems used to supply the bearings with the necessary oil or grease; but bearing lubrication is much more simple than is cylinder lubrication.

Some of the best lubricants now contain an almost infinitely fine graphite powder in suspension, which greatly increases their lubricating value. This is because the graphite enters the minute pores of the cylinder walls and bearing surfaces, forming a film that protects against excessive friction. A lubricant containing graphite in this form is now referred to commercially as liquid graphite.

An important condition contributing to successful lubrication is that all parts of the engine and its mechanism must be kept thoroughly clean. When not in use an engine should be protected by some kind of canvas or similar covering, and periodically should be wiped off to remove dust or dirt that otherwise may be carried in by the lubricant to bearing surfaces, thus increasing friction and hence wear.



The Massey-Harris Binder with Auto Forecarriage

TURNS A SQUARE CORNER

Because the wheels turn at a greater angle than the pole, the Binder turns a square corner easily with no crowding of the horses and no dragging or lifting of the wheels. Neither is there any twisting strain on the pole.

This Forecarriage not only makes it possible to turn a square corner easily, but this is accomplished without the horses trampling on the standing grain.

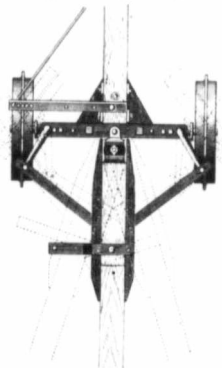
SUBSTANTIAL CONSTRUCTION

This Forecarriage is built almost entirely of steel and is braced and trussed in such manner as to give it ample strength to withstand any strain which may be placed upon it.

SELF-STEERING

If the platform of the Binder shows a tendency to pull back, the Forecarriage wheels are turned in the opposite direction, thus straightening the Binder back to position.

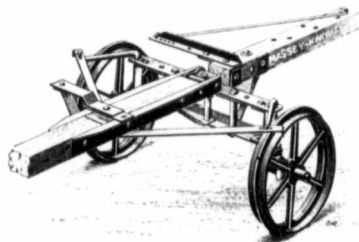
When necessary the wheels can be set to run slightly away from the grain, over-covering side draft and giving the horses plenty of room without being crowded into the grain.



The Wheels Turn at a Greater Angle than the Pole

REMOVABLE BEARINGS IN WHEELS

The wheels have removable hubs which can be easily and cheaply replaced, but as they are provided with screw cups for hard oil they will wear almost indefinitely, and are strong enough to make breakages unlikely.



Massey-Harris Co. LIMITED

HEAD OFFICES - TORONTO

Branches at MONTREAL, MONCTON, WINNIPEG, REGINA, SASKATOON, SWIFT CURRENT, YORKTON, CALGARY, EDMONTON

AGENCIES EVERYWHERE

Wills and Administration

By MARK LANE

A Call to Duty

PROCRASTINATION in the ordinary affairs of life often brings retribution upon the individual personally, but if a man, and especially if the head of a family, neglects to arrange for the administration and disposal of his estate after his death, the punishment falls upon the innocent beneficiaries whose sorrow is thus needlessly reinforced by anxiety and perplexity. While there is a considerable difference between the costs of obtaining Letters of Administration in intestacy and Letters Probate where there is a will the principal advantage of having a will made is that the testator's wishes with regard to his estate will be absolutely carried out. Many cases occur where in the absence of a will considerable injustice is done to the beneficiaries. When no will has been made bondsmen must be found for the administrator in a sum amounting to twice the value of the estate and it is thus very difficult to get private individuals acceptable to the court to become bondsmen. While some guarantee insurance companies are now doing this class of business they are naturally exceedingly careful about assuming such risks and charge a very high premium. Again, where there are minors it is usually necessary to have a guardian appointed and the administrator will require to obtain a maintenance order from the Court before he can pay anything out of the minors' shares for their maintenance. Additional expense is incurred (in Saskatchewan if not in other provinces) by having to serve notice upon the Official Guardian and having him represented in the application. Sometimes the costs of a maintenance order will almost amount to that allowed by the Court for one year's maintenance of the child, and although this seems ridiculous yet the only way by which it can be avoided is to have a will appointing an executor and a guardian for the children, providing at the same time for a suitable allowance for their maintenance and education.

Making the Will

Will forms are usually supplied free by trust companies but such are skeleton forms merely and rarely meet the requirements of a family man. A homemade will is better than none at all, but it does not always stand the test. In a recent case a will in the deceased's own handwriting was

produced by which the testator (whose estate consisted of about \$2,000.00 life insurance and who was survived by a widow and child) bequeathed his estate to his wife but in the event of her remarriage it was to revert to his brothers and sisters. Such a will was incapable of being carried out as the trustees could not hand over the policy proceeds to the widow in case she should remarry and they could not hold the funds for the exclusive benefit of the brothers and sisters as that was clearly not the testator's wish. Hence the brothers and sisters were asked to renounce their rights under the will and the Court was petitioned to order payment of the funds by monthly instalments to the widow for her own and her child's maintenance. The man of wealth will devote much thought to his will and will pay his solicitor a handsome fee for its preparation, but if a man's estate be small it is all the more important that his wishes be clearly, fully and legally expressed in a document drawn by a solicitor of good standing and so prevent unnecessary costs eating into the beneficiaries' all too slender funds. The cost of having a will properly drawn is not a tax; it is an investment and as death is the one great certainty this act of simple justice to one's kith and kin demands urgent attention.

As a general rule the head of a family who is possessed of a small estate say up to \$10,000.00 net would do well to bequeath his whole estate to his wife for family maintenance and the education of the children, the administration being subject to the supervision of a specially qualified friend or a trust company for a safeguard in realisation and investments. It is often a serious matter for a widow if two thirds of the estate has to be held intact for the children until they attain majority; they are then able to care for themselves while the widow even with strict economy would require the whole capital to keep her in comfort for the remainder of her days.

Appointing the Trustee

The appointment of an executor and trustee is seldom an easy matter. A private individual may lack the necessary qualifications; he may refuse to act or may remove to another locality and if he dies during the administration the appointment of a successor by the Court entails legal costs. The well established trust company on the other hand offers per-

THE BEST YET

1916 has been the most successful year in the business of The Great-West Life Assurance Company. The following are the essential figures for the year:—

Business issued 1916.....	\$ 25,575,373
Increase for the year.....	1,117,444
Business in force Dec. 31st, 1916 ..	133,016,448
Increase for the year.....	13,550,381
Income for 1916.....	5,594,041
Increase for the year.....	814,551
Total assets, Dec. 31st, 1916	21,702,570
Increase for the year.....	2,498,024

The year's business is yet another argument in favor of insuring with

The Great-West Life Assurance Company

Dept. "U"
HEAD OFFICE - WINNIPEG

MONEY TO LOAN

in moderate amounts on improved farm property occupied by the owner and situated not more than 10 miles from elevator and railroad.

Full particulars from our agent in your district, or

UNION TRUST
STRENGTH—FIDELITY
COMPANY LIMITED

REGINA, SASK.

WINNIPEG, MAN.

1499



Which HAIL INSURANCE POLICY?

If you are in doubt about the protection offered in a policy consult the Government Superintendent of Insurance—or choose a company like the British America Assurance Co., whose proved financial strength assures you of prompt and full settlement in case of loss.

Take No Chances on Policies or Weather
Insure Your Crop with the

Ask for particulars of our policy

FIRE MARINE TRAIL

Write us to-day or see our Local Agent

British America Assurance Company
AD 1653

HAIL DEPT., WINNIPEG

**THE C. P. R. GIVES YOU
TWENTY YEARS TO PAY**

An immense area of the most fertile land in Western Canada for sale at low prices and easy terms ranging from \$11 to \$30 for farm lands with ample rainfall—irrigated lands up to \$50. One-tenth down, balance if you wish within twenty years. In certain areas, land for sale without settlement conditions. In irrigation districts, loan for farm buildings, etc. up to \$2000, also repayable in twenty years—interest only 6 per cent. Here is your opportunity to increase your farm holdings by getting adjoining land, or to secure your friends as neighbors. For literature and particulars apply to Allan Cameron, General Superintendent of Lands, Department of Natural Resources, 912 First Street East, Calgary, Alta.

Well Drilling

By An Expert in the Business

Don't take a chance on not getting water through experienced drillers. First class work guaranteed. Sixteen years' experience in practically every section of Western Canada.

For Particulars address—

E. E. DOWLER
Marquette, Manitoba

WANTED

Live, Energetic Agents for a new and progressive Life Assurance Company whose policies are based on the

SCIENTIFIC SYSTEM

and are therefore easy to sell. Let us tell you of our 18 powerful reasons why our policies are superior to others.

Do YOU want a Profitable Agency? Write us for particulars.

THE NORTHWESTERN LIFE ASSURANCE CO.
Canada's Only Scientific Life Company
Bank of Nova Scotia Building, Winnipeg

Money to Loan

on improved farm property

Lowest Current Rates

Apply through our representative in your district or direct to our nearest office.

National Trust Company Limited.

323 Main Street
WINNIPEG

TORONTO MONTREAL
EDMONTON REGINA
SASKATOON

manency of expert service, security of investment, and neutrality of action between family factions. Unlike the private trustee, a trust company handling an estate not heavily encumbered can pay an allowance for family maintenance in anticipation of assets being realised. It must not be assumed, however, that because the trustee is a trust company it can take over an estate with heavy liabilities and pay off these liabilities as a matter of course before the assets are realised. The company's capital funds are the trust moneys of its shareholders and must be protected accordingly.

Administration Costs

Probably many hesitate to appoint a trust company as trustee in the fear that the charges will be exorbitant. The following table of minimum fees fixed by the Saskatchewan Government for official administrators will be of interest. While they are stated as minimum charges the general practice of the Court has been to adopt them as the fixed remuneration; they are exclusive of actual out of pocket costs and the necessary legal work which latter is usually confined to obtaining Letters of Administration and completing title to the real estate. In other provinces beneficiaries may ask the Court to fix the charge just as they can call for a solicitor's account being taxed.

On gross estate assets of over \$200 and up to \$500, \$35.00.

On gross estate assets of over \$500 and up to \$1000, \$50.00

On gross estate assets of over \$1000 and up to \$10,000, 5 per cent.

On gross estate assets of over \$10,000, 5 per cent on the first \$10,000, 2½ per cent on the next \$10,000 or portion thereof and 1½ per cent on the balance.

Where the estate consists entirely of cash in bank, life insurance and other liquid assets and the proceeds are to be handed over to the beneficiaries on realisation, these fees are quite ample, but where the farm has to be carried on for a time, then sold, the proceeds invested, and a monthly payment made to widow perhaps for ten or even five years the charges for a \$10,000 estate would work out at \$50.00 or \$100.00 a year respectively, which is only ½ per cent or 1 per cent per annum on the gross capital value of the estate.

It will be readily conceded that corporate trusteeship protects beneficiaries from falling a prey to the scheming investor or the self-styled "family friend" whose motives are not always altogether disinterested.

(Our next article will deal with intestate succession and succession duties.)



PAGE HARRISON Ltd.
WINNIPEG. General Agents

Yorkshire Fire Insurance Co. of England
LIVE STOCK DEPARTMENT
SPECIAL FARMERS' ACCIDENT POLICY
FIRE INSURANCE
AGENTS WANTED

UNION BANK
OF CANADA


LOANS FOR LIVESTOCK

THE UNION BANK OF CANADA is prepared to make loans to good farmers on reasonable terms, to purchase cattle for feeding or breeding purposes.

It is in the best interests of farmers to increase their herds. Consult the Local Manager for particulars.

Paid Up Capital - - - \$5,000,000.00
Total Assets Exceed - \$109,000,000.00

The Pioneer Bank of Western Canada



Head Office: Winnipeg
Total Assets over \$109,000,000
Deposits over \$85,000,000

WESTERN HOMES LIMITED

A SAFE INVESTMENT

This investment will appeal only to those who desire absolute safety. Not less than 7% has been paid. Regular annual returns assured.

Authorized Capital - - -	\$500,000.00
Subscribed Capital - - -	\$265,000.00

Shares now going at \$100.00 will be advanced to \$110.00 this year.

Investigate this splendid investment opportunity at once. Full information willingly given. Write or if in Winnipeg make a personal call at our office.

Western Homes Limited
707-708 Confederation Life Building
M. WILLIS ARGUE
President and Manager

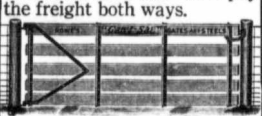
"Cant-Sag" Gates

At Home-Made Gate Prices

Send for our latest catalog—pick out the gates you want

TRY THEM FREE 30 Days

If pleased, keep them. If not, send them back and we'll pay the freight both ways.



Last Three Times As Long

as iron, gas pipe, and wire gates, and costs even less than home made all-wood gates. They can't sag, drag, warp or twist. Made with 4 inch boards, double bolted between 2 angle steel uprights. No wood joints to collect moisture and rot. No nails to gather rust or pull out.

Guaranteed Five Years

We'll furnish you complete gates ready to hang or just the Gate Steels, hinges, bolts, etc.—everything but the boards. You can put up your own Cant-Sag Gates if you wish and save money. Postal brings free catalog. Write for it today.

RADFORD-WRIGHT COMPANY, Ltd., Winnipeg, Can.

"Cant-Sag" Gates

POTATOES

9 4-5 Bushels from One Pound of Seed

Three potatoes, planted in 56 hills in Huron Co., Ohio, yielded this amount. The seed, the planting and the crop harvested are matters of County record. You can do as well or even better by following my instructions. It is not a matter of variety of seed, or soil, or fertilizer used, important as each of these matters are, but it is the selection and cutting of seed and treatment. It was these elements that enabled me to produce the yield of 552 lbs. of potatoes from one pound of seed. Full information as to how it was done, the seed used, the soil, the fertilizer employed, the tillage and the methods of producing this large crop will be sent for One Dollar. Send your order now and grow more potatoes from less seed. Any one that feels too poor to spend a dollar to learn how to increase the yield in raising potatoes, send me your name and address. Planting time is near. Send your order to-day and raise more potatoes from less seed.

A. R. GIBSON, - Brookfield, Ill.

Continued from page 19

(12 acres of it), pulling a 16-inch brush breaker and it worked very satisfactory. I also used the engine for road work pulling in machinery, etc. one instance being a big International tractor, size 25. I also used it for threshing, operating a 32-54 Case Separator with feeder, blower and high elevator. I could thresh everything through the separator that four bundle teams could haul to

follows: I plowed 300 acres at a depth of about six inches. While the tractor is capable of handling a three bottom fourteen inch plow, I did all my plowing with a fourteen inch gang plow with a small disc attached to the plow and a five foot harrow.

This combination double dragged the ground plowed, making the draft about equal to three fourteen inch bottom plows. I preferred using the gang plow



No big noise but doing great work

the separator, using from 20 to 25 gals. gasoline per day of about 12 hours each day. I also used it for plowing — (backsetting), this being hard work and averaged 9 acres per day with a 3 share 14 in. plow and at the same time pulling a 8 ft. disc harrow.

For your information I might state I do much prefer this gas power to steam and even horsepower. Now in winter time I do not have to bother with horses, nor worry about feed like the majority of farmers in my community, who were unfortunate to be hauled out this year. My intention was to use it on a binder as well but being hauled out naturally had to give this up, but will use this engine of mine for farm

with the attachments mentioned as it left the ground in splendid condition to receive the seed, and also prevented the ground from drying out.

In addition to this plowing I threshed 215 acres of a heavy crop of straw. The separator used was a 22-36 inch "Red River Special." The tractor was quite capable of handling this machine, and the two together did splendid work.

