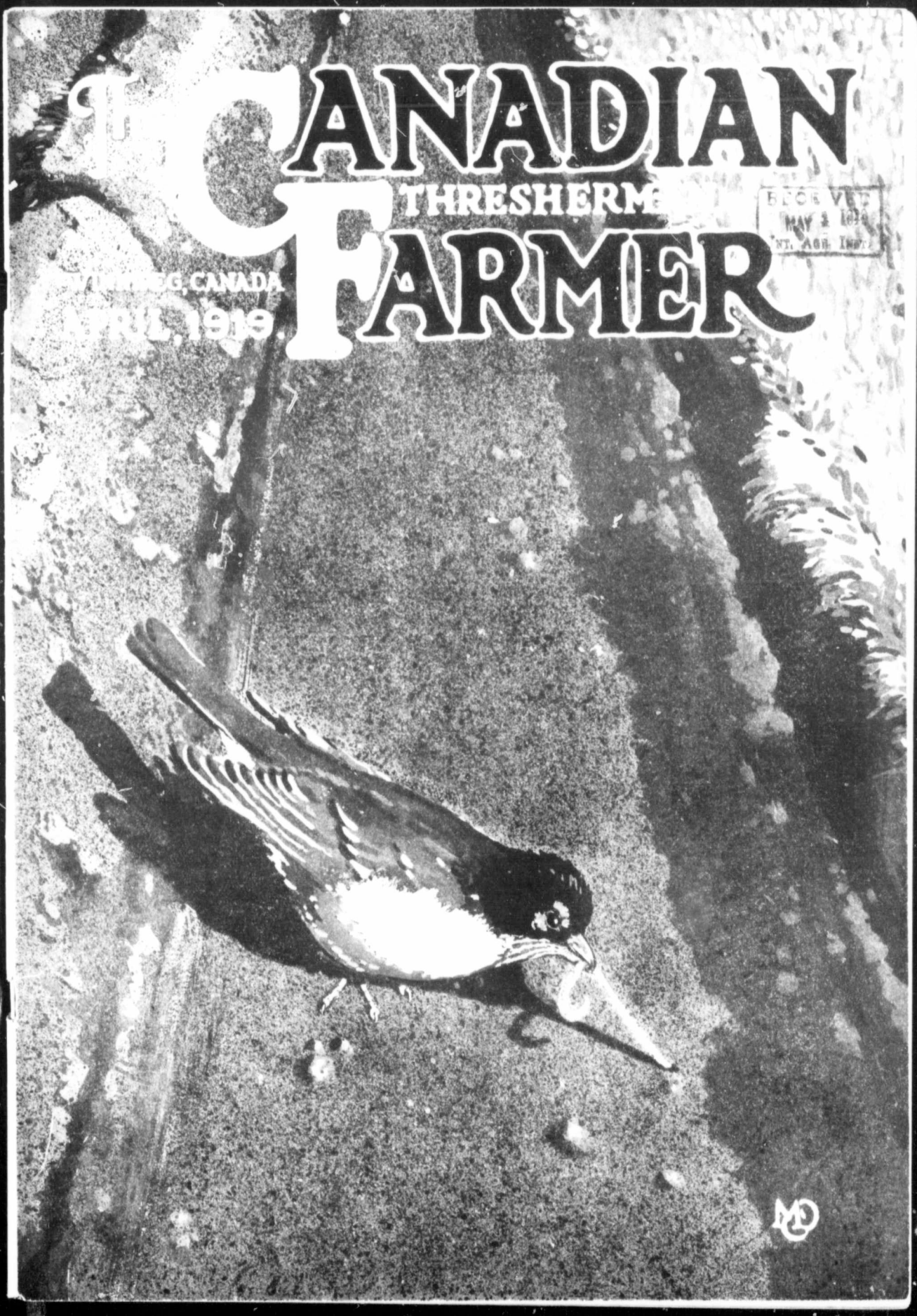
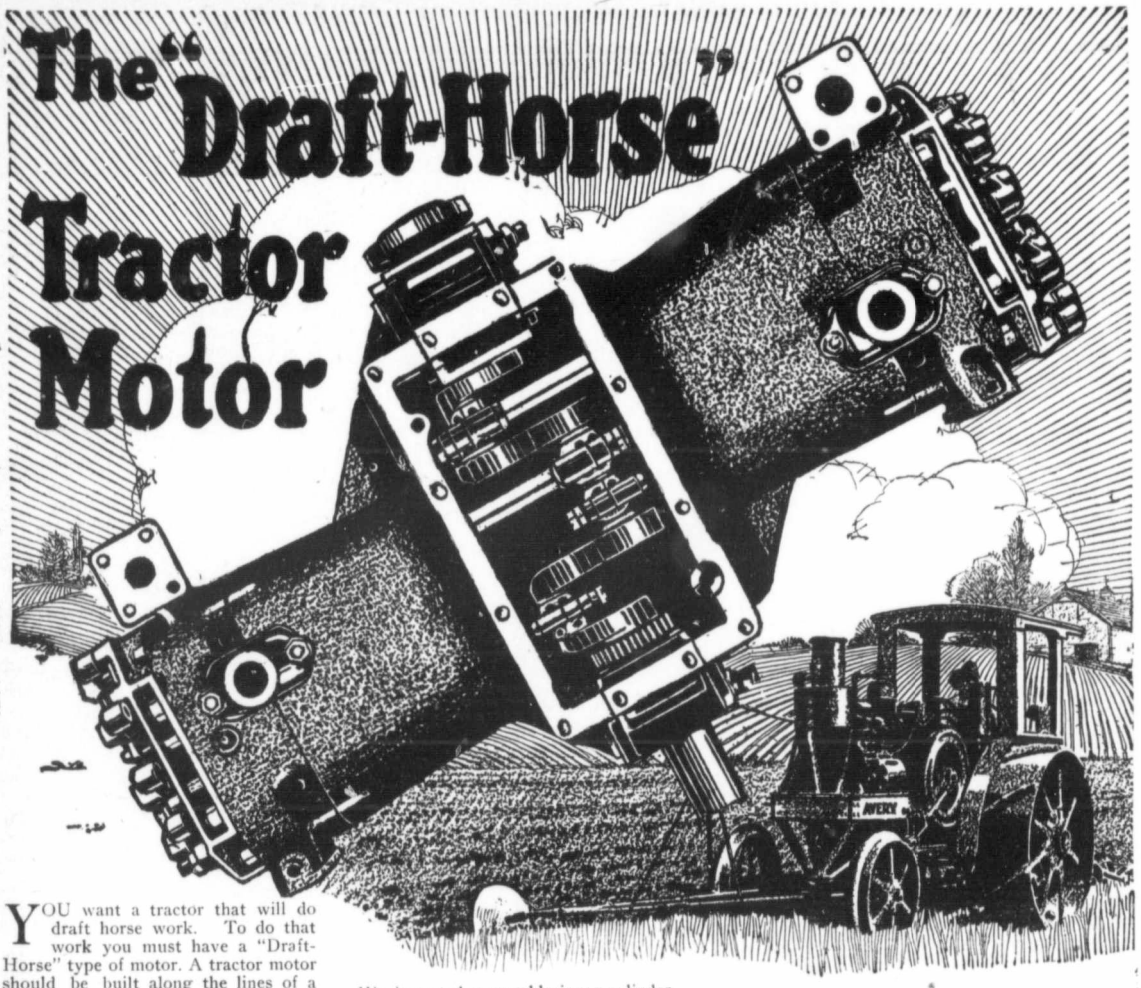
CANADIAN THRESHERMAN FARMER

WINNIPEG, CANADA
APRIL, 1919



The "Draft-Horse" Tractor Motor



YOU want a tractor that will do draft horse work. To do that work you must have a "Draft-Horse" type of motor. A tractor motor should be built along the lines of a strong, powerful draft horse — that is exactly what you get in the Avery "Draft-Horse" motor.

The Avery Motor is of the Opposed Type. We selected the opposed type of motor over the twin-cylinder and the four-cylinder automobile type because: its length distributes the weight better between the front and rear wheels; its narrower width makes possible a shorter crankshaft with only two bearings; it runs at a lower speed and hence requires less gears in the transmission, and makes possible a "Direct-Drive" in high, low, reverse or in the belt.