I did not keep an account of the different quantities of oil used in doing the work mentioned. The total amount of all kinds of oil used in doing the work mentioned amounted to \$200.00.

With the gang plow we averaged about six acres per day of ten hours. I estimate that the



A 16-32 Kerosene burning Tractor pulling a 5 bottom 14-inch Cockshutt Engine Plow

work, any place where you can use horses, with less expense and bother.

Yours truly,
H. A. Friesen.

"Very Well Satisfied"

Dacotah, Man.,
January 20th, 1917.

Dear Sirs—The small tractor which I purchased last spring is the "Waterloo Boy" tractor, 12-24 H. P. The work which I did with this tractor last season is as

amount of kerosene oil per acre with a three fourteen inch bottom plow would be about two and one-third gallons per acre.

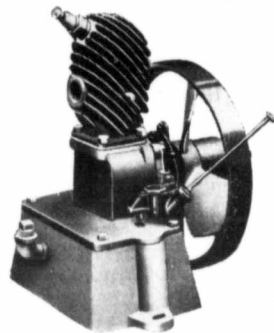
I am very well satisfied with the work this tractor did last season and it is a very convenient engine to handle. One man handles it with ease, there being a very convenient platform at the rear for the operator to stand on when operating the plow.

Yours truly, W. Shanks.

Here is a PERFECT ENGINE!

Can You Afford NOT to OWN One?

The One-Half and One Horse Maytag Multi-Motor Engines are Two-Cycle, Air-Cooled, and EAT GASOLINE OR GAS.



They Are Different From The Hired Hand—When Not At Work They Do Not Eat Anything.

This unique baby engine consists of only 29 parts, including all the bolts and screws—only 5 actual moving parts. There are no gears, cams or valves to cause trouble.

Guaranteed in Every Detail

PRICE COMPLETE—which includes a set of Columbia Sealed Batteries, a Lemke Coil, and one gallon of Maytag Multi-Motor Special Oil.

\$35.00 For Half-Horse

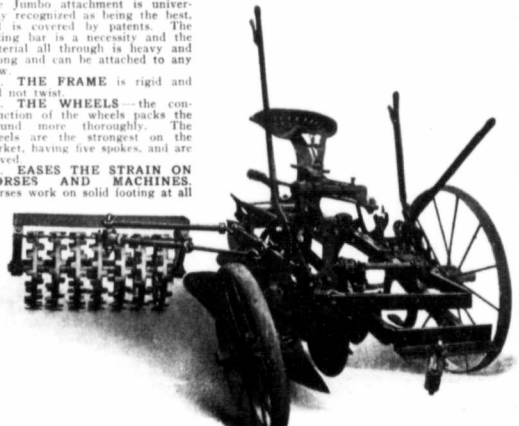
\$45.00 For One Horse Size

WRITE FOR FULL PARTICULARS

The MAYTAG CO. Ltd.
WINNIPEG, MAN.

Ten Reasons why YOU should have a "JUMBO" SOIL PACKER

1. THE ATTACHMENT—the part that spells success or not with land packers that are attached to the plow is whether or not the attaching apparatus is going to work right with your plow. If it does not the packer is no good to you and will be a continual source of trouble and expense in getting same to follow the plow properly. The Jumbo attachment is universally recognized as being the best, and is covered by patents. The sliding bar is a necessity and the material all through is heavy and strong and can be attached to any plow.
2. THE FRAME is rigid and will not twist.
3. THE WHEELS—the construction of the wheels packs the ground more thoroughly. The wheels are the strongest on the market, having five spokes, and are curved.
4. EASES THE STRAIN ON HORSES AND MACHINES. Horses work on solid footing at all



times when using our packer, even at the time of packing, and leave the footing solid for seeding. All the machinery runs easier and does much better work, adding to the life of all implements on account of the land being packed.

5. MAKES PLOWING EASIER. A plow runs better with our packer attached, as the packer contracts the side draft on the plow and keeps the heel of plow down level.

6. LIGHT DRAFT. The light draft of the "Jumbo" gives very little extra work for your horses or requires very little extra power from your tractor.

7. BEST PREPARATION FOR SEEDING. It leaves the land ready for seed, with the air space closed below and the soil mulched fine on the top.

8. SAVES LABOR OF HARROWING. No harrowing is necessary on old land.

9. PRESERVES THE MOISTURE. It does the work at the proper time with the least possible expense, keeping all the moisture in the land.

10. WHAT OTHERS THINK OF IT. Praised and recommended by everyone who has used it.

PRICE FOR IMMEDIATE ACCEPTANCE (F.O.B. Winnipeg)
Two Furrow, 6 wheels, weight 192 lbs. \$28.00
Three Furrow, 8 wheels, weight 250 lbs. \$32.50
The surface wheel shown in the illustration above is the one commonly used, but we can supply sub-surface wheels at the same price, if desired.

The WINNIPEG STEEL GRANARY & CULVERT CO. Ltd.
BOX 3054 WINNIPEG

The Small Tractor—"A Fine Thing on the Farm"

Woodland Farm,
Russell, Man.
3rd January, 1917.

Dear Sir—In the spring of last year (1916) I bought a Hart-Parr "Little Devil" tractor and the following is, roughly, my experience with it:

I started in as soon as the land was ready to harrow, hitching the "Little Devil," on an 8-ft. disc harrow with a 5 sec. drag-harrow behind. This load it pulled steadily for two days and the engine seemed to find no trouble in hauling it all. I then hooked on to a 3 furrow 14 in. P. & O. "Canton Little Genius" plow and started in earnest to spring plowing. I got along very well from start to finish and did all the spring plowing with the engine except the very short turns.

Summer fallow was the next job. It was located in two fields with prairie between. I set the plow down 6 inches and started across the field and right across the prairie, plowing all the prairie down between the two fields — about 20 acres in all of breaking and had no trouble whatever with the outfit.

As near as I could figure, it takes about 2¼ gals. of kerosene per acre, and about a gallon of lubricating oil per day of 10 hours. I never had more than one man with the outfit at any job except for chopping, and one man ran both ends at threshing. I threshed with a 22 in. "Red River Junior" and had ample power for same. I may say that it takes less kerosene for threshing than plowing.

My conviction is that the small tractor is a fine thing on the farm and I can see it will become more common as the results from the right type of engine are known.

I am Yours Truly,
E. C. Pagan.

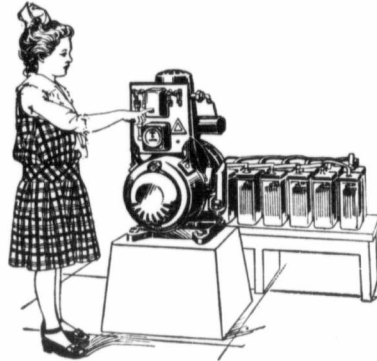
Good Marksmen

A Yankee entered a hotel in the Highlands when he overheard a party of gentlemen speaking about shooting.

"Gentlemen," he said, "I guess I have seen some good shooting in my time. I have seen a fly killed on the flagpole at 300 yards."

An Irishman, who was one of the party, said: "Begorra, it's pretty good, but I believe I've seen better. When I was in the army the major used to roll an empty beer barrel down the hill and every time the bunghole turned up we put a bullet in. Any man who couldn't do it was dismissed. I was in that corps for fifteen years and never saw a man dismissed."

DELCO-LIGHT
ELECTRICITY FOR EVERY FARM



**Economical, Safe, Convenient,
Electricity for the Farm**

Clean, safe, brilliant, electric light, always ready at the turn of a switch. That is the wonderful convenience Delco-Light is bringing to the farms. It revolutionizes your home; makes everywhere more bright and cheerful. It gives brilliant light, all over the house, in the barns and sheds, outdoors. Clean light, too—no more drudgery or time wasted in cleaning and filling lamps. And no danger of fire from explosions.

The cost of the Delco-Light plant is worth-while for the brilliance and convenience of electric light alone. But it is more worth-while to you because it earns its way by the abundant power it provides. It saves hours of time spent on chores and housework, because it gives better, more convenient light. Allowing only 10c an hour for labor on your farm it will save you at least \$130 each year.

Simplicity itself—easy to understand, easy to operate. A child can look after it. Starts itself on pressing of a lever. Stops automatically when batteries are fully charged. Complete plant costs \$390 for No. 208 and \$465 for No. 216; consists of gasoline engine, generator, switchboard and batteries. Average cost is less than five cents a day.

**The Handy Powerstand
Write Today for FREE Information**

The Delco-Light Powerstand enables you to do mechanically all the milking, separating, churning, washing, water-pumping, feed-cutting. It is handy and portable—runs from the nearest socket. This gives you abundant electric power for small machinery.



Some very complete literature has been prepared that tells all about the Delco-Light plant in pictures as well as words. This literature is yours for the asking. Write today and by return mail we will send you folders and booklets that will show you how simple, convenient, economical, Delco-Light will be on your farm. Don't put it off. Write today.

Distributors:

BREEN MOTOR CO. B. L. ROBINSON
Winnipeg Calgary

Domestic Engineering Co.
Dayton, Ohio.

Delco-Light has been developed by the same engineers who have made Delco-Lighting, starting and ignition systems for automobiles the standard of the world.

For Names of Winners of our Big Automobile Contest just closed turn to page 61 this issue. Count just completed. Full particulars May number.

THE CONSTRUCTION OF HIGHWAYS

By M. J. Allen

There is no work which a municipality can undertake which is of greater importance than the building and maintenance of public highways. The benefits derived are so obvious and distinct that a more comprehensive plan for carrying on road work should be adopted, and the question arises as to what is the best type of road to build.

This decision should be reached after a careful survey has been made of the natural resources in the district. Before this material is used, however, proper drainage should be effected along the road allowance which will not only serve the road, but the land adjoining.

In such cases, the material excavated can be made to form the basis of the road and consolidated with a roller before the wearing surface is placed upon it. Gravel, which can be obtained in almost any part of the province, though not as suitable as soil will prove very serviceable as a road covering. Moreover, it is a material that will form a base for the construction of a more durable type of road which traffic may require at a later date.

Gravel, containing dirt, much clay or earthy material should be avoided. The best gravel for road work is clean, free from an excess of clay, and composed of particles varying in size up to one and one-half inches in diameter, with enough fine material to fill the voids and make a compact mass. It is sometimes more convenient to have gravel hauled in sleighs during winter, as the loads hauled are so much larger than in summer time and thus the cost is reduced about one-half. And, again, teams can be obtained more readily.

Gravel should be spread in layers of about four inches and consolidated with a roller when additional layers should be spread under the same process until 12 inches have been put down, and after thorough consolidation the road will have about 9 inches of wearing material. After the above requirements have been complied with, a few extra loads of gravel should be hauled and placed on side of road in convenient piles about 200 feet apart so that when depressions or ruts appear they can be filled up and the contour of the road thus preserved.

On rural roads, if the gravel is placed on the surface about 8 feet wide, it will spread considerably the process of consolidation and will eventually be of sufficient width to allow two vehicles to pass. A gravel road can be much

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improved in appearance and a degree of economy if shoulders of earth were built up against the gravel to hold it in position. This would make it more convenient for vehicles passing as the shoulders would keep them in a more upright position when turning out of the sides, and would prevent gravel being wasted by being pushed off the sides of the road.

When gravel can be obtained at a reasonable cost, municipalities should undertake to build up their main roads with it as a decided improvement is possible with an outlay that is very low. There is no doubt that this material will make a satisfactory road and for a number of years it will be quite suitable on the main highways in the rural districts of the province. Advantage should be taken of the assistance offered by the local government and reap the benefits material and social accruing from a well constructed system of highways.

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"Naw; de bloke wot lives here is a lawyer," replied the other in disgust.

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Lightning and the Lightning Rod

Figures describing actual losses as the direct result of lightning-struck buildings in Western Canada might be given which would astound even the reader who already knows something of what has happened in his own little corner, but mere figures on a printed page leave little impress even upon an impressionable mind.

The best thing a man of decent foresight can do is to have a look round his fine home building and stock-barns one Sunday morning, think of what their contents value means to him and what his feelings and his position would be if the whole splendid outfit went up in smoke before nightfall.

Most people have the idea that lightning and electricity are one and the same thing. They are not. Electricity is a form of energy and lightning is only one of the ways in which electrical energy manifests itself.

During a storm, the surface of the clouds becomes heavily charged with electricity. When a square mile of cloud surfaces becomes thus charged it affects an equal area of earth surface beneath it, so that the latter also becomes charged with electricity of the opposite potential. This process, in natural philosophy, is called induction.

The square mile of electricity in the cloud and the square mile of electricity on the earth try to get together to neutralize their differences. The air between them, however, is a poor conductor of electricity and resists the effort as long as it can.

At first there is not sufficient strain at any given point on either cloud or earth surface to break down this resistance. But presently the electricity on the earth centres in one spot, most favorable to such concentration, and in the clouds above there is a similar concentration of the cloud electricity. Now the air can no longer resist, and hence there is a violent electrical discharge, accompanied by a brilliant zigzag flash and a loud reverberating report. The flash is what is commonly known as lightning. The report which in ordinary parlance is styled "thunder," is produced by the vibrations of the air caused by the discharge of electricity.

The place on the earth where electricity is likely to concentrate is often a building, such as a barn. If this barn is equipped with sharply pointed metal conductors or lightning rods, there will not be so great an accumulation at this barn as there would be if it

were not so equipped. The reason for this is that it is the tendency of sharp metal points placed on a building to prevent any great accumulation of electricity by silently discharging it, under ordinary conditions, and if they do not discharge it with sufficient rapidity under normal conditions the points themselves may be melted.

What a lightning rod does, then, is not to "draw the lightning," but quietly to conduct away the earth electricity as fast as it gathers, so there can be no chance for an accumulation and a subsequent destructive discharge.

To be of value a rod must be properly made, kept in good repair and put up by a person who is thoroughly competent to do such work. The rod should at all times be grounded in permanently moist earth. The reason for this is apparent, when we realize that the electricity from the earth will follow the rod upward. Poor earth connections cause resistance and the electricity will try some other path, such as a rain spout, etc. This results in side flashes which in all probability will set fire to the building.

Possibly the foregoing will simplify to some extent this great mystery of the lightning flash to many who have never gone into the "family history" of the electrical storm. It will also help to clarify the minds of some folks as to the nature of effective lightning conductors in the form of scientifically equipped installations (simple and inexpensive as they are) in contrast with the so-called "lightning rod" of common steel wire that is often eaten away at its most vital points before it has been many weeks on the building it is designed to protect.

Apart from the actual safeguarding of property, there is an immediate saving in insurance rates to the man who can show the company who takes his risk that he has his buildings scientifically rodded by material and by someone who **knows** how to apply and distribute that material so that it shall really guarantee the protection it is alleged to afford.

The pure copper cable is beyond doubt the one satisfactory medium to employ. Bulletins and scraggy advice will be found in all sorts of places stating that ordinary steel wire cable will give the necessary protection and cost less to instal. That is so, but it has a short-lived existence and must be carefully watched for corrosion all the time it is in use, and renewed (it might be many times) in the same period in which the copper



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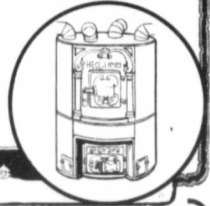
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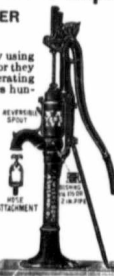
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cable would have done duty and then is "as good as new" commercially when it is necessary to remove it for any purpose of change.

We are glad in this connection to refer our readers to the Canadian Lightning Arrester Company of Brandon who specialize in pure copper cable and whose announcement will be found on another page. This company has a long and most honorable record both in the United States and Western Canada and in every respect are people who can be relied upon to give sound and final advice in their own special line but who will not encourage any man to spend his money with them unless he is certain to obtain full value for the outlay.

FARM HOME BUILDINGS

We have much pleasure in drawing the attention of our readers to the method of showing floor plans portrayed in the three cuts on this page.

This method is now known as the "Visible Interior" and has been copyrighted by the Western Retail Lumberman's Association, by whom it was originated and developed. With the use of the Visible Interior floor plan system, any house plan is very easily understood. Instead of being a series of lines the walls are shown as built up to a certain height so that the reader can easily imagine walking into the house and from room to room, and, in that way, get an excellent impression as to how any house plan would appear when actually built.

In the plans shown herewith attention is directed to the vestibule entrance which keeps the hallway and stairs of a house warmer in the winter time, than it can possibly be kept where a vestibule is not built in.

The living room, dining room and kitchen are excellently arranged and the pantry is made an outstanding feature of this design. Each bedroom has splendid closet space. You will notice one bedroom has an entrance to the balcony, which provides for the fitting up of a sleeping porch. This feature is becoming more and more popular, not only in city houses, but in farm houses as well.

Western Canada demands a low type of house so as to make it conform more readily to its surroundings, and in this house we have a low roof without cutting seriously into any of the rooms.

This is an excellent type of farm house, and we shall be glad to have you furnished with a plan book showing a great variety of houses specially designed for Western Canada. Address Building Editor, Canadian Thresherman and Farmer.

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OUR PRAIRIE HOME

GROUND FLOOR

SECOND FLOOR

A Woman's Talk to Women

By LILLIAN BEYNON THOMAS

FREEDOM

"As for the future generations, their freedom must come from within." So wrote a woman from her little home on the prairie. On every side stretched the plain, as far as eye could see, bounded only by the blue dome of heaven. She might have said, "I am master of all I survey; My right there is none to dispute." But instead she looked into her heart, and there she found, freedom and slavery, autocracy and democracy, war and peace, religion and savagery. All that is beautiful and all that is ugly in civilization, and lack of civilization, was there huddled close in her breast. As in every drop of water, the mystery of the universe is hidden, so in every human heart, may be found the secret spring, which ticks out the history of peoples and tribes and nations.

On many trails and side tracks, the people of the world wander, lured by beauty and pleasure, and the lust of gain, but it is only for a little while, like the child wanders from the road to gather flowers, and then all are swept back on to the main trunk road of life, that along which the whole creation tends, the road to Freedom.

As I write, the streets of Russian cities are stained with human blood. Side by side soldiers and civilians are giving up their lives for the same thing. Deep down from within came the clarion call, the call to which even the most sluggish of the human family must respond in the end, the call to Freedom. It welled up in their hearts, it caught their imagination, it fired their souls.

Prison walls fell down before it, powerless to hold the bodies of the martyrs whose souls were ever free. From frozen Siberia, from southern prisons, from east and west and alien lands, flock the men and women whose shackled bodies ever failed to imprison their minds. What a sight! Who can even picture it and be the same again! Who can be touched by the outer edge of such dreams, and ever forget!

The grandmother of revolution, an aged woman, bent by years of toil and hardship and imprisonment in Siberia, released and free, is hastening to join the revolutionists; other aged and broken men and women are hastening to join them; some are too broken to hasten, and still others will never see that for which they have given their lives. It is sad to fall by the wayside as victory is in sight, but always it is so. Some must sow and others must reap.

But the sickle is laid at the root of the harvest; tears and moans mingle with shouts of joy. A whole nation groans and struggles in travail, for freedom is being born, and it is meet that at such a birth, the children of earth should rejoice in pain, should shout and weep, and curse and pray. By the supreme sacrifice alone is freedom given life, and as it bursts from the womb of the nation, the hush of things as they were lies bleeding, and from every heart in the nation has been torn deep roots of being, that have been offered a trembling sacrifice on the altar of the common good.

Oh Russia, how every freedom loving heart goes out to you! The pulse of the world has been stirred. The imagination of the world takes fire. In the womb of the world Freedom has quickened. . . . it struggles . . . a little while, yet a little while!

MUNICIPAL OFFICES FOR WOMEN

Women may now hold any municipal office, on the same terms as men. At the session of the legislature just closed, this amendment was made to the municipal act. Previous to this time, the only municipal offices for which women were eligible, was that of school trustee.

In many parts of the province, there are women on the school boards. The number of women holding such offices is increasing, as women realize that they have a view point, that should be expressed in the management of the school. The men have proven to be more than ready to have the women undertake this

work, and in many instances where women have been persuaded to run for the office men have refused to oppose them, and they have been elected by acclamation.

Now all the other municipal offices are open to them, if they care to run for them. Like the men, they can hold office only by the will of the people, and it is not likely or desirable that they should be appointed to these offices by the courtesy of men, instead of by an election, where the will of the electors has been expressed.

No doubt it will be some time before women to any great number will aspire to municipal offices. Too many women feel that if the men are doing good work they should continue to do it.

The women merely wish to be in a position to elect some one who will do what they wish, provided the men will not express their wishes. The power to vote and hold office, gives the full right of citizenship. In the years to come, it may be to the best interests of the country for the women to hold many offices. If that is the case, the electors will say: We have now a democracy, with but one more step needed. The needed step, is a municipal vote, without a property qualification. At the present time, there is a property qualification, which bars most country women.

The women asked for an amendment giving the municipal vote to the wives and daughters of farmers, but it was not granted. At the present time the son of a farmer of twenty-one years of age can vote on municipal matters, but the wife and daughters of the farmer have no vote. It is the business of the wives and daughters of the farmers, of Manitoba, to protest so loudly that this right will be granted to them at the next session of the legislature.

This right should be made wide enough to take in the wives and daughters of men living in cities and towns. It would appear that the best way to overcome the difficulty would be to make the municipal vote a residence vote, and not a property vote. The provincial vote is merely a residence vote, and it appears to be all right, and it is not likely that much harm would be done by making the municipal vote a residence vote. In fact the sooner the idea of property can be separated from the idea of citizenship, the sooner will the country as a country approach the true standard of life.

CONSOLIDATED SCHOOLS

Is it always selfish motives that impel people to the line of action they follow?

This thought came to me, when listening to a debate on whether the present time is the right time for introducing consolidated schools into Western Canada. The affirmative was argued by village men, and the negative by country men, and the country men used the argument, that the people who favor consolidation are the people who will benefit by having the school quite near them. They enlarged on this theme by saying that the country people who favor consolidation are those who hope to have it on the corner of their farm; and the town people who favor it are those who know they can in this way have a good school at less cost than any other way.

Another fact was brought to my attention when the chairman mentioned the names of two judges, and the audience was asked to name the third. Someone called out: "Those two are from the town. Get the other from the country," and the audience applauded. It was evident that in this matter of consolidation the village people and the country people are supposed to have a different view point.

All through the debate this fact was plain. Another fact that was evident was that people detest a direct tax. It is no wonder that people have allowed governments to collect great sums through tariffs, instead of direct taxes, and that governments have abused this method, for people would turn them out right and left, if they dared to collect the same sums in direct taxes that they pay with-



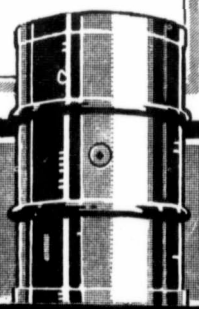
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One man wrote us once, "I don't see why other companies can't make just as good teeth as Avery's but they DON'T."

Well, there are two reasons why Avery Teeth are so good. The first is in the material and the second is in the process of manufacture. It's just a question of quality. We PAY MORE for the raw MATERIAL that goes into an Avery Tooth. Then we work that material by a BETTER METHOD.

It COSTS us MORE to MAKE an Avery Tooth because of the MATERIAL and METHODS we use but it COSTS you LESS to USE an Avery Tooth because of the same reasons.

The Rest of an Avery Separator is Just as Superior as the Teeth

We don't make special teeth, but where an Avery will fit we sell a lot of teeth to go in other machines just to help owners out and also to let men prove out that what we say about Avery teeth is true.

But Avery Teeth are only ONE of the superior points of an Avery Thresher. We do help a man out who is having trouble when we can, but the only way a man can get ALL the advantages of an Avery Thresher is to buy the complete machine with JUMBO TOOL STEEL TEETH and ALL the OTHER SUPERIOR AVERY FEATURES BUILT IN IT.

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out a word, and even defend their payment, when they are not sure just how much they are paying. It is on the same principle as the people who are afraid to ask what their bills are, because they know they will be uncomfortable if they have the facts before them.

But to come back to this matter of consolidation of schools. There seems no doubt that in a consolidated school, much better work educationally can be done than in a one-roomed country school. On the other hand there is the question of distance, and in some parts there has been consolidation, when the district was but sparsely settled, and it has meant that the children have had to drive great distances; in some cases the parents contend that the advantage of the better school has been more than offset by the injury to the health of the children.

Perhaps some day some one will gather up the statistics, to show how many of the leaders of thought in the world were trained in the country school and how many in the graded school. Theory all points to the graded school, as the place where the real thing should be turned out, but on the other hand, the educationist is faced with the fact that in the graded school, the system of fitting the child to the curriculum is more perfect, and is more capable of crushing out any individuality with which the child may have started.

There is one thing sure, and that is, that no parents worthy of the name will let the matter of a few dollars of extra taxes interfere with the education of their children. The fact that the village children may benefit more than the country will have no weight with good citizens. The question will be, what is the best, and how can it be got?

The real problem is not, consolidation or not consolidation, but a new system, in which it will be demonstrated that the aim of education is not to lop off every shoot of originality with which the child started, in order to turn out parrots, capable only of repeating what they have heard. But to foster originality, to encourage new lines of thought and repair that not all are made on exactly the same pattern.

RUSSIAN WOMEN

English and American women travelling in Russia tell us that Russian women are regarded socially, politically and economically as equal to men. They have said that Russian women will never have the struggle for equality that the women of other nations are having, for they already have equality. This seems borne out by the fact that in all the revolutions that have taken place in Russia, women have taken a very prominent part. Women have been imprisoned, sent to Siberia, and punished as have the men, and in about equal numbers, so far as has been reported here.

Women have taken equal risks with men, and apparently without any thought of being specially brave. The women who have taken these risks and have suffered beyond to all classes. Students take a big part, the aristocracy, women of great wealth, in fact all classes of women, have taken part in revolutions, and have suffered for doing so.

The Russian women with whom I have talked since the war have on the whole been opposed to war. One woman expressed her ideas in this way. She said: "You help Russia now. Then Russia eat you up."

Another said, "Too many women cry." While still another said, "Russia not want war. Too many men no arms, no legs, no anything."

No one can tell, now, that the people are in the saddle, what will happen, but one thing seems pretty sure, and that is that when the people of Russia rule, they will not be a great menace to the nations around them, the nations that are not looking for additional territory or military honor. The Russians have never been a military nation, and the women may be even more peace loving than the men.

THE LOOM

Riding back through Cautlebec through autumn night, knows the older gods, I saw and heard—The Loom. I heard a wild-boar grunting, I heard a lone stag bray.

PERCY'S PUZZLED! WANTS Your Help!! \$510.00 in Cash Prizes to be Awarded



MARY'S letter is surely a puzzler. She has so mixed up the letters in the names of things she would like Percy to give her for her birthday gift that they spell something different entirely. Sometimes she has even made two or three words out of one name, as in number nine, which is undoubtedly "Diamond Ring."

Each of the names in Mary's letter represents a present that any girl would like to receive for her birthday. You know one of them; now try to solve the remaining names, and when you do, re-write Mary's letter, substituting what you consider the correct names and send your solution to us. In this interesting contest we will award

\$510.00 in Cash Prizes

- 1st Prize \$150.00 in Cash
2nd Prize 75.00 in Cash
3rd Prize 50.00 in Cash
4th Prize 35.00 in Cash
5th Prize 25.00 in Cash
6th Prize 20.00 in Cash
7th Prize 15.00 in Cash
8th Prize 10.00 in Cash
9th Prize 10.00 in Cash
10th Prize 10.00 in Cash
11th Prize 5.00 in Cash
12th Prize 5.00 in Cash
13th Prize 5.00 in Cash
14th Prize 5.00 in Cash
15th Prize 5.00 in Cash
16th Prize 3.00 in Cash
17th Prize 3.00 in Cash
18th Prize 3.00 in Cash
19th Prize 3.00 in Cash
20th Prize 3.00 in Cash
21st Prize 2.00 in Cash
22nd Prize 2.00 in Cash
23rd Prize 2.00 in Cash
24th Prize 2.00 in Cash
25th Prize 2.00 in Cash
26th Prize 2.00 in Cash

Fifty Cash Prizes of \$1.00 each

PERCY'S PLAN WILL HELP YOU. THE first thing Percy did was to walk through the store and make a list of all the things that would make nice presents for a girl, so that he could compare his list with Mary's. He was surprised to find the number of new things one could get for a girl for very small sums of money. He had a list of things like: wrist watch, silk waist, manure set, jewel case, kid gloves, lace handkerchiefs, napkin ring, earrings, brooch, diamond ring, candy, photo frame, necktie, bracelet, slippers, card case, travelling bag, purse, blower, shawl, toilet set, perfume, flowers, set of fans, lace collar, etc., etc. These suggested presents may help you. Get a pencil and paper and try!

How to Send Your Answers. USE one side of the paper only in writing out Mary's letter and keep the same in form again about money substituting your solution of the proper names in place of the jumbled one. In the lower left hand corner instead of the postscript put your full name including Mr., Miss or Mrs. and your full address. Nothing else must be written on a separate sheet of paper. Do not send fancy, drawn or typewritten answers. A contestant may send as many as three sets of answers to the puzzle but only one set may be a prize winner. More than one prize will be awarded in any family. Entries to the contest is barred to all employees of this Company and their relatives.

NO EXPENSE IS ATTACHED TO THIS GREAT CONTEST ANY ONE CAN WIN A FINE CASH PRIZE

THIS interesting contest is reproduced from this month's issue of EVERYWOMAN'S WORLD, Canada's greatest Home Magazine. IT IS OPEN TO ALL. You may enter and win a big prize whether you are a reader of EVERYWOMAN'S WORLD or not, and moreover, you will neither be asked nor expected to take the magazine send a single penny, nor buy anything in order to compete. When your answers are received, the publisher of this great magazine will gladly send you a FREE OF ALL COST a sample copy of our very latest issue in order that you and your friends may know what a live, interesting, up-to-the-minute magazine is published right here in Canada by Canadians for Canadians. You'll surely like EVERYWOMAN'S WORLD. It tells stories, times, interesting articles, up-to-the-minute fashions, etc. It abounds with beautiful illustrations and departments of interest to every one in the family. More than 100,000 Canadian homefolks love EVERYWOMAN'S WORLD, and welcome it every month. It is sustaining American magazines in the favor of Canadians everywhere, and you will like it and agree that it is the most interesting magazine being produced in Canada.

How the Prizes Will be Awarded. AS soon as your answers are received, we will write and tell you the number of names solved correctly, send you your free copy of the magazine and the big list of cash prizes and rewards that you can win as well as names and addresses of hundreds of winners of big prizes from EVERYWOMAN'S WORLD.

The Contest Editor, EVERYWOMAN'S WORLD, CONTINENTAL PUBLISHING CO., LTD. 226 Continental Bldg., Toronto, Ont.