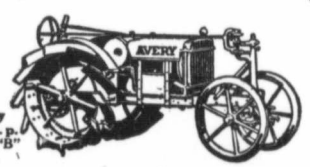
We build the Avery motor with the heaviest crankshaft in any tractor motor, practically unbreakable. Five-ring pistons and valves in the head, which mean power and economy. Thermo-siphon cooling system and round radiator — no fan, pumps, belts, pulleys, etc.

We invented renewable inner cylinder walls, gasifiers that turn kerosene or distillate into gas and burn it all, adjustable crankshaft boxes that take up the wear in the bearings instantly, and many other exclusive, protected Avery features.

The Avery Perfected Opposed "Draft-Horse" Motor is built especially for heavy-duty traction and belt work. It is made in our own **special** Motor Factory and **only** for Avery Tractors.

Write For the New Avery Catalog

telling about Avery Tractors, Motor Cultivators, Plows and Threshers. Also ask for the Avery Free Tractor Correspondence Course and the Avery Special Circular entitled "100 Questions and Answers to Tractor Troubles." See Samples at the Nearest Avery Dealer's.



Avery 5-10 h. p. Model "B" Tractor

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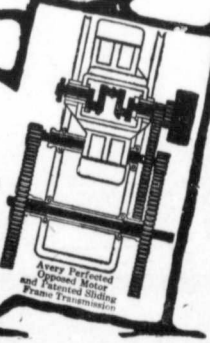


Avery Perfected Opposed Motor and Patented Sliding Frame Transmission

The CANADIAN THRESHERMAN and FARMER
A MAGAZINE FOR THE FARM AND HOME

Vol. XXIV WINNIPEG, CANADA, APRIL, 1919 No. 4

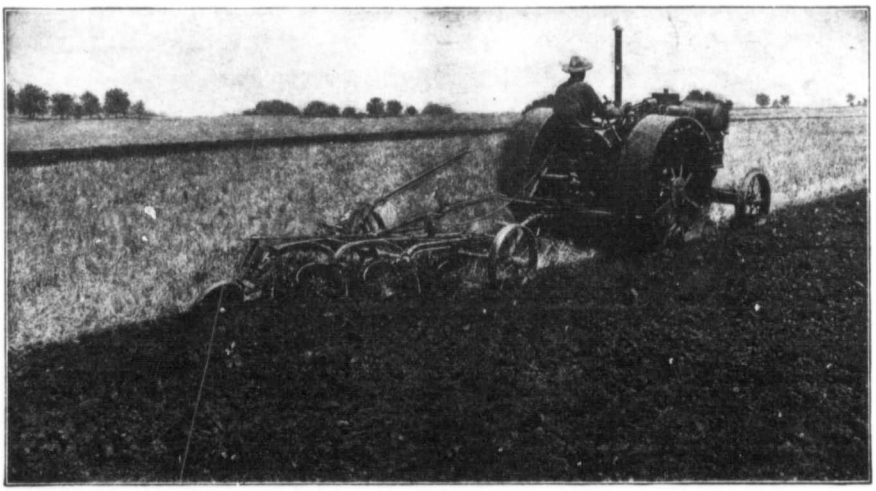
The Tractor in Western Canada

Past, Present and Future

By E. W. HAMILTON

THE gas tractor is to-day Western Canada's third most important agricultural asset. First, most naturally, comes her large area of fertile soil. Second, must come a more diversified system of farming; and third, comes the gas tractor.

No doubt there are those who will disagree with me, but a careful study of the situation must readily convince one that the tractor came at a most opportune time to help the farmer in his farm operations. Western Canada will always be largely a grain raising country, and unless the climatic conditions change beyond the imagination of those of us who are living to-day it must of necessity be devoted largely to small grain. Small grain raising is not really profitable under old conditions and old prices. Just at present with all small grains at prices that a few years ago were never dreamed of grain raising is profitable, provided the farmer can get the maximum of results out of the labor that is expended.



A first-class combination of tractor and plow operated by a first-class man on first-class soil

Land, the basic tool with which he works, has not advanced very much in price in the past few years, but labor has gone up. A few years ago it was possible to hire a good man from $25 to $30 a month, while to-day $65, $70 and $75 is being paid in a great many many cases. The farmer has reached the point where he has got to regard his farm more and more as a factory, and for the increased price that he has got to pay for labor he must of necessity get more work done in the same space of time. This is where the tractor comes in.

Now I know there is a farmer who will disagree with me, and he will claim that the tractor is a losing proposition from every standpoint, but I have only one answer for such a farmer, and that is, that he doesn't know his business. He is either in the position of the man who is convinced before he has given the tractor a fair trial, or his experience has been with the tractor that is a lemon, or that he did not study the conditions so as to adapt his tractor to his farm.

The tractor is not a fad. It is a fact, and it is a stubborn fact that every farmer in Western Canada must sooner or later face, whether he wants to or not. Nobody is going to force the farmer to buy tractors, but the more efficient of our farmers who will study the situation carefully and familiarize themselves with what the tractor is, and what it will do, will so outstrip their more sceptical neighbors in their farm work that the sceptics will be obliged to follow suit or go out of business.

The gas tractor first came into use in Western Canada in 1903, when one gas tractor was sold in Dominion City, Man. As we know the gas tractor to-day, this would hardly be classed as a tractor at all, but a mere attempt to try to apply gas power to the drive wheel. Between 1903 and 1904 six of these machines were put into the province. None of them were successful. In the fall of 1904, the first Hart-Parr tractor came into Western Canada, and in 1905 a concern at Portage la Prarie took on the agency and sold a number of these machines. In 1906, the International Harvester Company came out in Western Canada with their first machine. There are, however, some conflicting records as regards this, as there is some information to the fact that there were some I.H.C. machines put in in 1905, but these records I have never been able to verify. In 1906, 237 tractors were sold in Western Canada. In 1907 the sales were 580. In 1908 the sales were around 660. In 1909 there were not quite 600, but in 1910 they went to over 1,500. In 1911 something over 1,700 were sold. In 1912, 3,700; 1913, 4,600; 1914, 4,200; 1915, 4,400, and in 1916 they barely passed the 5,000 mark. In 1917 6,400 machines were sold, and in 1918 approximately 7,300.

There were in use up to the 1st of November, 1918, in Western Canada 19,777 tractors. Of the number sold in 1918 1,115 were Fordsons. The gas tractors in use were divided as follows:

Saskatchewan ...	11,105
Manitoba	3,655
Alberta	5,017

There were up to the first of the year approximiately 218,000 farms of 160 acres and over, divided as follows:—

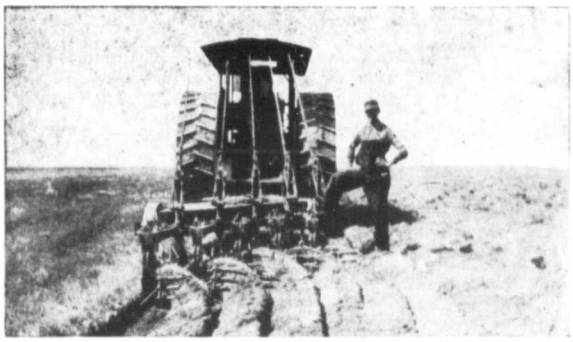
Saskatchewan ...	99,341
Manitoba	67,490
Alberta	51,663

(Cont'd on page 18J)

Service Department

Conducted by G. WHO

IT has been suggested that, as the writer has reached the place in his gas engine experience where he is fully convinced he doesn't know a gas engine from a hole on the ground, that he conduct a service department for the benefit of the readers of "The Canadian Thresherman and Farmer."



J. J. Rogers (Plenty, Sask.), with Minneapolis tractor breaking sod, June, 1915

You know tractor operators all go through certain stages. Some stop longer in one stage than another, while some go chasing right through pretty fast. At first a fellow don't know anything about a gas engine and wishes he did; then, almost all of a sudden he knows all about them and knows it; next, he knows too much about them and wishes he didn't; then he begins to think he doesn't know very much about them after all and that's when he begins to learn. His past graduate training consists in being sure he doesn't know anything about them—that's me.