MAGNIFIED COPY OF MARY'S LETTER

Dear Percy, Since you have so kindly asked me to suggest a birthday present that I would like I am sending you a little list to think over. If you can puzzle this out in time for my birthday I would just love to receive any of the following:-

- 1 BALL RUME. 5 BELT CARE.
2 OH C ROB 6 SCARE CAD.
3 DEVILS KOG 7 GRANSIRE.
4 SORE STUFF 8 C CAN LEAK.
9 DO MI DARNING
10. TRaine MUSEC.

P.S. I have printed the words so that you can read them easily! Sincerely yours Mary.

\$150 IS FIRST PRIZE

THE judging of the entries will be in the hands of three independent judges, having no connection with this firm, whose names we will tell you in due course, and contestants must agree to abide by their decisions. The awards will be given to the senders of the best opinions and sets of answers qualified according to the rules and conditions of the contest. In judging the entries to the puzzle, points of merit will be given to the most correct answers; the general neatness and appearance of the entries; and the merit of both the answers and your opinions will be coupled in making the decisions on the awards. All answers must follow the form of Mary's letter, but containing the sender's solutions for the proper names as called for above. Answers in any other form will not be considered. The contest will close promptly at 5 P.M., August 26th, promptly after which judging will be commenced and the prizes awarded. Study Mary's letter and try for the correct solution now. Entirely in addition to the competitive prizes an extra cash reward is guaranteed and may be secured at once by every contestant complying with the conditions of the contest. Address your answer to:-

And-I heard the muffled mutter of the great guns far away. Its distaff wove the dooms of men, its phantom spindle veered, While the wandering wind that walks the world came wailing thro' the trees And the hair upon my head stood up, the horse flinched 'neath my knees, For I knew the gods behind the gods, the gods of an older day, The Norms who were ere Odin was, whom Ragnarok cannot slay. And I was the child of an ordered world and followed the Nazarene, But their spindle-song sang "Christ is dead with all that He seemed to mean." And the old fierce gods have come again, the gods of pride and might, Whose lips are slow and feeble to bless, but whose hands are heavy to smite, Who, desperate, rule the world for a while in dread by fear of the sword. With the hopeless fates behind their power and doom at their council board. The White Christ wails in Nibelheim and never shall rise again, His saints are dumb and in their stead ride the "Champions of the Slain"! And my heart grew cold within my breast as the shapeless shuttle whirred, For ever the whisper of distant guns was their songs over-word. "For I have been in the Ditches of Death, and I have seen men die, Your warp and woof may darken the earth, but they cannot hide the sky, Ye may grind men's bones and rive their flesh and pound their works into dust, But Christ on the Cross of Calvary is the sword our souls shall trust!"

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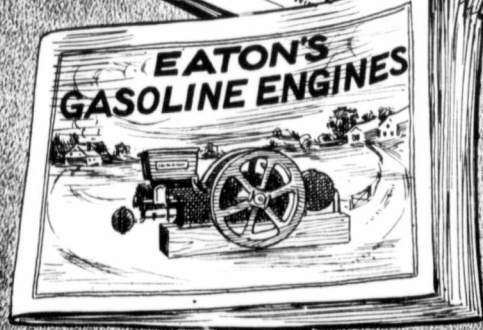
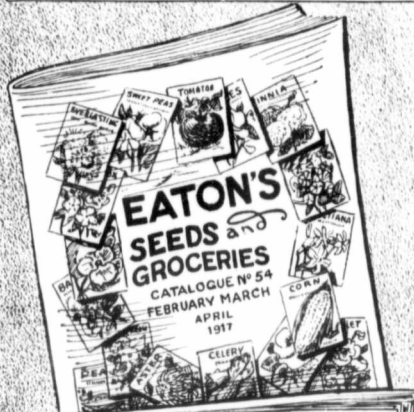
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The black bolts swing against the sky,
 a sudden rain squall blurred
 The half-seen vistas of the pines—At
 speaking of the Word
 The Sight had passed—and as I rode I
 saw by Maillerie
 A road-side Calvary stand clear against
 the dawning day
 —By Capt. J. H. Knight-Arkin.

**BEAUTIFUL FLOWERS
 AND
 HOW TO GROW THEM**

(By Mrs. Dumbrell, Charleswood)
 I believe annuals are the most satisfac-
 tory flowers here in this western climate.
 As so very often happens, our hardy
 plants do not always prove iron-clad.
 It has been very disappointing to me to
 find that what I had considered perfectly
 hardy, after coming through three win-
 ters, has winter-killed the fourth.



Stalking the Caterpillars

But even so, I would still try them if
 there is enough room in the flower border.
 Busy women on our prairie farms want
 something that will make a display all
 the time; and such a short time we have,
 too. But with care and early sowing,
 plants can be had quite easily, and with
 very little expense. They can also be
 used in conjunction with perennials to
 fill in any gaps left by early blooming
 plants. To the fragrance of the garden
 they contribute their share. Especially
 such as stocks, mignonette, nicotina and
 sweet peas. Summer bedding plants
 could be used, but they would be quite
 expensive. They would not suit the
 pocket-book of the western home garden-
 ers, especially in these war times, when
 every spare cent should go for the com-
 fort of our boys in the trenches.

Annuals can be purchased for a very
 small sum, and can be depended upon to
 give a great display of colors. The culti-
 vation of annuals is very simple if a little
 care is used while the seedlings are com-
 ing through. In the first place, do not
 sow the seed too thick. When sowing
 seeds, always remember that every seed-
 ling should have room to fully open out
 its seed leaves. Even more space than
 this, unless you have the conveniences to
 prick the seedlings off and transplant
 elsewhere. Some annuals will not bear
 transplanting, and must be sown out-
 doors where they are to bloom.

The most satisfactory annuals for deco-
 rative purposes that I have raised are
 asters, stocks, sweet peas, salpiglossis,
 pansies, candytuft, coreopsis, phlox and
 scabiosa. So I will just give you my
 notes on their cultivation. These can be
 raised in the window of the house, as
 they do not need the heat that some
 other seeds do—55 to 65 degrees.

For a few seeds, wooden, milk chocolate
 and cigar boxes are about right, and they
 are quite handy to water, as you can put
 the box in a pan of water, and let the
 water gradually soak up from the bot-
 tom. In this way the seeds do not get
 flooded out, as they are very apt to do if
 watered on the surface.

The soil I use is from a pile of well
 rotted sods (layer of sods and a thin
 layer of manure). To a pail of this soil
 I sift with it a three-pound lard pail
 of sand, and this makes the soil just right
 for the seedlings. For the asters I specially
 prepare the soil by baking for an hour,
 for I believe that aster disease is in the

M A D E I N C A N A D A



*Those things that need your
 attention on the farm:*

You, Mr. Farm Owner, who are about to make your first
 trip of the season to the farm, will find a score of things that
 need attention. Whether it is rented or "worked on
 shares," or whether you employ a superintendent, you, *the
 owner*, have certain things that you want done, will order
 done. And you want a record of how things look now:

- Certain old fences.*
- The foundation to the corn crib.*
- The south porch.*
- The broken hoops on the silo.*
- The land that needs tiling.*
- The condition of the orchard.*
- The condition of the horses and cattle and hogs.*

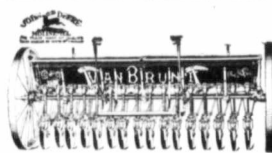
And one obvious thing to do is to make an auto-photo-graphic record.
 Make pictures of the things that don't please you, as well as pictures of the
 things that do please you. And alongside of each picture make a brief memo,
 —at least a date and title, an authentic, indisputable record written on the
 film at the time. It's a simple and almost instantaneous process with an

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 where they connect machines to regulate depth of disc boots in
 furrow is another original feature on VAN BRUNT drills.

1—REGULAR POSITION

All gates up, with latches in top
 notch at left side, to sow corn, beets,
 all grain and small seeds.

2 FOR COARSE SEED

Fasten all latches at right side to
 sow peas, common beans and extra
 large quantity of trashy oats.

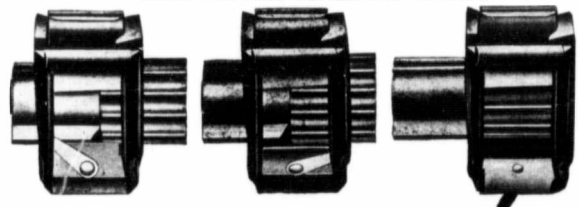
4 TO CLEAN FEEDS

Loosen all latches and drop gates to
 clean out feeds.

This is only one of the ex-
 clusive features.

Mention this paper

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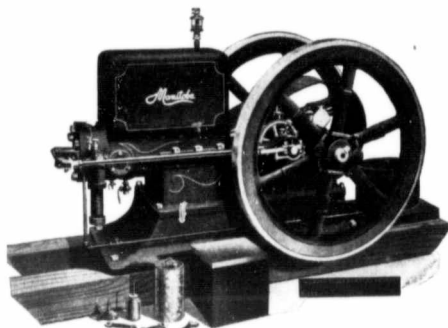
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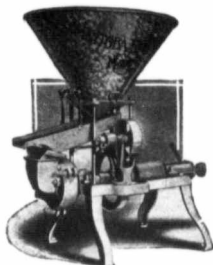
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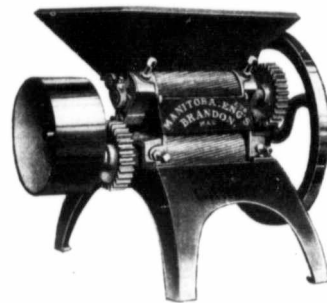
Bird's Eye View, Brandon Plant

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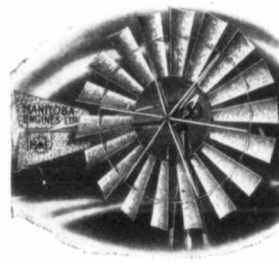
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BRANDON MANITOBA

seed bed. At any rate, since I have done this I have lost very few plants from stem rot.

Last year we did not lose one plant out of 800 plants, and the disease was very bad at St. Vital and around here, too. Right here let me say, **never** put asters in the same place the second year.

Aster seeds take from three to six days to come through, and should be large enough to prick out in two weeks from

developed they are transplanted two inches apart in the soil from the soil pile, but not as much sand mixed with it, because when they get into their blooming quarters they will not get any sand at all. Any good garden soil will give good results. I keep these growing well until time to put out in the open, but before 'his time I gradually harden them off.

Put out about June 1st to 10th. They may be set out a week earlier along the river, but out on the open prairie do not be in too great a hurry. The safest time for setting out the plants with us is when the oaks are coming into leaf. By that time they are not so apt to be caught by frost.

Carefully cover from hot sun and winds when first setting out the plants. Guard against covering with tin cans. So many people have this failing, and have lost such nice plants. Tin cans draw the frost at night, and also the heat in the daytime. These extremes kill or cook the plants. Shade with shingles or newspapers for a few days.

Remember to always give the plants plenty of room, as to do their best they must not be crowded. Keep the soil well stirred to conserve the moisture. Do not be afraid to be out in the sun, even if you do get sun-burned; it's healthy anyway. After setting out the young plants watch carefully for some time for cut-worms. You will usually find them just under the surface, not far from the plant. At one time I could not handle one of the greasy looking things for any money. Now I just go after them, and generally have a chicken or two who will make short work of them as fast as I locate them.

These hints are for those women who have no sun porch or green house to start their seeds, and cannot regulate the temperature. Also for those who cannot afford to have many varieties of flowers. Another thing, be sure and get good seeds. If I could only have fifty cents worth of seeds I would pay 10 cents a packet for them, five varieties, and they would be, sweet peas, phlox, pansies, salpiglossis and asters.



In her Forest of Sweet Peas

the time they come through the soil. Pansies are very slow germinating; they take fully four weeks in the house, but only two weeks in the greenhouse, so it is well to know just how long to give them.

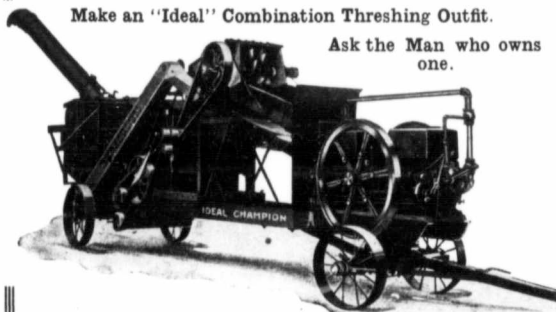
Annual phlox is another tardy plant, and seed taking much longer to germinate than fresh seed. These take one month to come through; stocks, one week, also pinks. Salpiglossis takes ten days, candy-tuft, a few days, and scabiosa, seven to ten days.

When the first true leaves are well

THE "IDEAL" ENGINE and "CHAMPION" SEPARATOR

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OUR WOMEN FOLK

CONDUCTED BY
PEARL RICHMOND HAMILTON

TONIC FOR THE TROUBLED

Paste these quotations above your kitchen table. The children will often ask you to read them. They will help the whole family. This is especially helpful on "the day when everything goes wrong." I have tried it, and found it a sure cure for "the blues." These are some of my favorite quotations.—P.R.H.

"If I covet one high grace
It is this: upon my face
Just to wear an inner light
To illumine other's night.
Give me such a look so high
That the saddest passerby
On a sudden glad shall say:
'Somewhere shines the sun today.'"

"Let's find the sunny side of life
And believe in it.
A light there is in every soul
That takes the pains to win it.
Oh, there's a slumbering good in all,
And we perchance may wake it.
Our hands contain the magic wand,
This life is what you make it."

"You never can tell what your thoughts
will do
In bringing you hate or love,
For thoughts are things, and their airy
wings
Are swift as a carrier dove.
They follow the law of the universe—
Each thing must create its kind—
And they speed o'er the track to bring
you back
Whatever went out from your mind."

"God sent his singers upon earth
With songs of sadness and of mirth,
That they might touch the hearts of men,
And bring them back to heaven again."
—H. W. Longfellow.

The Master's Touch

"An old violin—'twas a rare Stradivarius—
But broken and mended a dozen times
o'er,
When touched by the hand of the master
its music
Was richer and sweeter than ever before.

"Thus, often, the heart that is broken by
sorrow,
Or wounded by slander, betrayal or
wrong,
Is purer thereafter, and richer and stronger,
And rings out a sweeter and tenderer
song."

"I care not who were vicious back of me,
No shadow of their sins on me is shed,
My will is greater than heredity.
I am no worm to feed upon the dead.
My face, my form, my gestures and my
voice—

May be reflections of a race that was.
But this I know, and knowing it, rejoice,
I am myself a part of the great cause.
I am a spirit! Spirit would suffice
If rightly used, to set a chained world free.
Am I not stronger than a mortal vice
That crowds the length of some ancestral
tree?"

"You never can tell when you do an act
Just what the result will be;
But with every deed you are sowing a
seed
Though its harvest you may not see.
Each kindly act is an acorn dropped
In God's productive soil;
Though you may not know, yet this tree
shall grow,
And shelter the brows that toil."

"I am glad for the gracious, gifted souls
That brighten the world to-day;
For I can catch the shine of their light
sublime

As I journey along life's way.
The painter's brush that is steeped in
flame,

And the sculptor's subtle art;
The poet's strain and the sweet refrain
Of the singer, thrill my heart;
But I turn with joy to the hallowed soul

The Arrow and the Song

"I shot an arrow into the air,
It fell to earth, I knew not where;
For so swiftly it flew, the sight
Could not follow in its flight.

"I breathed a song into the air,
It fell to earth, I know not where;
For who has sight so keen and strong,
That it can follow the flight of song?"