In conducting this service department the big idea is to help owners and operators of power farming machinery through these different stages, and, if possible, to answer any questions they may ask as to the practical use and care of their power farming machinery.

We are fully convinced that, if people will come out and ask what they want to know, this department will become very interesting and be a help to practically everybody who reads it.

However, there are a few things about asking questions that it might be a good idea to mention. When you want to know why a tractor won't run, it isn't enough to ask why it won't run. The man whom you are asking about it has to know something about how it acted before it stopped. He wasn't there when it stopped, and it's up to you to tell him all you know about it. Then, your Uncle Dudley here, will try to answer your questions in a safe and sane manner.

All right, fellows, send in your questions.

Q.—The motor in my tractor acts funny. It will run for about an hour and then starts to miss bad, but if I stop for 20 or 25 minutes it will run all right again. The spark seems to be all right and she has good compression. The fuel lines seem to be clear, but the fuel doesn't run free when the motor stops, although it runs out pretty free when I start up again. It's a ——— 10-20 tractor.

A.—Probably the kerosene slopped out through the vent hole in the tank filler cap and you plugged the hole. The vent hole is placed there to allow air to enter the tank and replace the fuel which has been taken out. If the hole is plugged, no air can get in and a vacuum is caused which holds the fuel in the tank. Keep the vent hole clear.

Q.—I have a ——— three-bottom plow. The center plow hasn't cleaned or plowed the same depth as the other two since the fall of 1917. The land here is very black, heavy clay.

A.—The trouble is with the make which you have is hung on third plow. The third plow on the side of the second one, and, at some time, the third one has struck some extra hard work and the bolts which hold it to the second one have all been strained, allowing it to settle below the other two. After the plow had passed through this hard spot, the first and third plows found a level and raised the second one too high. This trouble can be overcome by replacing all the bolts which hold the third plow, with new ones and putting a piece of heavy angle iron or two pieces of flat iron on edge, across the three beams and clamping it down tight.

Q.—I have a ——— 12-25 tractor, and it hasn't been any good to me since I first bought it. It has good compression and plenty of spark and fuel, but it won't run. What's the matter?

A.—Nobody knows. Give us a little more definite information, and we'll try to fix you up. I know your engine and it's a good one.

Q.—Have a ——— tractor and a four-bottom plow. Can't get the plows to clean at all and have tried four different types of bottoms. Can you suggest anything?

A.—You have a choice of almost any speed in your type of tractor. Four plows are an overload, and you have to travel very slowly in order to pull them. Throw off one plow and travel at about 2¾ to 2⅞ miles per hour and the regular general purpose bottom will clean in your land.

A young man of sixty-seven—F. C. Kempfield, Pretty Valley, Sask.—good for another quarter of a century.

"AS GOOD AS 10 HORSES"

Pretty Valley, Sask.
Feb. 8th, 1919.

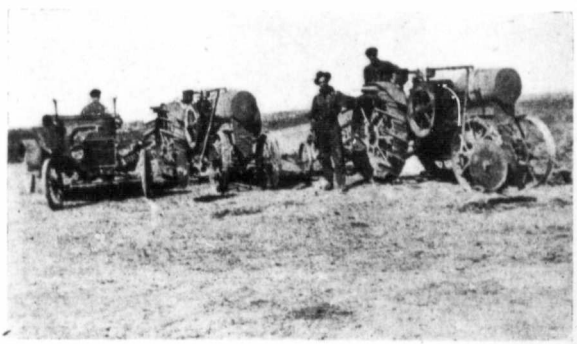
I HAVE had considerable experience with steam plowing, having owned at one time a 20 horse-power engine and a six-bottom plow, which I found a very cumbersome and expensive rig for plowing. Expense of labor was too heavy; also noting that my neighbors plowing with heavy tractors (whether steam or otherwise) have not been getting as good returns as they should, I have decided that heavy tractor plowing is not profitable, except for the first breaking of the sod.

I am now an old man of sixty-seven years, and have not been able to handle an outfit of horses for some years; but last spring, on hearing such a cry for bread and food for a starving world, the question came to my mind: What can I do to help in this awful crisis? I finally decided I could handle a small tractor; so I purchased from the Food Board one of the "Fordson" tractors put out by them, and a two-bottom Oliver.

This I found a good investment, as I could ride this all day, plowing eight acres a day and drawing one section of harrows, so at night my plowing had one stroke of the harrows which kept the soil from drying out. This I did with less than 2¼ gallons of kerosene per acre, and about one gallon of engine oil per day.

These light tractors do not pack the soil and are very cheaply operated. I consider my little plow outfit as good as any ten horses. It will do just as much and do it well. I intend doing a lot more this year.

F. C. Kempfield.



J. A. Maynard (Cluny, Sask.), with his mates—neither of whom had run an engine before they came to work on his farm, but can now handle an engine as they can wind their watches.

Tractor Ratings

Uniformity Necessary---A Proposed Solution

By PROFESSOR J. MACGREGOR SMITH, Saskatchewan University

PRIOR to the introduction of the gasoline or kerosene tractor there was not much confusion about tractor ratings. While steam engines were underrated they were all underrated in about the same proportion. It seems that gas tractors have been in many cases overrated and cannot develop their advertised capacity for actual work on the belt or at the drawbar. In some instances it is due to the fact that tractor companies get the motors from a plant making a specialty of this particular and vital part. Due consideration of the power lost in transmission to the belt or the drawbar being omitted. From the farmers' standpoint it is highly desirable that tractor ratings should be placed on a rational, uniform and national basis which would be accurate and acceptable from coast to coast and not different at every meridian line. The tractor interests would profit by conservative and uniform ratings. The practice of overrating is short-sighted. We emphasize the fact in case there may be doubters that the reliable companies would be glad to fall in line and adopt any policy that could be mutually arranged. A solution for many of our present troubles is offered in the remainder of this discussion.

We will suppose that a practical farmer is in the market for a tractor. He has studied the problem carefully. He has looked through a list of specifications of various tractors in a vain endeavour to decide which one is the right machine for him. We present below several of the specifications he may have selected regarding four makes that may appeal most strongly to him.

Rating	Plows Recommended	Pounds Pull at Drawbar	Speed Miles Per Hour	Drawbar Horsepower
A 10-18	2	900	2 3-4	6 2-5
B 10-18	2	1800	2 1-3	11 1-5
C 10-20	3	1800	2 1-2	12
D 10-20	3	2650	2	14 2-15

The first two in the above list are in a class of 10-18 (meaning 10 horse-power at the drawbar and 18 at the belt), the last two are in a class of 10-20 engines. However, all four are advertised as 10 horse-power machines at the drawbar, and they are all in one class. Let us examine each and from the data given in their respective cases see what can be developed. We know that the drawbar horse-power equals the pull in pounds multiplied by the distance travelled in feet per minute and the product of these two factors divided by 33,000 (the number of foot pounds of work per minute in one horse-power). Stating it briefly, we have:

$$\text{Drawbar Horsepower} = \frac{\text{Pull in pounds} \times \text{Distance in feet per min.}}{33{,}000 \text{ (one horsepower)}}$$

Take Tractor A in the list and work it out and you will find that:

Drawbar Horsepower = 900 (Pull in pounds) × 242 (2¾ miles per hour = 242 feet per minute.)

$$\frac{900 \times 242}{33{,}000 \text{ (one horsepower)}} = \frac{217{,}800}{33{,}000} = 6\ 3\text{-}5$$

33,000 (foot pounds) of work per minute in 1 horse-power.

And its rated as 10 drawbar horse-power. We have taken the advertised specifications. Something is wrong.

Now if you will examine B, C and D in exactly the same way you will find that they respectively are able to develop 11 1-5, 12 and 14 2-5 drawbar horse-power. In every instance they exceed their rating, and therefore may be reasonably expected to give satisfaction.

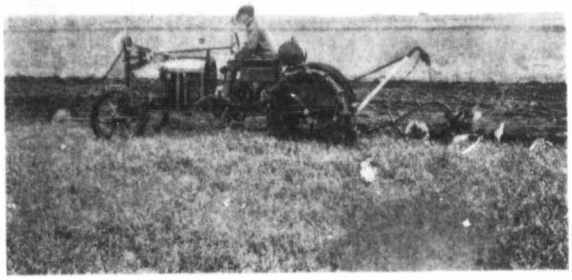
If that does not mean chaos and confusion I would like to know what it does mean to the average man. You say, "Well what are you going to do about it?" We would respectfully suggest that since tractors have been and are being sold in large numbers in this western country that some uniform method of rating be adopted in the interests of the reliable manufacturer as well as the interests of the farmer.