Ada Ward—The Soldier's Friend

Among the interesting visitors to Western Canada recently was Miss Ada Ward, who has spent the last two years with the soldiers in the trenches, in hospitals, and in camps. With her blackboard illustrations she has made the soldiers forget their sufferings, and has cheered their hearts with her fascinating gift of entertainment. Miss Ward brought a picture of the soldier's life that few in her audience will ever forget.

In her address she paid a wonderful tribute to the Canadian soldier. She said "Canadian boys are better protected than any others, in so far as dangers from temptations, for they have taken 'home' with them. They are boys who have in their hearts a niche for the mother, the hearth, the Bible class and the Sunday school teacher they used to have—boys who hunger and crave for the touch from home. If you are writing for God's sake keep on writing! If you are knitting, for God's sake keep on knitting! If you are praying, for God's sake keep on praying! Anything, so long as you keep in touch with them. Tell them the little details of your life—it may be the means of saving theirs! Don't let them slip."

One of the great lessons of this war is that we are getting nearer the meaning of real religion—the religion that knits closer together humanity by dissolving class—at least the brave soldiers over there are teaching it to us at home. Speaking of this Miss Ward said: "One got very near the real thing in France." Her story left few dry eyes in the audience, for pathos and humor were blended all through her remarks. She prefaced her word picture by saying she had a special message for those who said they were afraid to let their boys join the army, soldiers were such a godless lot. "You needn't be afraid for your boy on the score of religion," she said. "Many a soldier has found his God over yonder, who never found Him amid the ease and luxury of home life. After all, what is religion? I think in France you get very near to the real thing. I find in one part of the Bible, 'Fear God and keep His commandments.' In another part, 'Whatsoever ye would that men should do unto you, do ye also unto them.' This is the religion of the soldier whether he be Anglican, Catholic, Non-Conformist or Jew. I have seen a tent where the Jewish rabbi held services on Saturday, followed that evening by confession heard by the priest for the Roman Catholics. At 9 o'clock on Sunday morning the Anglicans held their service; at 11 o'clock the Catholics celebrated mass, and in the afternoon the Non-Conformists worshipped God in their way. I wonder whether you could find such a place in Winnipeg.

"It is all very well to sit in your comfortable armchairs at home and talk about the soldiers in the trenches being a godless lot, but did it ever occur to you people that the boys are 'living' the true religious life?"

Home Economics

Last year Mrs. Dumbrill very generously sent flower seeds to more than three hundred women. She did so at her own expense, because she loves flowers, and she has the spirit of the flower missionary. She not only wants to see her own home abloom with flower glory, but she desires to see other women enjoy the pleasure that comes from flower culture.



THIRD YEAR DEGREE CLASS. DOMESTIC SCIENCE

From left to right—1. Evaline Judson, Taber, Alta.; 2. Ethel Armstrong, Souris, Man.; 3. Evelyn Moore, Manitou, Man.; 4. Elinor Fee, Hartney, Man.; 5. Gladys Henry, Killarney, Man.; 6. Margaret Speckley, Winnipeg; 7. Tressa Campbell, Walseley, Sask.

With a gift of love divine,
And friendly face where tender grace
And a kindly purpose shine,
For the choicest gift that heaven bestows
On the favored ones alone,
Is a tender heart that can feel the smart
Or a sorrow not its own."

"He that hath light within his own clear
breast
May sit in the center and enjoy bright
day;
But he that hides a dark soul and foul
thoughts,
Benighted walks under mid-day sun,
Himself in his own dungeon."

—John Milton

"Silks and satins and scarlets and vel-
vets put out the kitchen fire."

"Shut your mouth and open your eyes,
And you'll need nothing to make you
wise."

"Long, long afterward, in an oak
I found the arrow still unbroke;
And the song from beginning to end
I found again in the heart of a friend."

Influence

"When'er a noble deed is wrought,
When'er is spoken a noble thought,
Our hearts in glad surprise,
To higher levels rise.

"The tidal wave of deeper souls
Into our inmost being rolls,
And lifts us unawares
Out of all meaner cares.

"Honor to those whose words or deeds
Thus help us in our daily needs,
And by their overflow,
Raise us from what is low."—Longfellow.

The works of Charles Dickens contain
one thousand, four hundred and twenty-
five different characters.



The Dutton Home, Birle—Beautiful by some of Mrs. Dumbrill's Fine Floral Productions

I am wondering how many women have written Mrs. Dumbrell a letter telling of their success with the seeds she sent. A word of appreciation means so much. We were pleased to receive this letter from Mrs. J. Dutton, of Birtle, Manitoba, with a picture of her home, made beautiful through the seeds and plants Mrs. Dumbrell so kindly sent.

Birtle, Man., March 7, 1917

Dear Mrs. Hamilton:

In The Canadian Thresherman and Farmer, just a year ago, you gave us two papers on flower garden culture, by Mrs. Dumbrell, of Charleswood; also an offer of flower seed.

They were most instructive and interesting papers I have them beside me in my seed box, and read them often.

I wrote to Mrs. Dumbrell, not asking for seed, which I thought an imposition, but on a flower question. Still she most generously sent me seed, and later, perennial plants, also a rose bush, the charming Mrs. John Laing, which, with others, is at present asleep in the cellar.

The finest tomatoes I saw last season were in a Birtle garden, and from plants grown by Mrs. Dumbrell.

We all very much enjoy your corner of the magazine. I enclose a snap of our garden, which Mrs. Dumbrell helped to make beautiful.

Yours sincerely,
(Mrs. J.) Mary Dutton.

Wawanesa

Dear Madam:

I am pleased to report that the Wawanesa branch of the Home Economics Society are doing what they can to help the patriotic work along. We have just finished sewing \$14 worth of material, and had a tea and sale of work on January 20, which realized us \$36, to be spent in more material. We have also provided a rest room for the town, which was very much needed, as the hotel closed the first of June last. We have a membership of 32 for the coming year, and hope to do more along the line of patriotic work than in the past year.

Mrs. J. B. Leachman, Sec.-Treas.
Wawanesa, Man.

La Riviere

The February meeting of the H. E. S. was held at the home of Mrs. Newcombe. The meeting opened in the usual manner, after which the minutes were read and approved. It was decided that we would send a parcel to each of the La Riviere boys now in France. We are having a social evening on March 15 to raise funds with which to provide comforts for our overseas boys. We had a very fine demonstration on making a sunshine cake by Miss L. Keating.

The delegates to the convention in Winnipeg, Mrs. Henderson and Mrs. Durham, read their reports. Mrs. Newcombe and Miss McIvry gave us an instrumental duet. Lunch was served by Mrs. Keyes and Mrs. Steves. The meeting closed by singing "God Save the King."

CHARLESWOOD

"What the Home Economics Can do to Help Make the Boys' and Girls' Club of Charleswood a Success in 1917."—Paper read by Mrs. H. E. Viailoux.

(Discussion led by Mrs. Singleton, Principal Charleswood School)

Our Boys' and Girls' Club last year had a late start, to begin with, as spring had really smiled upon us before the Club was formed. As the school gardens were not prepared at all the autumn before, the members were much handicapped in their gardening operations at school. Fighting thistle and stink weed is not always an interesting experiment. The Home Garden contests were not taken up, and the chicken proposition, which looked so rosy, when outlined by the college professor, Mr. Parkinson, never materialized into anything but a few belated chickens, which should have remained in their shells.

However, 1917 is going to be different. Eggs will be set on time, and gardens planted. The H. E. S. is prepared to stand behind the Club, assisting them in every way possible. Therefore, the Monthly Talk at the H. E. meeting in February will be on "Vegetable and

PURITY FLOUR

More Bread and Better Bread



The Power Behind the Cook

Flower Gardens," and all boys and girls are invited to hear the expert advice given along these lines by a skilled gardener.

Shortly after this a meeting of the Boys' and Girls' Club should be arranged, and plans made for a good season's work. The Home Economics Society is willing to give some special prizes for vegetables, poultry and flowers at the fall fair in Charleswood school, which must be a grand reality this autumn. The competition should be open to the four schools in Charleswood, viz., Phenix, Charles-

wood, Chapman, and London. No doubt the council will assist in the scheme. I think the members of the H. E. S. should use their influence with members of the school board, and parents as well, to induce them to help the boys and girls as much as is possible, providing proper garden plots in the school grounds, and in home gardens, ploughed and manured ready for the pupils to do their expert work with rake, hoe and elbow grease. As we wish our boys and girls to be patriotic I will suggest that the Club arrange a patriotic sale of vegetables and flowers

after the fair. A Red Cross sale would be a splendid idea, and the members could bring a few extra entries with this end in view. I mean to give a patriotic garden party this coming summer, and to ask all friends who have gardens to send some home-grown vegetables for sale. I hope the Boys' and Girls' Club will respond to this invitation. By all working together for this season I feel we can make a splendid success of club work, and gain much useful knowledge.

Discussion

Mrs. Singleton, in her discussion, had great hopes of the success of the Club, in which she was keenly interested, and urged that a personal supervision be given the boys and girls in the various contests outlined in the Club bulletin.

A first-class bread-maker, for instance, could lend a hand in showing the girls her "methods." A successful raiser of chickens could assist the members in their chicken raising problems. Members of the H. E. S. could take on this work, and thus give material assistance to the young people.

The meeting, which was a very pleasant one, closed at 4.30, when "Afternoon Tea" was served by the tea committee.

The members present, of the H. E. S., heartily endorsed the proposed amendments to various laws sent them by the W. P. E. L., Winnipeg. Mesdames Brown and Atkinson were appointed delegates to the H. E. convention in February in Winnipeg. A "Flower Fund" was instituted by the members, each one paying five cents at the monthly meeting to provide flowers in the case of illness or death of members.

The Charleswood H. E. S. held their monthly meeting in the Charleswood



Old Lady. "And how did you get your medal?"
Old Lady. "Yes, yes. But how, and where?"

Tommy. "Won it."
Tommy (in desperation). "At a bazaar, Mum. In a raffle!"

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You will like this recipe:

QUAKER MUFFINS

2/3 cup rolled oats
1 1/4 cups flour
4 level teaspoons Gold Standard Baking Powder
1/2 teaspoon salt
1 cup scalded milk
1 egg
2 tablespoons melted butter
3 tablespoons sugar

Turn scalded milk on rolled oats, let stand five minutes; add sugar, salt and melted butter; sift in flour and baking powder; mix thoroughly, and add egg well beaten.

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school on Friday, 16th inst. As Mrs. Valoux, President, was unable to attend, Mrs. Dumbri was voted in the chair, and took charge of the meeting in a very able manner. We had only nine members present, owing to its being such a bad day. The minutes of last meeting were read, and passed as satisfactory. We had the report of the delegates to the conference, and the secretary read a paper dealing with the different papers given at the convention. This was enjoyed very much. We have arranged for a dance at the close of our next month's meeting, March 16. Miss F. Corbutt, our youngest member, was the hostess at the close of our business meeting, afternoon tea being served.

Mrs. H. Brown, Sec.-Treas.

Emerson

My Dear Mrs. Hamilton:

I wonder if all the delegates enjoyed the convention quite as much as we did, for it certainly was a great pleasure and inspiration to all of us. We are to have our monthly meeting next Saturday, when two of our delegates will give their reports. One, Mrs. Casselman, is to take up the social side of the convention, and Mrs. Roll the report of papers and addresses. They have asked me to give a short talk or paper on Professor Broderick's address on perennials, as the April meeting is rather late to plan for a perennial border, especially if one is going to raise them from seed. Our society is directing most of its energy at present, in fact all the time, to Red Cross work. We held an executive meeting yesterday, and made arrangements for planning our second flower show. Last Tuesday night our young people, under the auspices of the H. E. S., put on a concert and sketch, and realized the sum of \$113.50. After all bills are paid we will have \$105.75 to devote to Red Cross work. We have decided to have a ten-cent tea at our regular monthly meetings, the little social time when the members can mingle together makes our meetings less formal; in fact we feel like one big family then. Our January and February meetings have been particularly interesting. Splendid papers were given by two of our clergymen and one of our members, and although the weather was so extremely cold the attendance was good.

I am yours sincerely,
Emily Bell, Secretary.

Notes From the Superintendent's Report of Home Economics Work Canning and Preserving

In order to further emphasize this work, we have been fortunate in persuading Mrs. McBeath to give a number of practical demonstrations which have resulted in several people undertaking the work, with splendid results. We have also added to the Extension staff a special demonstrator on canning and preserving, and have persuaded Miss Atkinson, who has charge of this work, to take a special course in canning at Columbia University, New York. Both Miss Atkinson and Mrs. McBeath promise to place at the disposal of the other Extension lecturers their knowledge and experience, so that during July and August canning demonstrations will be the order of the day everywhere.

Boys' and Girls' Clubs

We have our work so planned that every Extension worker is prepared to organize a Boys' and Girls' Club, and to give whatever assistance is needed in explaining the various contests. We are mailing a Boys' and Girls' Club bulletin to each of you at your home address to-day. Last year there were 110 central clubs, 800 branch clubs, and over 13,000 members, and this year it would not surprise us if we had 20,000 members. The Home Economics Societies can do their best work—

1. By taking the initiative in organizing a Club in case one has not already been organized, and

2. By giving the organizer or teacher, or inspector, or whoever is behind it, all the support possible, and the attitude of the Extension Department is to help and not to run the clubs. They are your clubs, and we want you to manage them, but we promise to help all we can.

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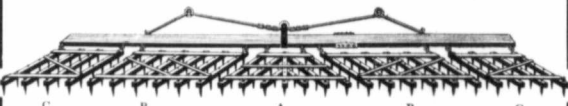
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A roller equalizer is used with the four-horse draw bars only. Every piece of wood used in these harrows is good hardwood, insuring a most durable implement. All teeth are double rivetted. They are of high carbon steel, with dagger points; this style of tooth cuts deeply and cultivates perfectly. The evenness is easily taken off the harrows, but will not come off itself, as the connecting hooks have a safety drop link.

Each section is independently connected to the draw bar; this makes the harrow flexible, and does its work evenly. Strongly rivetted and firmly braced throughout.

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THIS WASHER MUST PAY FOR ITSELF

A MAN tried to sell me a horse once. He said it was a fine horse and had nothing the matter with it. I didn't know the man very well either.

So I told him I wanted to try the horse for a month. He said "All right, but pay me first, and I'll give you back your money if the horse isn't alright."

Well, I didn't like that. I was afraid the horse wasn't "alright" and that I might have to whistle for my money if I once parted with it. So I didn't buy the horse, although I wanted it badly. Now this set me thinking.

You see I make Washing Machines—the "1900 Gravity" Washer.

And I said to myself, lots of people may think about my Washing Machine as I thought about the horse, and about the man who owned it.

But I'd never know, because they wouldn't write and tell me. You see, I sell my Washing Machines by mail. I have said over half a million that way. So, though I, it is only fair enough to let people try my Washing Machines for a month, before they pay for them, just as I wanted to try the horse.

Now, I know what our "1900 Gravity" Washer will do. I know it will wash the clothes, without wearing or tearing them, in less than half the time they can be washed by hand or by any other machine.

I know it will wash a tub full of very dirty clothes in six minutes. I know no other machine ever invented can do that without wearing the clothes. Our "1900 Gravity" Washer does the work so easy that a child can run it almost as well as a strong woman, and it doesn't wear the clothes, fray the edges nor break buttons, the way all other machines do.

It just drives soapy water clear through the fibres of the clothes like a force pump might.

So, said I to myself, I will do with my "1900 Gravity" Washer what I wanted the man to do with the horse. Only I won't wait for people to ask me. I'll offer first, and I'll make good the offer every time.