You may wonder why we include the manufacturer. They are willing and anxious to co-operate, and one needs go no farther than the record attendances at the instruction school to realiz this is true. Every province should provide equipment for testing tractors on the belt and at the drawbar. The majority probably have the necessary equipment now in the agricultural engineering departments of the agricultural colleges. The law governing the sale of tractors would demand that every type and every make of tractor be tested, and if the results of the test showed that it came up to its rating then a stamp of approval or guarantee, call it what you like, would be attached to all contracts involving the sale of the said type and size tractor. The plan is simple and would work as follows: The John Jones Company would notify the testing bureau that they wanted their 10-20 tractor tested. A qualified official would go down to the warehouse or car and select any engine at random, noting its serial number. The tractor would then be submitted for trial, and approved or rejected as the case might be. In a test of this kind Tractor A in our list would receive no stamp of approval, and would be placed in a class designating it as a 6 D.B.H.P., and why not? The other three machines B, C, D would pass and go on in the market as approved, government inspected 10-20 tractors. All other sizes would be dealt with in a similar way. Provincial laws would have to be uniform, in fact, there should be one rating for Canada or even North America. A company making an engine that could not come up to the standard would have two roads open to it, the first to improve their machine and the second "To shuffle off this mortal coil." Much more might be written about the tests, but enough has been said for the present, and there seems no reason why the details cannot be arranged to the mutual benefit of all. Something should be done.

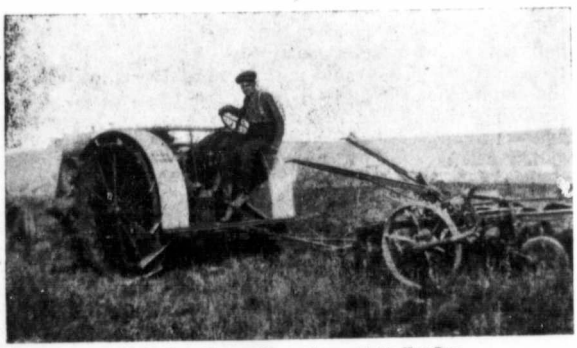
How many plows will the engine pull? You might just as well ask how long will it last? No matter how conscientious we are we cannot answer your question unless we know the soil conditions, etc. The solution in this case is to have the country

Continued on page 18B

E. L. Williams, Duhamel, with his P & O breaking plow (1 ton, 24-in.)



An "Avery" 5-10 pulling Grand Detour plow



N. B. Mack, Veteran, Alta., at home with his Hart-Parr

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April | "Passing the Buck" | 1919

THE act of shirking an obligation or unloading a responsibility is commonly referred to as "passing the buck." In moral significance, the operation may carry the weight of anything between the harmless joke and a full-blown crime. It takes at least two to play the game, but the greater the number the more complete is the success in losing the "buck." The "buck" may be literally interpreted as the direct responsibility, credit, or blame for some course of action which has or ought to have been taken. It is, however, to be observed that the passing of the buck takes place only when what has been done is accounted blame-worthy or of an extremely doubtful character. When credit is due, very rarely does it happen that you hear of the passing of the buck.

* * *

It is one of the instinctive faculties of human nature that needs next to no inculcating. It "comes in with the milk." A few familiarities taken from daily life will illustrate better than it can be explained:—Half a score of boys are experimenting with what knowledge they have of the game of baseball. Biff! and the ball makes a bee-line for the best bedroom window of Judge Jellicoe's city residence. Who did it? No human being in sight can bring that "buck" home. The team has melted away "like a guilty spectre at the first dawn of morn." The "buck" has been passed with a point of refinement in its complete success that might well excite the envy of older men.

* * *

Years pass and these same rapscallions become what are called "responsible citizens." Some of them have swapped all active interest in baseball for the still more alluring diversion of politics. Anyhow, they are now men, each carrying a definite weight of responsibility which he may not unload on the shoulders of any other man, or body of men. The "citizen" who regularly avails himself of the privileges of citizenship while declining to take his full share in its responsibilities is no citizen. He may be either a sneak, a coward, a traitor, or all of them, but he is no citizen. He is the parasite who believes that when he has dropped in his voting paper in favor of a certain government, his responsibility to his neighbor and society at large ceases.

* * *

Wellington warned an audience of his peers that "We put too much faith in institutions and look too little to men." And this "Iron Duke" was a man who was never known to "pass the buck." Had he done so only once during that frightful ordeal upon a man's fortitude and patience his whole public life reveals, there would have been no Waterloo and what Waterloo meant to the emancipation of the race. But notwithstanding all that has passed since Wellington's day, we are little better off for men in the public service. There is still an incredible poverty of the class of men who count it the very hell of human meanness to "pass the buck;" who, in the face of any fate, will manfully stand up and say: "Yes; the responsibility for this thing rests with me."

* * *

Coming specifically to the immediate duty of the hour, does it not strike one that we are making gods of our governments to the neglect of the high privilege of doing the individual little bit that no government squad can deal with? Even if its "mob formation" did not afford the most perfect facilities for "passing the buck," the very circumstance of its swarm of conflicting thought, it disposition to drift, its propensity to "pooh, pooh" prevents it from getting there in time; and then we have riots at Rhyl, a small civil war in Winnipeg, and still worse pending, because of some one "passing the buck" for the admission into Canada of a horde of undesirables, with a special immunity from military service at that most fateful hour in Canada's life—the spring of 1918.

* * *

Apart from all "government recognition," what does every individual citizen owe to those men who went overseas, and having done their job magnificently, are now returning to civil life? Did any of these wonderful men "pass the buck" in any of the great crises that confronted them in France and Flanders? We heard an old public servant tell a congregation the other Sabbath evening that every individual of the many hundreds within hearing owed a debt peculiarly his own to those men which he could not discharge except directly to the one man or the greatest number of these men he could personally reach. That was the view of a very decent man whose private and public life is a credit to his community, and it will be the view of every person who has failed to acquire or has ceased to practice the art of "passing the buck." The matter of reinstating the returned soldiers is the most pressing, but it is only one of the many problems in the new social structure in the solution of which the individual's responsibility is inescapable. The cumulative weight of government can do things which the individual cannot accomplish, but the personal touch of the individual has an influence far beyond the reach of any impersonal "government."

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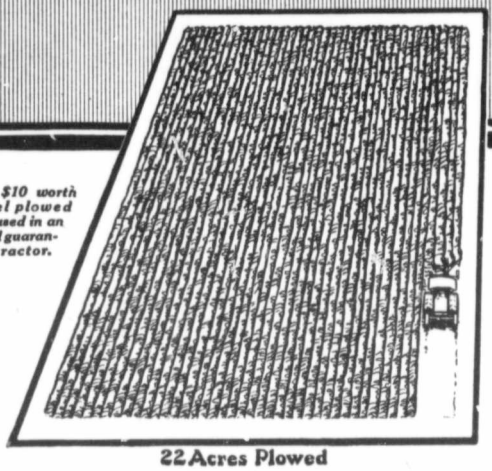
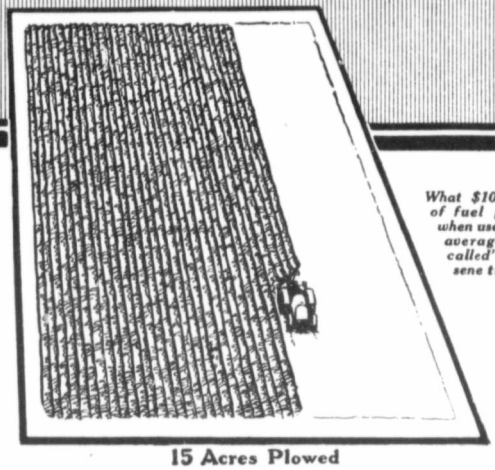


What $10 worth of fuel plowed when used in an OilPull guaranteed tractor.

22 Acres Plowed



What $10 worth of fuel plowed when used in an average "so-called" kerosene tractor.

15 Acres Plowed

THE main reason why you buy a tractor is to produce greater crops at a larger profit. And the tractor that will do the work at the least cost is the tractor you want—provided of course that it has the strength and durability to give it long life.

Above we illustrate a comparison of operating costs—based upon actual official public tests. We take as an example an official demonstration in which were entered 29 of the best known tractors. In making the comparison, we, however, have considered only the 23 tractors entered as kerosene burners, eliminating the five gasoline entries, and as a basis have taken the average cost for an acre plowed. On the one hand, the OilPull plowed at a cost of 45 cents per acre—on the other the average cost of the 23 competing kerosene tractors was 66.27 cents per acre.

This gives the OilPull an advantage of almost one-third—or in other words the OilPull proved that it is capable of doing one-third more work for the same fuel cost. And remember that we compare the OilPull with the so-called kerosene tractors only. Compared with gasoline tractors the OilPull will cut fuel costs in half.

On the basis of the $3.00 saved by the OilPull in plowing 22 acres, you can easily figure the saving in operating costs in the day after day, year after year operation. You can see that the saving in fuel alone will practically pay for the outfit while your OilPull is still a young machine. We can't say just what the life of an OilPull is because the first ones built ten years ago are still on the job.

Furthermore, what the OilPull has done in these public tests is what it is doing in the hands of owners everywhere. *The OilPull will plow an acre of ground at less cost than any tractor made—bar none.*

And not only has the OilPull proved this economy—its makers give you an absolute *guarantee in writing* that it will burn successfully all grades of kerosene under all conditions, and at all loads to its full rated brake horse power. *The OilPull is the only tractor that carries such a written guarantee.*

Four sizes of the oil burning, oil cooled OilPull can now be had—12-20, 16-30, 20-40 and 30-60 H.P. A post card will bring you the OilPull catalog.

ADVANCE-RUMELY THRESHER COMPANY, *Inc.*

La Porte, Indiana

Regina, Sask., Saskatoon, Sask. — Calgary, Alta., Winnipeg, Man.

BACKED BY WRITTEN GUARANTEE

ADVANCE-RUMELY

Light Tractor Experience Survey

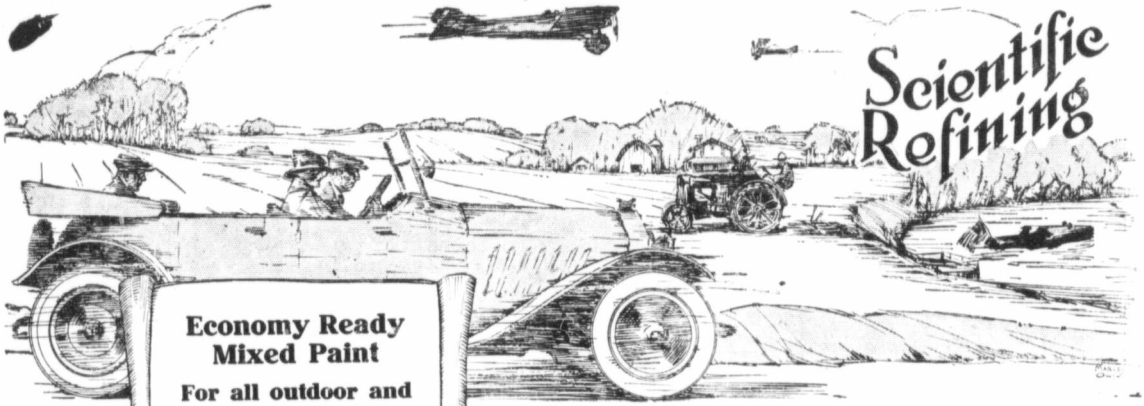
On this and following pages will be found the results of a quesitonaire that was sent by The Canadian Thresherman and Farmer to a number of gas tractor owners in Manitoba, Saskatchewan and Alberta. We have omitted the names and addresses, likewise the makes of tractors, as the owners in many cases do not care to have their names published.

The originals are on file in our office where they can be seen by anyone who so desires.

To the best of our knowledge, this is the first time such a questionaire has ever been sent out to tractor owners and the results should prove of considerable value to tractor owners.

More detailed information is required regarding the tractor—information that is based upon fact and not theory. This magazine is the only one in Canada that has made any attempt to supply such information; in fact, has led the way as regards this most important farm implement since 1904. The number column has no significance except for our own records.