Let me send you a "1900 Gravity" Washer on a month's free trial. I'll pay the freight out of my own pocket, and if you don't want the machine after you've used it a month, I'll take it back and pay the freight, too. Surely that is fair enough, isn't it. Doesn't it prove that the "1900 Gravity" Washer must be all that I say it is?

And you can pay me out of what it saves for you. It will save its whole cost in a few months in wear and tear on the clothes alone. And then it will save 50 to 75 cents a week over that on washwoman's wages. If you keep the machine after the month's trial, I'll let you pay for it out of what it saves you. If it saves you 60 cents a week, send me 50 cents till paid for. I'll take that cheerfully, and I'll wait for my money until the machine itself earns the balance.

Drop me a line today, and let me send you a book about the "1900 Gravity" Washer that washes clothes six minutes.

State whether you prefer a washer to operate by Hand—Engine Power—Water or Electric Motor. Our "1900" line is very complete and cannot be fully described in a single booklet.

Better address me personally
S. B. MORRIS, Mgr.
"1900" Washer Company
337 Yonge St. - Toronto



Mother's Corner

To My Daughter

O Daughter Mine, whose future is my prayer,
May thou be richly blessed, with just of care.
Sufficient to ennoble and refine
The character, the sweetness that is thine.

May purity and love in thee abide,
Patience and gentleness, what'er betide,
That, though thy path may lead through
Woe or weal,
Thy children can look up to thee and feel
That has been ever noble, just and good,
A perfect flower of glorious womanhood.

A Prayer for Young Women

The following prayer I have kept before the minds of our club of girls for the past eleven years. I trust it will help our girl readers:

"Keep my mental home a sacred place, golden with gratitude, redolent with love and white with purity. Let me send no thought into the world that will not bless, or cheer, or purify, or heal."

Dear Mothers.

For a long time I have wanted to have a heart-to-heart talk with you about your daughters—those girls whose lives throb with emotions hard to understand at times. For eleven years I have found joy and sorrow while trying to guide the lives of girls from environments clean or filthy; wherever I see a girl my heart goes out in love to her, for to me the loveliest opportunity in this whole big, wide world is the chance to encourage a girl to climb upward.

Just now our womanhood is going through strange experiences. Our girls must develop every bit of moral, mental and physical strength possible to be worthy of those brave men who are offering their lives in sacrifice for our protection and honor. Our future women must be the strongest in the world. All corners of the earth expect it. If every girl and woman in Canada possessed a pure determined will, there would be in Canada no jails, no reformatories, and I almost believe no insane asylums. Canada would be a paradise if all our girls were pure and clean. Why is this not possible?

LESSONS IN COOKING NO. 3

Art in Planning Meals and Combining
ing, Digestible and Appetizing—Menus for Spring

By Edith Charlton Salisbury

To many women, the most difficult part of preparing and serving meals is to select those foods which make not only an appetizing and nourishing bill of fare, but which represent a fairly well-balanced dietary. That means a bill of fare in which all five food principles—namely, the proteids or tissue-building materials, fats and carbohydrates—will be properly represented. In order to do this it is not necessary to spend time figuring a perfect balance of food materials for ordinary meals, but it is necessary to have a general idea of food values and to be careful that too much fat, or protein or sugar or starch is not served at one time. In a previous lesson, a little instruction was given on the use of each food principle in the body, also some general examples of each principle were mentioned. From time to time, it may be possible to repeat, or add to, that instruction, but for this month the following examples of common mistakes made in combining food materials will illustrate how it is extremely easy to have too much of one or more food principle in the daily bill of fare. Every one will recognize these mistakes as occurring very frequently in the meals ordinarily served in the average home:

- Beef or mutton, baked beans and mince pie—too high in protein.
- Cream of corn soup, meat, cheese, custard—too high in protein.
- Beef, macaroni and cheese, peas—too high in protein.
- Roast pork, fried potatoes, rich pudding with butter sauce—too high in fat.
- Pork, vegetables with drawn butter



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31 inches high in playing position. With lid closed, the Carola stands 22 inches high, x 13 x 11 inches.

- Weights only 11 pounds. Plays all Victor and Columbia Records. Uses any standard needle. Sound waves do not pass through metal. Tone arm is of nickel silver. This prevents rasping metallic ring.
- Remain sealed and you can easily rewind or change records. One winding plays one 12-inch record, or two 15-inch or three 8-inch records.
- Every musical note produced in all its fullness and richness.
- Body is made of acoustic metal, strong and durable.
- Mahogany finish. The appearance is a surprise. It is beautiful, artistic and dignified. The delicacy and excellence of its finish, we believe you will agree, makes it the finest looking little phonograph in the world.
- Small and convenient to handle.
- Light enough to carry about the house; ideal size for yacht, to take to summer cottage, or in motor car.
- Dust proof compartment specifically designed to contain records; this gives protection against dust, dirt and damage, and keeps records always easily accessible. (Albums extra.)
- Top can easily be lowered and raised, enclosing entire phonograph, making it one compact unit and protecting all working parts. Nothing is exposed to get injured or to spoil appearance.

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You have no conception of what marvelous music this machine makes until you have heard it. Owners of phonographs costing hundreds of dollars more vow they cannot tell the difference.

When it arrives in your home, it will be one of the happiest moments in your life. You can dance all the latest dances in your own home. It will be an endless source of delight and comfort to the entire family and makes an ideal present.

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Enclosed please find \$25.00 for which please send me at once CAROLA Phonograph as advertised.

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We would be glad to send you our booklets, prices and particulars of any of the undermentioned goods, if you will kindly place an X against any you are interested in. We know we can sell you these **Articles** at a less price and give you better quality, and at the same time give you more money for your **HIDES** and **FURS** than any house in Canada.

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sauce, salad with mayonnaise dressing and perhaps a dessert served with whipped cream—too high in fat.

Chicken, potatoes, sweet potatoes, stewed corn, rice pudding—too high in starch.

A combination rice and meat dish, potatoes, beets, corn starch pudding—too high in starch.

Meat, sweet potatoes, preserves, sweet cakes, jelly—too high in sugar.

Unless the selection of food is very carefully watched there is always a tendency in well-to-do homes to serve meals containing too much protein and fat. When butter, cream and meat appear at every meal it is almost impossible not to do so. What is the harm if we do serve too much of those things, are they not good and do we not like them? Some one asks. Unfortunately, the things we like are not always the things most suitable for us and too much fat or sugar generally results in a sick headache or a bilious attack, too much protein leads to various diseases of stomach, liver and kidneys. Even if we are careful not to overstep the limit in amount it still makes the meal considerably more expensive than is necessary. That is, after all, one of the fundamental reasons for studying food values and the cost of food.

Some Good Combinations

The total food value should depend chiefly on the amount of physical exercise taken by the members of the family. The menu for a farmer's family should contain more heavy, rich foods than that of a family in which the work is largely indoors and requires but little physical effort.

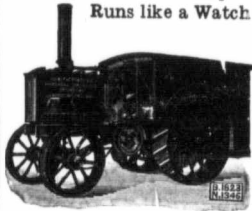
If the dinner is divided into four main courses—soup, meat, salad and dessert—plan to have two heavy and two light courses, such as cream soup, light meat, as veal or lamb, a fairly heavy salad and a light dessert; or, clear soup and heavy meat, as roast beef or pork, light salad without oil dressing, and a rich dessert, that is, one containing eggs, milk or considerable sugar.

Digestion depends on appetite, but appetite is considerably sharpened and toned by a pleasing combination of foods, a combination which enables one to partake of the food with relish to the very end of the meal. The "pleasurable taste" is largely dependent on a wise combination of foods. Most foods have the following characteristics, or contrasts: Heavy or light; strong flavored or mild flavored; moist or dry; crisp or soft; acid or sweet; hot or cold. The satisfactory and well-chosen meal should have contrast as well as variety; it should not be composed entirely of one kind of food, as all heavy or all strong flavored dishes, or all soft or all dry. It is possible to eat with relish much larger amounts of mild-flavored foods, like bread and potatoes, than of strong-flavored foods, like turnips, cabbage, cheese and game. In simple combinations and made dishes the strong flavored foods should be much less in quantity than the mild-flavored food. Much less cheese is used than bread or macaroni, and fewer tomatoes than macaroni in a dish combining these two foods. Creamed potatoes should not be served with gravy, but with a dry meat; moist meats, such as stews and fricassees, should be served with dry vegetables. Plain sponge cake or cookies are more suitable to serve with ice cream and whipped cream desserts than rich layer cake frosted with caramel or chocolate. Acid sauces should be served with rich puddings. In a well-planned course dinner the soup should be clear—a bouillon or consommé—to act as a stimulant to the appetite. Such a soup is usually served with croutons or crackers, which give crispness or dryness. If fish is served it should be accompanied by an acid sauce. The meat is the main course and is generally the heaviest, most highly-flavored dish on the menu. The vegetables should be soft, moist, and are better mild-flavored. The salad should be crisp, light and cold. The dessert may be warm, moderately heavy and rich, in which case it should not be followed by nuts and raisins. If a cold, light des-

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For further information see the Kill-Em-Quick Gopher Poison Advertisement on Page 39

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The great racing Pedalmobile is built exactly like a 6 cylinder 80 horsepower motorcar. It has real electric head lights, wind shield, gasolene tank, three speed lever, steering wheel, radiator, horn, lamps, etc.

HERE IS THE GRANDEST PROPOSITION EVER MADE

BOYS, you can earn this big, handsome racing Pedalmobile and be the pride of the town. Pedalmobiling is the greatest sport ever invented; you simply jump in the car, apply the special lever, touch your feet to the pedal and go spinning along to beat the road. Put on your overcoat and take the hills without pedalling, turn the sharpest corners without fear of spilling, blow your horn if any one is in the way, or reverse your speed lever and stop. In fact, the Pedalmobile will do everything a real auto will do but burn up gasolene. Beats bicycling all hollow, and just think of it, boys, you can get a racing Pedalmobile absolutely free and a jimmidy guaranteed watch as well that anybody would be proud to own. It has double solid nickel case, famous American movement, stem wind and stem set and absolutely guaranteed for one year.

If you are a live go-ahead boy and these two grand prizes interest you, just send us your name and address. We want you to help us advertise and increase the demand for Fairy Beries, the delightful new cream candy coated breath perfume that every body just loves.

THE REGAL MANUFACTURING CO., Limited, Dept. W 81 TORONTO, ONT. 26B

RENNIE'S NORTH GROWN
Canada's Best Seeds

- Rennie's Prize Swede Turnip, for table or stock 4 ozs. 20c, lb. 65c
 - Rennie's Derby Swede Turnip, biggest cropper 4 ozs. 20c, lb. 70c
 - Perfection Mammoth Red Mangel, for stock 4 ozs. 15c, 1/2 lb. 25c, lb. 45c.
 - Yellow Leviathan Mangel, good keeper 4 ozs. 15c, 1/2 lb. 25c, lb. 45c
 - Rennie's Jumbo Sugar Beet, for feeding 4 ozs. 15c, 1/2 lb. 25c, lb. 45c
 - Improved Early Ohio Seed Potatoes Peck 75c, bus. \$2.50
 - High Grade Longfellow Yellow Flint Seed Corn Peck 75c, bus. \$2.30
 - High Grade Compton's Early Yellow Flint Seed Corn Peck 75c, bus. \$2.30.
 - Northwestern Red Dent Seed Corn Peck 70c, bus. \$2.30
 - High Grade Wisconsin No. 7 White Dent Seed Corn Peck 75c, bus. \$2.85.
 - Select Yellow Dutch Onion Sets lb. 35c, 5 lbs. \$1.70
 - English Multiplier Potato Onion Sets lb. 30c, 5 lbs. \$1.40
 - Gold Medal Gladioli Bulbs (no two alike) 10 for 85c, 100 for \$6.00
 - Rennie's Mammoth Squash, specimens 403 lbs. weight Pkg. 25c
 - XXX Scarlet Round White Tip Radish Pkg. 10c, oz. 20c, 4 ozs. 60c
 - XXX Melting Marrow Table Peas (dwarf) 4 ozs. 15c, lb. 40c, 5 lbs. \$1.90.
 - Round Pot Kidney Bush Butter Beans 4 ozs. 15c, lb. 55c, 5 lbs. \$2.40
 - Cool and Crisp Table Cucumber Pkg. 5c, oz. 15c, 4 ozs. 40c
 - XXX Early Table Sugar Corn (very fine) Pkg. 10c, lb. 40c, 5 lbs. \$1.90
 - Rennie's Fireball Round Table Beet Pkg. 10c, oz. 20c, 4 ozs. 50c
 - XXX Early Summer Cabbage (heads 12 lbs. each) Pkg. 10c, oz. 30c.
 - Rennie's Market Garden Table Carrot Pkg. 10c, oz. 25c, 4 ozs. 75c
 - Early Yellow Danvers Onion, black seed Pkg. 5c, oz. 20c, 4 ozs. 60c, lb. \$1.90.
- Seed Corn and Potato Prices do NOT include freight charges.

"Pakro" Seedtape. "You plant it by the yard." 2 pkts. for 25c. Ask for descriptive list. Rennie's Seed Annual Free to All.

Order through your LOCAL DEALER or direct from

RENNIE'S SEEDS Wm. RENNIE Co., Limited
394 Portage Ave., WINNIPEG
Also at TORONTO MONTREAL VANCOUVER

Twelve Months of this Magazine for \$1.00

Columbia Batteries



NO. 6 COLUMBIA IGNITOR DRY CELL

FOR GENERAL IGNITION CANADIAN CARBON

When you want a battery to light a lantern or run an engine, here's the name to remember—"Columbia."

Canadian National Carbon Co., Limited
Toronto, Ontario
Furnishing complete outfit including poles, no extra charge.



GREATLY IMPROVED HORSE COLLAR PADS



Look Where the Arrows Point!

Our new staple and felt reinforcing device gives the hooks a larger, firmer hold on the pad and keeps them from coming off easily. It adds to life of the pad and satisfaction of the user. This form of attachment is

Found Only On Pads Made By Us

Ask your dealer for free Tapatco booklet. Shows pads in colors and contains valuable horse remedies. If he hasn't it request him to write us direct.

The American Pad & Textile Co.
Main Office and Plant, Greenfield, Ohio, U.S.A. Chatham, Ont.

sert, as an ice or jelly, has been chosen, nuts and raisins may be served with the coffee, which, at a course dinner, should always be taken without cream. Clear, black coffee stimulates the digestion, while the addition of cream to it tends to retard digestion.

The Artistic Side of Menu-Making
An expert in foods and cookery has, in a recent article, compared the art of planning meals with the art of painting, in this manner:

"A well-planned meal has something in common with a well-designed painting. The painting usually consists of a background of neutral colors, relieved here and there by bits of bright color, known as the high lights. The background may be a forest in browns and greens and the high light may be the sun finding its way to one spot through the trees.

"A well-planned meal has its background also. This consists usually of neutrally flavored foods, bread, meats, cereals. These should be touched up like the painting and relieved, like the painting, by small quantities of food having pronounced flavor, as acid fruits, pickles, relishes and sweets.

"Of the painting it is foolish to try to say whether its success is due more to the background than to the high lights, or vice versa. The background sets off the bright bits of color and keeps them from clashing one with the other; the bits of color give charm to the sombre expanse. So, too, with the meal. The breads, meat and cereals are the substantial part and are absolutely necessary, not only for health, but also for the purpose of keeping the foods of pronounced flavor from clashing. The flavoring materials, on the other hand, are necessary oftentimes to make the more solid foods more attractive and palatable, and authorities tell us now that good digestion waits on appetite."