No.	Size of tractor	Kind of fuel used	No. of plows pulled	Kind of plows used	Acres under cultivation	Acres that can be worked with tractor	Type of soil	Character of land	Use of tractor	No. of horses and men replaced by tractor	Which is more satisfactory	Which is cheaper to maintain	No. of days in year tractor is kept busy	Troubles	Who operates the tractor?	Amount of repair bill per year	Amount gallons fuel and lubricating oil used per day	Length in hours of working day	Average life in years of tractor	Size in acs. of farm before tractor profitable	2, 3, 4 wheel or caterpillar best	Does tractor pack soil	Is tractor successful investment
1	13–30	coal oil	3	mouldb'd	220	220	black clay	level	plowing, discing, cultivating, moving buildings	8 horses	tractor	tractor	60	clutch is too weak	myself	No	Coal Oil 18 gal lub. oil 1 gal.	..	..	220	4 whl.	no	yes
2	10–20	coal oil	3	mouldb'd	500	475	clay loam and stony	level	plowing, cultivating, harrowing, cutting wood, grinding feed and pulling stones	8 horses 2 men	tractor	tractor	50		self	$ 1 50	kerosene 23 gal. cyl. oil 2 gal.	12	10	480	4 whl.	no	yes
3	12–25	coal oil	3	mouldb'd	350	350	mixed	level	breaking shrub land with 24-in. brush breaker, hulling, crushing, breaking prairie, plowing and belt work	8 horses 1 man	tractor	tractor	150	.....	self	65 00	20 gal. 2 gal.	10	..	..	4 whl	not enough to hurt	yes
4	10–20	kerosene	3	mouldb'd	300	450	clay	level	plowing, threshing, hauling and crushing	none	tractor	tractor	60	....	self	..	20 gal. 1½ gal.	12	..	320	4 whl.	no	yes
5	10–20	kerosene	2 in brk. 3 in stub	mouldb'd and disc	185	300	heavy clay loam	rolling	breaking, disc plowing, disc harrowing and moving granaries	12 horses 2 men	tractor	tractor	100		self	..	20 fuel 1½ oil	10	..	320	4 whl.	no	yes
6	15–30	coal oil	6	mouldb'd	200	all	loam	rolling	breaking and stubble plowing only	yes	tractor	horses	30		self	..	.....	12	..	320	4 whl.	no	yes
7	10–20	kerosene	3	mouldb'd	200	300	clay and rocky	rolling	plowing and discing	6 horses	tractor	tractor	40	starting when cold	self	..	24 fuel 1½ oil	10	5	320	4 whl.	no	yes
8	30–60	kerosene	8	rod	320	all	heavy clay	level	plowing, discing and crushing	30 horses 5 men	tractor	tractor	240	only general	engineer	700 00	125 fuel 8 oil	14	5	320	cater-pillar	yes	yes
9	18–36	gasoline	4	mouldb'd	600	..	clay loam	rolling	plowing, discing, moving buildings, threshing, grinding feed	yes	tractor	tractor	..	none	self	100 00	30 fuel	..	..	..	4 whl.	no	yes
10	10–20	kerosene	2	mouldb'd	640	600	clay loam and rocky	level	plowing, discing and threshing	1 man 8 horses	use both	tractor	100	poor fuel	self	20 00	22 gal. 2 oil	10	7	480	4 whl.	no	yes
11	9–18	coal oil	1	mouldb'd	51	160	clay with some rock	level	breaking, sawing wood, chopping, hauling and grubbing	8 horses	tractor	tractor	75	none	self		14 fuel 1 qt. oil	10	..	160	4 whl.	no	yes
12	11–22	coal oil	2	mouldb'd	500	600	clay loam	rolling	plowing, threshing, hauling, drilling wells and grinding feed	10 horses 4 men	tractor	tractor	200	none	self	..	12 fuel 1 qt. oil	12	..	320	4 whl.	no	yes
13	12–20	kerosene	3	mouldb'd	275	300	heavy black loam, sticky	level	plowing, discing, threshing, crushing	1 man 2 horses	tractor	tractor	..	very little	self	10 00	20 fuel 1½ oil	14	8	200	4 whl.	yes	yes
14	12–20	kerosene	2	mouldb'd	340	340	clay and loam	rolling	plowing, discing, cultivating, harrowing, floating	2 men 10 horses	tractor	tractor	100	none of any account	self	25 00	20 fuel 1 oil	12	10	320	4 whl.	no	yes
15	18–35	coal oil	3	rod	800	800	clay loam	level	plowing, threshing and discing, hauling granaries	none	need both	tractor	150	poor cylinder oil	self	70 00	50 fuel 4 oil	20	15	640	4 whl.	no	yes
16	30–60	coal oil	8	rod	800	all	very heavy clay	level	breaking, stubble plowing and threshing	6 men 20 horses	tractor	tractor	..	very small	engineer	50 00	80 fuel 4 oil	14	10	600	4 whl.	yes	yes
17	10–20	kerosene	3	mouldb'd	450	..	clay, rocky and loam	rolling	plowing and cultivating	1 man 4 horses	tractor	.....	..	lack of knowledge	self	small	24 fuel 1 oil	12	..	400	4 whl.	no	no
18	12–20	kerosene	3	mouldb'd	320	....	sandy loam	rolling	plowing, threshing and chopping	1 man 5 horses	tractor	tractor	65	.....	self	50 00	20 fuel 2 oil	11	..	540	4 whl.	no	yes
19	11–22	coal oil	....	.....	640	..	loam, rocky	rolling	threshing	none	tractor	horse	..	.....	self	....	.....	..	..	..	.....	.....	yes
20	10–20	kerosene	3	mouldb'd	160	all	clay loam	level	stubble plowing, breaking, threshing, stump pulling, crushing grain	none	tractor	tractor	..	.....	self	10 00	20 fuel 1 oil	11	..	..	4 whl.	no	yes
21	10–20	kerosene	3	mouldb'd	300	all	clay loam	level	plowing	8 horses	.....	.....	..	starting when cold	self	....	25 fuel 2½ oil	12	5	320	4 whl.	very little	yes
22	10–20	kerosene	3	.....	350	300	loam and rocky	level	breaking, grinding and moving granaries	10 horses 1 man	both	horses	75	none of account	self	10 00	18 fuel 1 oil	13	10	640	4 whl	no	yes
23	10–20	kerosene	3	mouldb'd	210	235	heavy clay loam	level	plowing, cultivating, threshing, crushing grain, sawing wood and hauling out stones	8 horses 1 man	tractor	tractor	60	inexperience	self	10 00	16 fuel 1½ oil	8*	..	320	4 whl.	very little	yes
24	10–20	kerosene	2	....	300	300	black loam	level	threshing, plowing, crushing and sawing wood	none	tractor	.....	..	very little	self	5 75	20 fuel 1 oil	10	..	..	4 whl.	....	yes
25	13–30	kerosene	3	mouldb'd	175	250	heavy clay	level	plowing, threshing, crushing, sawing and stump pulling	6 horses	tractor	tractor	270	.....	self	..	26 fuel 2 oil	12	..	160	4 whl.	no	yes
26	10–20	gasoline	3	mouldb'd	230	all	sandy to heavy clay some rock	hilly	plowing, threshing, seeding, discing and harrowing	4 horses	tractor	tractor	70	ignition	self	25 00	12 fuel ½ oil	10	5	160	4 whl.	no	yes
27	10–20	kerosene	3	mouldb'd	120	160	black loam clay subsoil	rolling	breaking pulling stumps, plowing stubble, threshing, cutting straw	2 men 8 horses	tractor	tractor	160	.....	self	82 00	25 fuel 2 oil	14	..	160	4 whl.	no	yes
28	30–60	kerosene	6	mouldb'd and disc	600	600	heavy clay loam	level	plowing and threshing	8 horses	tractor	tractor	60	very little	engineer	100 00	60 fuel 5 oil	14	..	640	4 whl.	no	yes
29	13–30	kerosene	3	mouldb'd	270	270	chocolate loam with rock	rolling	plowing and discing	....	tractor	tractor	..	.....	self	....	20 fuel 1 oil	8	..	200	4 whl.	no	yes
30	10–20	kerosene	2	mouldb'd	40	40	clay	rolling	plowing, threshing and hauling	2 horses 1 man	tractor	tractor	160	.....	self	10 00	20 fuel 1½ oil	10	6	100	4 whl	very little	yes
31	14–28	kerosene	4	mouldb'd	300	700	heavy black loam	rolling	plowing, breaking, threshing, moving, sawing wood and crushing	12 horses	tractor	tractor	55	very little	self	....	12 fuel 1 oil	12	..	..	....	no	yes
32	10–20	gasoline	3	mouldb'd	300	300	clay and loam	rolling	plowing, threshing, discing and sawing wood	4 horses 1 man	horses	tractor	65	ignition	self	20 00	18 fuel 1½ oil	10	..	..	4 whl.	no	yes
33	10–20	coal oil	2	mouldb'd	140	all	clay and rocky	rolling	plowing, discing and threshing	6 horses 2 men	tractor	tractor	..	.....	self	....	12 fuel 1 oil	10	..	100	4 whl.	very little	yes
34	10–20	kerosene	3	mouldb'd	300	500	loam	level	breaking, discing, cultivating, plowing, threshing	5 horses 1 man	tractor	tractor	200	.....	self	25 00	25 fuel 2 oil	13	5	300	4 whl.	no	yes



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No.	Size of tractor	Kind of fuel used	No. of plows pulled	Kind of plows used	Acres under cultivation	Acres that can be worked with tractor	Type of soil	Character of land	Uses of tractor	No. of horses and men replaced by tractor	Which is more satisfactory	Which is cheaper to maintain	No. of days in year tractor is kept busy	Troubles	Who operates the tractor?	Amount of repair bill per year	Amount gallons fuel and lubricating oil used per day	Length in hours of working day	Average life in years of tractor	Size in acs. of farm before tractor profitable	2, 3, 4 wheel or caterpillar test	Does tractor pack soil	Is tractor successful investment
35	10-18	coal oil	2	mouldb'd	104	300	sandy and clay loam	level	threshing and plowing	8 horses 2 men	tractor	tractor	90	.....	son	...	10 fuel 1 oil	10	..	..	4 whl.	very little	yes
36	25-45	kerosene	8	mouldb'd	900	all	black loam	level	plowing, threshing, road work	10 horses 2 men	tractor	tractor	..	spark plug	self	25.00	55 fuel	12	..	..	4 whl.	yes	yes
37	10-20	kerosene	2	mouldb'd	300	300	heavy loam	rolling	discing, stubble and summerfallow plowing, breaking, hauling granaries	16 horses 2 men	tractor	tractor	210	little trouble with magneto	self	10.00	18 fuel 2 oil	12	..	320	3 whl.	no	yes
38	10-20	kerosene	3	mouldb'd	360	350	clay	level	stubble, plowing, breaking, discing, cultivating, threshing and hauling	10 horses 1 man	tractor	tractor	180	.....	self	5.00	18 fuel 1½ oil	12	10	240	4 whl.	not much	yes
39	12-20	kerosene	3	mouldb'd	625	625	black loam clay subsoil	rolling	plowing, threshing, crushing, moving granaries, cutting feed and sawing wood	7 horses 1 man	tractor	tractor	..	.....	self	...	18 fuel 1 oil	10	..	320	4 whl.	not much	yes
40	14-28	kerosene	5	mouldb'd	500	600	clay with some stone	rolling	plowing	10 horses 2 men	horses	tractor	40to 50	.....	engineer	...	28 fuel 3 oil	14	..	320	4 whl.	no	yes
41	10-20	kerosene	2	mouldb'd	260	all	heavy loam	rolling	breaking, discing and hauling	8 horses 2 men	tractor	tractor	180	.....	self	15.00	15 fuel 1½ oil	12	..	160	4 whl.	no	yes
42	10-20	kerosene	3	mouldb'd	1040	1080	loam	level	seeding, breaking, summerfallow, discing, hauling grain	12 horses 2 men	tractor	tractor	210	very little	hired help	...	20 fuel 2 oil	12	..	320	4 whl.	no	yes
43	10-20	coal oil	2	mouldb'd	270	400	black loam	rolling	breaking, moving portable granaries	4 horses 1 man	tractor	tractor	..	difficult to get repairs	self	...	16 fuel 2 oil	10	..	160	....	no	yes
44	15-30	kerosene	4	mouldb'd	500	500	loam	level	discing, plowing and threshing	.....	tractor	tractor	200	Wearing out too fast	self	...	45 fuel 3 oil	12	5	320	caterpillar	yes	no
45	10-20	kerosene	3	mouldb'd	240	500	clay and rocky	hilly	breaking summerfallow and threshing	1 man 2 horses	tractor	tractor	..	.....	son	high	15 fuel 2 oil	10	10	640	4 whl.	yes	yes
46	25-50	gasoline	5	mouldb'd	1200	..	clay	level	breaking, plowing stubble and discing, also moving granaries	.....	tractor	tractor	75	broken crankshaft and platinum points burning out	self	150.00	40 fuel 3 oil	11	..	..	....	yes	yes
47	10-20	kerosene	3	mouldb'd	300	250	sandy loam	level	fall plowing	.....	.....	.....	..	.....	sons	...	.....	..	..	..	caterpillar	no	yes
48	30-60	gasoline	6	disc	960	960	clay	rolling	breaking summerfallowing, discing, seeding and threshing	25 horses 5 men	tractor	tractor	125	weak transmission frame	help	75.00	50 fuel 3 oil	11	..	320	4 whl.	not much	yes
49	10-20	kerosene	2	mouldb'd	350	..	sandy loam	rolling	plowing, threshing, discing, harrowing and seeding	4 horses	both	...	75	.....	self	...	18 fuel 1 oil	10	..	320	4 whl.	no	yes
50	9-18	kerosene	3	mouldb'd	200	125	loam	rolling	threshing and plowing	1 man 6 horses	tractor	tractor	210	.....	self	5.00	12 fuel	10	5	200	4 whl.	no	yes
51	15-30	kerosene	4	mouldb'd	400	300	sandy loam	rolling	plowing and threshing	1 man 10 horses	.....	.....	..	.....	self	...	.....	10	...	...	...	...	yes
52	10-20	kerosene	3	mouldb'd	630	all	loam with some stones	rolling	moving portable granaries, plowing, harrowing	8 horses	tractor	tractor	210	magneto	self	...	15 fuel 3 oil	10	..	..	4 whl.	yes	yes
53	15-30	gasoline and kerosene	3	mouldb'd	555	all	loam with some clay	level	plowing, threshing, cutting feed, sawing wood, grinding, discing	1 man 8 horses	horses	tractor	60	magneto	son	135.00	18 fuel 2 oil	10	..	450	4 whl.	no	yes
54	11-22	kerosene	3	mouldb'd	300	all	loam	rolling	plowing, cultivating, crushing grain, sawing wood	1 man 4 horses	both	horses	90	piston rods	engineer	...	15 fuel 1½ oil	10	..	200	4 whl.	no	yes
55	9-18	gasoline	3	mouldb'd	210	210	loam	level	plowing, harrowing, seeding, cultivating	none	horses	tractor	..	carbonizing valves, etc.	....	...	10 fuel 1 oil	10	..	240	2 whl.	no	no
56	10-20	kerosene	3	mouldb'd	500	700	clay loam	rolling	plowing, discing, threshing harrowing and grinding	6 horses 1 man	tractor	tractor	75	.....	self	...	16 fuel 1 oil	10	..	..	4 whl.	no	yes
57	10-20	kerosene	3	mouldb'd	135	all	loam	level	stubble plowing, breaking, threshing, crushing and sawing	none	tractor	tractor	..	.....	....	...	20 fuel 1½ oil	10	10	200	4 whl.	no	yes
58	10-20	kerosene	3	mouldb'd	350	300	heavy clay	hilly	plowing, threshing, crushing, hauling, etc.	4 horses 1 man	tractor	tractor	90	oil pump	self	40.00	20 fuel 1½ oil	10	..	320	4 whl.	one furrow	yes
59	10-20	kerosene	3	mouldb'd	200	200	clay loam rocky	rolling	plowing, discing and moving buildings	2 horses 1 man	tractor	tractor	50	grit sucks into cylinders	self	5.00	18 fuel 1 oil	10	12	200	4 whl.	no	yes
60	15-30	kerosene	4	mouldb'd	275	all	clay soil	level	plowing	12 horses 2 men	tractor	tractor	..	.....	....	....	30 fuel 4 oil	12	..	300	4 whl.	no	yes
61	15-30	gasoline	...	.....	325	all	clay loam	rolling	threshing	none	tractor	tractor	20	.....	self	...	.....	..	..	..	....	not much	yes
62	10-20	kerosene	3	mouldb'd	650	all	heavy black loam	level	plowing, cultivating, breaking harrowing, crushing, sawing, and hauling buildings	.....	tractor	tractor	150	very little	self	...	20 fuel 1½ oil	12	..	320	4 whl.	no	yes
63	12-25	gasoline	2	mouldb'd	420	all	heavy clay	rolling	plowing, discing, threshing, and grinding grain	2 horses 1 man	tractor	tractor	80	.....	self	15.00	22 fuel 2 oil	10	7	640	4 whl.	not much	yes
64	10-20	kerosene	3	mouldb'd	300	200	black loam	rolling	plowing, harrowing, threshing, moving buildings	6 horses 1 man	tractor	tractor	..	starting when cold	self	6.00	18 fuel ½ oil	12	..	320	4 whl.	no	yes
65	10-20	gasoline	...	.....	300	all	chocolate loam, few rocks	level	threshing and crushing grain	none	horses	horses	..	.....	self	...	20 fuel	..	..	..	....	...	..
66	15-30	coal oil	4	mouldb'd	300	all	heavy clay loam	level	plowing, seeding, threshing and hauling	12 horses 3 men	tractor	tractor	..	.....	self	...	20 fuel	12	..	160	4 whl.	no	yes
67	12-20	kerosene	3	mouldb'd	200	300	clay loam and some stone	rolling	breaking, plowing stubble, discing, drawing water and pulling stones	12 horses 1 man	tractor	tractor	100	.....	self	40.00	30 fuel 2 oil	18	5	480	4 whl.	no	no
68	13-30	kerosene	3	mouldb'd	320	633	clay loam	level	plowing, discing and harrowing	8 horses 1 man	tractor	tractor	30	keeping connecting rods from knocking	self	40.00	18 fuel 1½ oil	10	10	320	4 whl.	not much	yes
69	10-20	kerosene	3	mouldb'd	325	all	loam	rolling	scrub breaking, plowing, threshing, hauling, grinding feed	6 horses	both	tractor	150	.....	self	...	15 fuel 2 oil	10	..	320	4 whl.	no	yes
70	15-30	gasoline	6	mouldb'd	450	400	chocolate loam very rocky	rolling	plowing, breaking and threshing	12 horses 1 man	tractor	tractor	60	.....	engineer	100.00	30 fuel 3 oil	12	..	320	4 whl.	no	yes
71	10-20	kerosene	3	mouldb'd	300	all	clay loam	level	plowing, breaking, discing and threshing	4 horses 1 man	tractor	tractor	..	spark plug trouble	self	50.00	20 fuel 2 oil	10	..	320	4 whl.	no	yes
72	10-20	coal oil	3	mouldb'd	550	all	chocolate loam	rolling	plowing, breaking, summerfallowing, hauling buildings and granaries	10 horses	tractor	tractor	..	.....	self	...	20 fuel 1½ oil	10	..	320	4 whl.	no	yes
73	12-25	kerosene	3	mouldb'd	200	200	clay loam	rolling	breaking, discing and plowing	6 horses	horses	horses	40	spark plug trouble	self	200.00	....	10	5	320	..	yes	no
74	10-20	coal oil	2	mouldb'd	300	640	loam	rolling	plowing and discing	10 horses 2 men	tractor	tractor	125	.....	self	...	15 fuel ¾ oil	10	..	640	3 whl.	no	yes

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We have tested it for several years in the West, and it has proven to be eminently suited to our seasons and soils. We have not had a crop failure in this variety.