Suitable Meals for March

The menus for the spring months should be characterized by a generous allowance of vegetables and fruits. Fortunately for those who live in colder countries where all fruits and vegetables do not thrive prolifically, the home-grown varieties and the cheaper kinds are just as rich in mineral salts as some of the imported and high-priced articles. Menus for one day in March may be as follows or may serve simply as a suggestion for other menus in which other materials at hand may be used.

BREAKFAST
Cream of Wheat with Sliced Bananas
Bread Crumb Griddle Cakes
Maple Syrup
Coffee

DINNER
Plain Pot Roast
Mashed Potatoes Mashed Turnips
Cabbage and Apple Salad
Cherry Souffle

SUPER
Turnip Soup
Potato Fritters—German Style
Raisin Bread and Butter
Canned Fruit Tea
Turnip Soup—Press 2 cups of cold boiled turnip through a sieve; add 2



Scene—
Concert at a Casualty Clearing Station.
Padre—"Lance-Corporal Gascoyne, of the — Regiment, just in from the Somme, will sing 'A Little Bit of Heaven.'"

PATMORE'S

RELIABLE NORTHERN GROWN SEEDS, TREES, SHRUBS and FRUITS



Seed time, the season when we lay the foundation of a good crop or a poor one, is close at hand. Good crops can be best assured only by using good seed. PATMORE RELIABLE SEEDS are selected from long years of experience, proving which varieties are the best and most profitable to grow here in the West. Reliable Flower and Vegetable Seeds, Grasses, Fodders, Farm Seeds and Seed Potatoes, of all the best hardy varieties.

FODDER AND FIELD SEEDS

Per 100	
Sorghum, a valuable fodder grass	\$12.00
Millet, Common, Siberian, Hungarian or Japanese	6.00
Spring Tares or Vetches	8.00
Spring Rye, per bushel	1.75
Nor-West Dent Corn, Northern grown	2.75
Longfellow	2.50
North Dakota Dent	2.50
Yellow Dent	2.50
Rape Seed, per lb.	.15
Sweet Turnip, per lb.	.45
Mangel, per lb.	.45
Field Carrot, per lb.	1.00
Sugar Beet, per lb.	.50
Garden Peas, best varieties, per lb.	.50

GRASSES AND CLOVERS

Per 100	
Brome, No. 1	\$12.00
Western Rye, No. 1	12.00
Western Rye, No. 2	10.00
Timothy	10.00
Alfalfa	25.00
Clovers, Red	25.00
Clovers, Alsike	24.00
Pasture Grass	18.00

WE HAVE GROWING IN OUR NURSERY AND OFFER FOR SALE THIS SPRING:

500,000 Caragana, 1 to 4 feet high.
255,000 Native Maple, 1 to 10 feet high.
6,000 Ontario Maple, 2 to 6 feet high.
150,000 Russian and other Poplar in all sizes.
50,000 Lilac, 1 to 5 feet high.
115,000 Russian Golden Willow in all sizes.
70,000 Russian Laurel in all sizes.
5,000 Crab Apple and Plum Trees and a large stock of all hardy fruits, ornamental shrubs, plants, etc.

We grow and offer all of the Hardest of Hardy Fruits, Apples, Crab-Apples, Plums, Cherries, Gooseberries, Currants, Raspberries, Strawberries, Rhubarb, etc., the very fruits that are needed for the comfort and health of the Western prairie home.

Honeyuckle Bushes, Asiatic Maples, Russian Olives, Elders, Spiraea and other Hardy Shrubs, Hardy Rose Bushes, Paeonies and the old-fashioned but ever popular Herbaceous Plants.

For more than 30 years we have been growing and selling Hardy Trees, Shrubs and Fruits, and all over Western Canada you will find homes made beautiful by the use of

PATMORE'S Hardy Trees and Shrubs.

OUR 1917 CATALOGUE WILL INTEREST YOU. It is free, and illustrated with actual photos of Western growth, and compiled with the experience of 30 years in this Western country. Write for it to-day.

COLLECTION NO. 1
Contains 22 varieties of our Reliable Vegetable Seeds in packets and outdoors 2 1/2 lbs. of seeds for..... \$1.25 prepaid.

COLLECTION NO. 2
12 packets of Reliable Flower Seeds for 25c prepaid.

FARMER'S COLLECTION NO. 3
Contains 1 lb. Mangel, 1 lb. Sugar Beet, 1 lb. Swede, 3/4 lb. Carrot, 3/4 lb. Kale and 4 lbs. Rape—8 lbs. seed for \$2.50 prepaid.

In our Catalogue we offer 60 of the Choicest Varieties of Spencer's Sweet Peas

SEED POTATOES

Are likely to be very scarce

Bovese, per bushel	\$2.00
Carman No. 3, per bushel	2.00
Drier's Standard, per bushel	2.00
Kidney, per bushel	2.00
Mortgage Lifter, per bushel	1.50
Wee McGregor, per bushel	2.00
White Sunrise, per bushel	2.50
Table Talk, per bushel	2.50
Six Weeks, per bushel	2.50
Honeycreeper, per bushel	2.20
Early Ohio, per bushel	2.00

SHRUBS FOR HEDGES

Per 100	
Caragana, 12-15 inch seedlings	\$ 3.00
Caragana, 2 to 3 feet	5.00
Caragana, 3-4 feet, selected	10.00
Lilac, 2 to 4 feet	5.00
Lilac, 3 to 4 feet	10.00

YOUNG TREES

Manitoba Maple Seedlings	\$ 1.00
2-3 feet trees	5.00
5-6 feet trees	10.00
Ontario Soft Maple, 3-4 feet	10.00
Cottonwood Seedlings	1.00
2-3 feet	5.00
Elm, 3-5 feet	10.00
Russian Laurel Willow, 2-3 feet	5.00
5-6 feet	10.00
Russian Golden Willow, 1-3 feet	5.00
5-7 feet	10.00



The PATMORE NURSERY CO. Limited
BRANDON, Man. SASKATOON, Sask.
The Oldest Horticultural Establishment in the West
ESTABLISHED 1883

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Please send me your illustrated Free Catalog.

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FREE FOR SIX MONTHS—My special offer to introduce my magazine, "Investing for Profit." It is worth \$10 a copy to anyone who has not acquired sufficient money to provide necessities and comforts for self and loved ones. It shows how to become richer quickly and honestly. Investing for Profit is the only progressive financial journal and has the largest circulation in America. It shows how \$100 grows to \$2,000; write now and I'll send it six months free. H. L. Barber, 490, 30 W. Jackson Boulevard, Chicago.

COMBINGS!



LADIES—We make your combings into switches, any quantity for **\$3.00**. Satisfaction Guaranteed.

New Hair added to Combings if desired from **\$1.00** worth up.

We carry a full line of **TOILET GOODS** 10c. postage for mailing.

Elite Hairdressing Parlors
207 Enderton Building
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The Happy Baby

The air of perfect happiness and contentment of babies brought up on Savory & Moore's Food is constantly a subject of remark. This is simply because it is so easily digested, so nourishing and satisfying, in fact an ideal food for babies in every way.

Get a tin of Savory & Moore's Food to-day from your Stores, and note how eagerly baby will take it, and what marked improvement and steady progress will follow its use.

MOTHER'S GUIDE FREE

Savory & Moore's little Book "The Baby" is full of useful and reliable information on Infant Management. It is just what a young mother requires, and will prove invaluable in the home. A Free Copy may be obtained on application to Savory & Moore, P.O. Box 1601, Montreal.

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Of all Druggists and Stores

BUY YOUR **LUMBER DIRECT**
FROM MILL TO CONSUMER
MILL TO CONSUMER

Why pay middlemen's profits when you can buy highest quality lumber, shingles, sash, doors, windows, fence posts, etc., direct from us, and save 20 to 40 per cent? We make prompt shipment on everything in lumber of guaranteed quality, required to build a house, barn, implement shed, silo, granary, school or church. Farmers, Contractors, Secretaries of School Districts and Municipalities, write for our prices delivered, freight paid, to your nearest station. Write now.

The F.M.T.C. LUMBER CO.
D.P.T. VANCOUVER, B.C.

cups of scalded milk and 1 tablespoon each of chopped celery and parsley, 1/2 teaspoon of chopped onion, and 1/2 teaspoon of salt. Dilute 1 tablespoon of flour with a little cold water, add to soup and stir until slightly thickened. Just before serving add 1 tablespoon of butter.

Potato Fritters—Boil and mash 3 good sized potatoes; add 1/4 tablespoon of butter, 1/4 teaspoon of salt, 1 1/2 tablespoon of sugar and the well-beaten yolks of 2 eggs. Mix well and form into small round, flat cakes, roll in a mixture made of 1/4 tablespoon of flour and 3 tablespoons of bread crumbs; saute in butter until well-heated through and a golden brown on the outside.

Raisin Bread—Mix together 1 cup each of cornmeal, graham flour and fine oatmeal, 3/4 teaspoon of soda, 1 1/2 teaspoons of salt, 1/2 cup of molasses, 1 1/4 cups of milk or water and 1 cup of raisins. Stir until well mixed, turn into well-greased molds and steam over hot water for 3 hours, then bake in a moderately hot oven for half an hour. One pound baking powder cans may be used, in which case steam 1 hour.

Plain Pot Roast—The best pieces of beef for a pot roast are the middle, or face, of rump, the round or shoulder. Wipe the meat with a damp cloth, then sear in a hot pan, using only enough fat to prevent sticking. Place in an iron or granite kettle, add 1 cup of boiling water, cover tightly and cook slowly, below the boiling point for three or four hours, or until meat is tender. Season with salt during the last hour of cooking. As the water evaporates it should be replenished so there will be a cupful when the meat is done. Thicken with one tablespoon of flour, diluted with a little cold water.

Cabbage and Apple Salad—Soak 2 cups of shredded cabbage in cold, salted water. Remove the seeds from one sweet green pepper, and chop finely. Chop 1 tablespoon of onion very fine. Pare, slice and cut in small pieces one tart apple. Drain the cabbage, place a layer in the bottom of the salad bowl; over this arrange a layer of apple and sprinkle with the onion and pepper; then moisten with French dressing (3 tablespoons of olive oil blended with 1 tablespoon of vinegar). Repeat with layer of cabbage, apple and so on until the ingredients are used.

Cherry Souffle—Melt 2 tablespoons of flour, add 1/2 cup of flour, 1/4 teaspoon of salt, and cook until blended; then add 3/4 cup of rich milk and cook, stirring until thickened, then add grated rind of 1/4 lemon, 1/2 cup of bread crumbs and the yolks of 2 eggs beaten with 1/4 cup of sugar and lastly 1/2 cup of canned cherries and the stiffly beaten whites of the eggs. Turn into a greased mold and steam 1 1/2 hours. Serve at once.

Appetizing Lenten Dishes

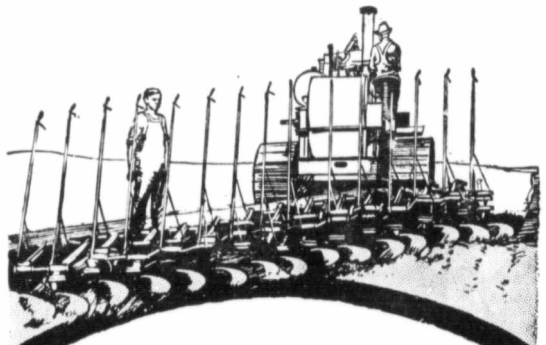
Jerusalem Fish Balls—Skin and pick all the flesh from the bones of 2 pounds of haddock, halibut or any seasonable fish. Put the skin and bones in a kettle, cover with 1 quart of cold water, add a bit of bay leaf, slice of onion and simmer gently for about one hour. While this is cooking put the fish through the meat grinder, together with 1/2 cup of nut meats—hickory, walnut or peanut—add 1 teaspoon of salt, a little pepper and a few grains of nutmeg, 1 egg well beaten and 1/2 cup of bread crumbs. Mix well and form into balls the size of an English walnut. Add the fish balls to the strained fish stock and cook below the boiling point for 20 minutes. Remove from the stock and serve at once.

Mock Oysters—Scrape one dozen oyster plants, or salsify roots, and cook with boiling salted water and cook slowly until tender. Drain and press through a colander. Add 1 teaspoon salt, a little pepper and 3 eggs well beaten. Cover the bottom of a frying pan with lard or dripping, and when hot drop in the mixture by spoonful, making each the shape of an oyster. Brown on one side, then turn and brown on the other. Serve at once.



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Old Dutch

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go a lot easier



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Your plowing need not be delayed because of cold weather if you use the proper lubricant on your tractor. Talk over your lubrication requirements with our agents and salesmen. They know the right oil for your machine.

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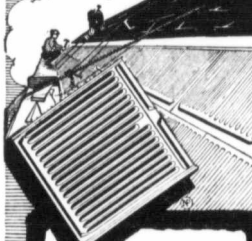
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"GEORGE"
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ARE you really saving money by neglecting to re-shingle that barn roof? You know that each additional patch lessens the value of your building. You know each widening leak means rotting, loosening shingles and early decay. You know that only by Pedlarizing your roof can you get enduring freedom from repair and rot. Pedlar's "George" Shingles bring you the durability and wearing qualities of steel at a price, when laid, about that of a good wooden shingle roof. A Pedlarized roof will last for generations, protecting you at all times from the danger of lightning and fire. The "Right Roof" Booklet tells you all about steel shingles and how to lay them, is free. Write to-day.

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OF THE FINEST LINEN MAY BE YOURS IN
CHALLENGE COLLARS
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COLLARS ON THE MARKET —
AT YOUR DEALER'S,
OR DIRECT
25c

THE ARLINGTON CO. OF CANADA

FINE VALUES IN FARM HOME REQUISITES

The Farmers' Supply Company of Winnipeg have just issued an unusually attractive catalogue, attractive in the sense that every illustration in it gives the prospective purchaser a clear and definite idea of the article he is asked to buy. Nothing is wasted on the purely ornamental, the whole effort being concentrated on perfect illustrations in detail of the various subjects.

The Farmers' Supply Company is really the sole intermediary between a chain of great manufacturing concerns and the farmer, thus cutting out a big slice of "middle-men" profit as well as greatly reducing the cost of handling and waste in freight charges, etc.

In the Catalogue before us, practically every need for the farm and home is represented. The "big thing" is the home furnishing contents in every grade and description of furniture for kitchen, parlor, dining and bedrooms, etc. The line of kitchen cabinets alone is a wonderful display of ingenuity in getting every conceivable accessory into such small and convenient compass. Moreover the quality of the cabinetmaking is of a superior type, and the women of the home are assured that there will be no detail that gives trouble, as so often happens from some cheap things of the kind, the material of which has not been seasoned before it was built into the cabinet.

There are also big bargains in chinaware, including most artistic dinner and toilet sets, glass-ware, etc. The kitchen ranges shown are also of a high order alike in character, appearance and value. There is also an extensive line in baby-carriages, children's go-carts, etc, while an unusual offering in "Primola" gramophones and records are sure to command a big market.

Cutlery, kitchen-ware of all sorts, sewing machines and collapsible adjustable dress forms for the home dressmaker are illustrated and described at wonderful prices, as are washing machines, gasoline stoves and portable steel ovens.

For the outside of the home and among the general farm necessities may be named the special line of farm buggies, of harness and farm tools of every description, machine and engine oils, kerosene, etc., at cut prices.

Space is not available to give in any satisfactory detail the contents of this wonderful illustrated inventory of splendid values. We are glad to add our testimony to the first class business standing of this company and can say that any reader caring to enter into business relationship with it can scarcely fail to find perfect satisfaction. The rule of the company is "Satisfaction or your money back."



Ex-gardener (concluding letter to his late employer).—"Well, Madam, I don't think I have much more to tell you, except that there's good soil out here for roses—just the thing for them. I said as soon as I saw it, 'that's the soil for roses.'"



MADE IN CANADA
Bread is the cheapest food known. Home bread baking reduces the high cost of living by lessening the amount of expensive meats required to supply the necessary nourishment to the body.
REFUSE SUBSTITUTES.

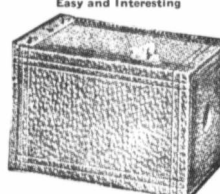


Beef and Potato Pie

The ingredients required are one pound of beefsteak, one large onion, two and a half pounds of potatoes, salt to taste. Cut the meat into small pieces, also the onion. Put it to stew for about two hours, then add the potatoes which have been

cut into pieces about the same size as the beef. Cover over with a pie-crust made from half a pound of flour, a quarter of a pound of lard, and half a teaspoonful of baking-powder. About forty minutes should be allowed for the baking of the pie.

FREE KODAK
Easy and Interesting



Any one can take perfect snapshots with this Kodak, it is so simple and easy to operate. It is leather covered with nickel fastenings. We will send you this Camera FREE; if you will send \$3.00 worth of our FLOWER and GARDEN SEEDS. We guarantee that every packet of seed is of the highest standard and are put up in attractive packets with colored flowers, etc., printed on them. The packets bear the name of a foremost Canadian seed firm.

We send you a splendid variety of seeds, including Asters, Sweet Peas, Pansies, Radish, Lettuce, etc., etc. These will sell like wildfire for 5c per packet. You can sell a dozen packets at one house. When you have sold them all, return us the \$3.00 and we will send you the CAMERA FREE. Ask for our Big Premium Catalogue.

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DESK T. K.

LOWER PRICED

ONION SEED High Grade Tested Onion Seed at One Dollar a Pound Less than Last Year.
Sow 5 Lbs. Seed Per Acre.
AVERAGE CROP 500 BUSHELS PER ACRE.

- Yellow Globe Danvers Onion, black seed. oz. 25c, lb. \$2.10, 5 lbs. \$9.25
- Giant Yellow Prizetaker Onion, black seed. oz. 25c, lb. \$2.10, 5 lbs. \$9.25
- Large Red Wethersfield Onion, black seed. oz. 25c, lb. \$2.00, 5 lbs. \$9.25
- Market Maker Golden Globe Onion. oz. 25c, lb. \$2.10, 5 lbs. 9.25
- Early Yellow Danvers Onion, black seed. oz. 20c, lb. \$1.90, 5 lbs. \$8.25
- Southport White Globe Onion, black seed. oz. 40c, lb. \$4.00
- Red Globe Prizewinner Onion, black seed. oz. 25c, lb. \$2.10, 5 lbs. \$9.25
- Select Yellow Dutch Onion Setts. lb. 35c, 5 lbs. \$1.70
- XXX Guernsey Parsnip, fine smooth roots. Pkg. 10c, oz. 20c, 4 ozs. 50c.
- Detroit Dark Red Table Beet (round). Pkg. 5c, oz. 20c, 4 ozs. 50c
- Chantenay Red Table Carrot. Pkg. 5c, oz. 25c, 4 ozs. 65c
- Rust Proof Dwarf Black Wax Butter Beans. lb. 50c, 5 lbs. \$2.25
- Early White Cory Sweet Table Corn. lb. 35c, 5 lbs. \$1.50
- London Long Green Cucumber (great cropper). Pkg. 5c, oz. 15c, 4 ozs. 40c.
- XXX Solid Head Lettuce. Pkg. 10c, oz. 25c, 4 ozs. 75c
- Improved Beefsteak Tomato. Pkg. 10c, 1/2 oz. 35c, oz. 60c
- XXX Scarlet Oval Radish (mild, crisp). Pkg. 10c, oz. 20c, 4 ozs. 50c
- Little Marvel Garden Bush Peas, very early. 4 ozs. 15c, lb. 40c
- Early Branching Asters, Crimson, Pink, White or Mixed. Pkg. 10c
- Mammoth Fringed Cosmos, mixed colors. Pkg. 10c
- XXX Mammoth Verbenas, superb mixture of colors. Pkg. 10c
- XXX Spencer Giant Sweet Peas, all shades mixed. Pkg. 15c, oz. 35c

"Pakro" Seedtape. "You plant it by the yard." 2 pkts. for 25c. Ask for descriptive list.

Rennie's Seed Annual Free to All. Delivery Free in Canada. Order through your LOCAL DEALER or direct from

RENNIE'S SEEDS **WM. RENNIE CO., LIMITED**
Also at **TORONTO** **MONTREAL** **VANCOUVER**
394 Portage Avenue, Winnipeg

STEAM PLOWERS-ATTENTION!



HIGHEST GRADE STEAM COAL PRODUCED IN CANADA

Canadian Coal for Canadian Farmers Equal to the best American Steam Coal. Semi-Anthracite. Smokeless, Sparkless, Low Ash, 14491 B.T.U.'s. Ask your dealer or write us for descriptive circular.

Birnie Lumber & Coal Co., Ltd.
General Sales Agents
CALGARY CANADA



SYNOPSIS OF CANADIAN NORTHWEST LAND REGULATIONS.

The sole head of a family, or any male over 18 years old, may homestead a quarter-section of available Dominion land in Manitoba, Saskatchewan or Alberta. Applicant must appear in person at the Dominion Lands Agency or Sub-Agency for the District. Entry by proxy may be made at any Dominion Lands Agency (but not Sub-Agency), on certain conditions.

Duties—Six months' residence upon and cultivation of the land in each of three years. A homesteader may live within nine miles of his homestead on a farm of at least 80 acres, on certain conditions. A habitable house is required except where residence is performed in the vicinity.

In certain districts a homesteader in good standing may pre-empt a quarter-section along side his homestead. Price \$3.00 per acre.

Duties—Six months' residence in each of three years after gaining homestead patent; also 50 acres extra cultivation. Pre-emption patent may be obtained as soon as homestead patent, on certain conditions.

A settler who has exhausted his homestead right may take a purchased homestead in certain districts. Price \$3.00 per acre. Duties—Must reside six months in each of three years, cultivate 50 acres and erect a house worth \$500.

The area of cultivation is subject to reduction in case of rough, scrubby or stony land. Live stock may be substituted for cultivation under certain conditions.

W. V. CORY, C.M.G., Deputy of the Minister of the Interior.

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No. of Wires.	Height in Feet	Inches Between Straps.	SAFE LOCK FENCES										
			Made of All No. 9 Hard Steel Wire Spinnings										
			Car Lots and Small Lots	Shed Lake or Melita	Yukon, Yukon or Klondike	Redvers, Regina	Devilton	Stokstrom	Winkler, Wilkie	Lloydminster	St. Mary's	Edmonton	Calgary
4	33	24	11, 11, 11	Car Lot	27 1/2	28	28 1/2	28 1/2	28 1/2	29	29 1/2	29 1/2	
				Small Lot	30 1/4	31	31 1/4	31 1/2	31 1/2	32	32 1/4	32 1/4	
5	40	24	8, 9 1/2, 11, 11	Car Lot	35	35 1/4	35 1/2	36	36 1/4	36 1/2	36 3/4	37 1/2	
				Small Lot	37 1/4	38 1/4	38 1/2	39	39 1/4	40	40 1/4	41	
9	51	24	4, 4, 5, 6, 7, 8, 8, 9	Car Lot	58 1/2	58 1/2	59	59 1/2	60	60 1/2	61	62	
				Small Lot	62	62 1/4	63	64 1/2	65	65 1/4	66 1/4	67	
8	32	12	3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6 1/2	Car Lot	53 1/2	54 1/4	55	55 1/2	56	56 1/4	57 1/4	58	
				Small Lot	58	59	60	60 1/4	61 1/4	62 1/4	63 1/2	65	
7	26	8	No. 9 Top and Bottom No. 12 Filling 3, 3 1/2, 4, 4 1/2, 5, 5 1/2	Car Lot	35 1/4	35 1/2	36	36 1/4	36 1/2	36 3/4	37	37 1/4	
				Small Lot	37 1/2	38	38 1/2	39	39 1/4	40	40 1/4	41 1/2	
10	47	12	No. 9 Top and Bottom No. 12 Filling 3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6, 7, 8, 9	Car Lot	48 1/2	48 3/4	49	49 1/2	50 1/4	50 1/2	51	52	
				Small Lot	51 1/4	52 1/4	53	53 1/2	54	54 1/4	55 1/2	56 1/4	
18	48	8	No. 9 Top and Bottom No. 13 Filling 1 1/2 in. to 3 in. spacing	Car Lot	61	62	62 1/4	63 1/4	64 1/2	65 1/2	66 1/2	68	
				Small Lot	64	64 1/4	65	66 1/4	67 1/4	68	69		
20	60	8	No. 9 Top and Bottom No. 13 Filling 1 1/2 in. to 6 in. spacing	Car Lot	67	68	69	69 1/4	71	72	73	75	
				Small Lot	69	70	71	72 1/4	74	75	77	78	
Drive Gate, 12 ft. x 48 in.				Car Lot	555	560	560	565	565	570	575	575	
				Small Lot	575	580	580	585	585	590	590	595	
Drive Gate, 11 ft. x 48 in.				Car Lot	585	590	590	590	595	595	600	610	
				Small Lot	600	605	605	605	610	610	615	625	

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BRANDON CANADA

Recipes

Flume Flannel Cakes

Scald one and one-half cupsful of milk, and add one-fourth cupful sugar, one-half cupful butter, and one-half teaspoonful salt. When lukewarm, add half of a yeast cake, and when yeast cake is dissolved add four cupfuls of flour. Mix thoroughly and add two egg whites beaten until stiff. Cover and let rise overnight; in the morning cut down, turn into buttered iron gem pans, having pans one-half full of mixture. Let rise, and bake in a hot oven twenty minutes.

Rabbit Pie

After boning the rabbit, put the bones with sufficient water to cover, into a stewpan, together with a large onion, a bunch of mixed herbs, and nutmeg, mace, salt, and pepper to season, and simmer for an hour. Arrange the rabbit meat in layers in a large pie-dish, placing a little fat bacon cut in strips and the yolks of two hard-boiled eggs in between. Strain over the gravy from the bones. Cover over with good pastry, and bake for an hour and a half.

Beef and Tomato Pie

Slices of cold beef should be arranged in a pie-dish with layers of thickly-sliced tomatoes and onions, then add seasoning. Continue the layers till the dish is full; add sufficient gravy to moisten the whole, cover with par-boiled potatoes cut in slices, and bake in a moderate oven for one hour.

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BRED SOWS—DUROC JERSEY, registered, also males and females unrelated, from prize winning stock; will give you better returns. Write for particulars. J. W. Bailey & Son, Weisakwin, Alta.

WANTED—To hear from owner of good farm for sale. State cash price and description. D. F. Bush, Minneapolis, Minn.

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Why NATIONAL Carbonless Motor Oil Is Better—Why It Costs More—How It Is Made

Steam that escapes through a tea-kettle spout, if caught and condenses, would be pure water.



Distilled water is manufactured on this same idea, only on a larger scale.

Along the sides and at the bottom of the tea-kettle, scale is formed and accumulates—the residue that is left over after the passing of the water into steam.

The same principle that manufacturers of distilled water use is carried out largely in the manufacture of National Carbonless Motor Oil.

Imagine a tea-kettle that will hold 25,000 gallons, then you have some idea of an oil still, used for this purpose. Into these huge stills goes selected Crude Oil from which National Carbonless Motor Oil is always refined, where the oil is heated until it forms a vapor. This vapor is then condensed into a liquid distillate (the same as the vapor from a tea-kettle spout becomes condensed), further refined and then filtered. The result is a clear, clean, carbon-free motor oil—National Carbonless Motor Oil. Residue oils left over in the still never enter into the manufacture of

National Carbonless Motor Oil. Where such residue is used an oil is made of very inferior lubricating properties, and can be and is sold at one-half the price of National Carbonless Motor Oil made as by our own scientific process.

A motor oil loaded with residue will break under heat and fail to perform its function. The residue and deposit which becomes incandescent, causes pre-ignition under heavy duty, and finally, after continued use, coke-like carbon forms. Just as scale is formed in the tea-kettle.



Suppose you catch and condense escaping vapor from the tea-kettle spout? You have pure water. Place this distilled water in a brand new tea-kettle and reboil it—you will find little, if any, scale in tea-kettle No. 2. The same experiment applies to National Carbonless Motor Oil.

National Carbonless Motor Oil, distilled into a vapor, is further refined and then filtered—leaves no carbon, and lubricates most efficiently.

Why pay hundreds or thousands of dollars for a fine motor car and break it down long before its time by unjustly using low-grade, carbon-form-

ing, ordinary motor oil? Why put up with all the many nuisances? Why not always know positively that your motor car, of whatever make, is perfectly lubricated, as it always will be with National Carbonless Motor Oil?

The amount of money a motorist spends for motor oil is really one of his smallest expenses. It is comparatively a trifle in the long run when satisfaction and perfect motor car efficiency are considered.

National Carbonless Motor Oil is a perfect product. It is the last word in quality, the recognized highest grade Motor Oil, and is your best insurance against repair bills caused by faulty lubrication.

Use National Carbonless Motor Oil from every point of view of satisfaction and permanent economy for perfect lubrication of any make of car.

Other NATIONAL Products

White Rose Motor Gasoline. Always uniform. Every drop is continuous power. Pure, dry, carbon free.

Ea-ar-co Tractor Oil. Especially made for modern tractors. Proper body to lubricate most efficiently—saves cash in machinery depreciation.

National Light Oil. Bright, clear light for lamps. No smoke, odor, charred wick or chimney. Uniform heat for incubators and brooders. Best for oil heaters and all purposes for which the best burning oil is required.

National Motor Grease. For Differential, Compression Cups, Transmission, gives perfect lubrication and is manufactured especially to be used for any and all purposes, all around the motor car.

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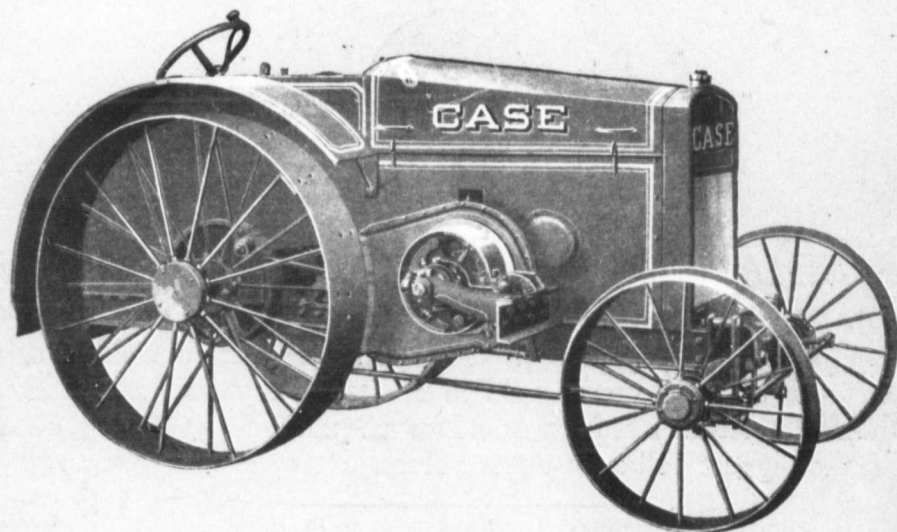
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