The vines are erect, robust and vigorous in growth with white flower. It is a remarkably heavy, reliable yielder and very profitable to grow as a main crop. The tubers are even in size and of good form, the flesh white and of the finest flavor imaginable—in fact, Epicure is almost in a class by itself when quality is considered.

Epicure is an absolutely distinct beautiful appearing Potato of fine texture and will satisfy every grower.

LOT A—"LION" BRAND, selected with the utmost care—practically every tuber perfect—will delight everyone who knowns and appreciates a good Potato. Price, bushel $3.00; 5 bushels $14.50; 10 lbs. 80c, bags included.

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You will always have something, even in driest seasons, when other crops fail. Price per bushel, $2.30; bags extra at 50 cents each.

OATS

The wise farmer wants seed of strong vitality—he wants a test of 90 per cent, or over, in six days. Our stocks are all of this class. They start quick and grow even and strong. Worth more than the difference in cost.

LOT A.—AMERICAN BANNER REGISTERED, per bag of 100 pounds, $8.25, bag included.

LOT B.—AMERICAN BANNER, grown from Registered Seed. Per bushel, $1.80; 24 bushels, $42.00; 100 bushels at $1.70 per bushel, bags included.

LOT E.—REGENERATED BANNER—Specially grown, very fine sample, recleaned over our own mills pure and free from all noxious weeds. Our germination test gave 94 per cent in six days. Price, three bushels, $4.75; 25 bushels, $38.75; 100 bushels at $1.50 per bushel. Bags extra at 30 cents each.

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SPRING RYE

FLAX

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Bags extra at 65 cents each.

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Our northerly-grown stocks are the best for this country. Germination from 90 per cent to 98 per cent in six days.

NORTHWESTERN DENT, per bushel, $4.00; 5 bushels, $19.50.

MINNESOTA 13 DENT, per bushel, $4.00; 5 bushels, $19.50.

EARLY DENT, per bushel, $3.50; 5 bushels, $17.00. Bags extra at 65 cents each.

PHOTO OF GOOD CROP OF FODDER CORN

SWEET CLOVER

Rapidly coming to be recognized not only as one of the most extraordinary fertilizing plants in America, but as the most wonderful pasture plant we have.

Stock when pastured upon Sweet Clover make gains which compare very favorably with those obtained from either Alfalfa or Red Clover.

SWEET CLOVER, WHITE BLOSSOM, 10 lbs., $3.40; 25 lbs., $8.25; 100 lbs., $32.00; (1 lb. 60c postpaid.)

SWEET CLOVER, YELLOW BLOSSOM, 10 lbs., $3.60; 25 lbs., $8.75; 100 lbs., $34.00; (1 lb. 60c postpaid.)

Remit extra for Cotton Bags, 65c each.

SPELTZ

Sow 1½ to 2 bushels per acre

Early, hardy, good yielder, excellent feed, sure cropper, suitable for all classes of soil.

Price: 2 bushels, $5.20; 10 bushels and over at $2.50 per bushel. Bags extra at 60c each.

True English Dwarf Essex Rape

Price, 10 pounds, $2.30; 25 pounds, $5.25; 100 pounds, $20.00; bags included.

ALFALFA

GENUINE GRIMM FROM REGISTERED FIELD, 10 lbs., $6.00; 25 lbs., $14.75; 100 lbs., $58.00.

MONTANA—VERY HARDY, 10 lbs., $3.60; 25 lbs., $8.75; 100 lbs. $34.00.

SELECTED COMMON, 10 lbs., $3.40; 25 lbs., $8.25; 100 lbs., $32.00.

Bags extra at 65c each.

MILLET

A short season crop, may be sown up to July.

SIBERIAN, 20 lbs., $2.00; 100 lbs., $9.00.

COMMON, 20 lbs., $1.65; 100 lbs., $7.50.

JAPANESE (Billion Dollar Grass), 20 lbs., $2.20; 100 lbs., $10.00.

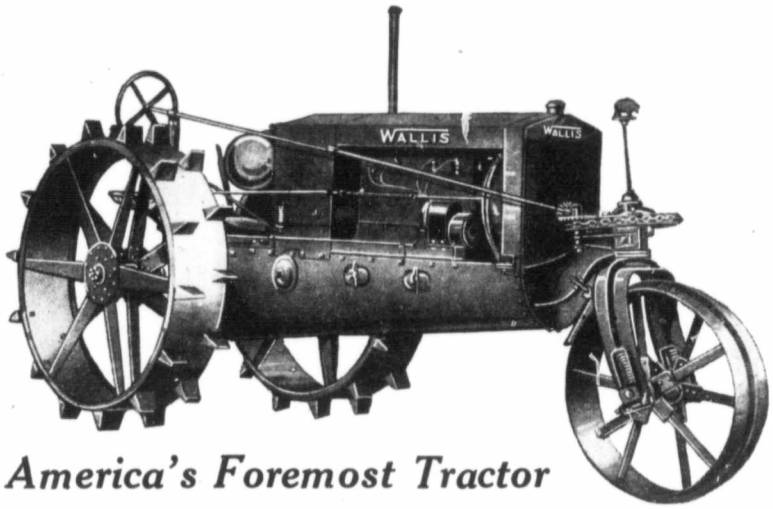
HUNGARIAN, 20 lbs., $1.75; 100 lbs., $8.00.

HOG, 20 lbs., $1.80; 100 lbs., $8.00.

Send in your name for a copy of our 1919 Seed Catalogue

STEELE, BRIGGS SEED CO. Limited Winnipeg, Man.

No.	Size of tractor	Kind of fuel used	No. of plows pulled	Kind of plows used	Acres under cultivation	Acres that can be worked with tractor	Type of soil	Character of land	Uses of tractor	No. of horses and men replaced by tractor	Which is more satisfactory	Which is cheaper to maintain	No. of days in year tractor in repair shop	Troubles	Who operates the tractor?	Amount of repair bill per year	Amount gallons fuel and lubricating oil used per day	Length in hours of working day	Average life in years of tractor	Size in acs. of farm before tractor profitable	2, 3, 4 wheel or caterpillar best	Does tractor pack soil?	Is tractor successful investment?
75	10-20	coal oil	3	mouldb'd	750	400	clay	rolling	plowing	10 horses 2 men	tractor	tractor			self	15.00	20 fuel 1½ oil	10	..	320	4 whl	no	yes
76	10-20	kerosene	3	mouldb'd	175	all	loam	rolling	plowing, threshing and moving grain bins	4 horses 1 man	tractor	tractor	120	.....	self	..	18 fuel 1 oil	12	8	160	4 whl.	no	yes
77	10-20	kerosene	3	mouldb'd	235	320	black sandy loam on clay bottom	rolling	plowing, threshing, moving granaries, grinding grain and sawing wood	4 horses 1 man	tractor	tractor	75	.....	self	..	24 fuel 2½ oil	12	..	320	4 whl	no	yes
78	12-22	kerosene	2	mouldb'd	200	all	clay loam	rolling	plowing		both	tractor	..	.....	self	..	18 fuel 1 oil	10	..	320	....	no	yes
79	10-20	kerosene	2	mouldb'd	640	all	clay loam	level	threshing and plowing	6 horses 1 man	tractor	tractor	180	.....	self	30.00	15 fuel 1 ½oil	12	..	320	4 whl.	no	yes
80	18-36	gasoline	3	disc	440	480	heavy clay and loam	level	discing, harrowing, plowing and threshing	4 horses	horses	horses	40	too much vibration, gears exposed to dirt, impossible to keep engine cool	engineer	165.00	45 fuel 2½ oil	12	6	480	....	yes	no
81	18-35	kerosene	5	mouldb'd	175	..	loam	level	plowing and breaking		tractor	tractor	..	.....	self	..	35 fuel 3 oil	9	..	..	4 whl	....	..
82	14-28	kerosene	..	mouldb'd	360	all	clay loam	rolling	threshing		both	..	..	.....	self	..	.....	..	..	320	4 whl	....	yes
83	15-30	coal oil	4	mouldb'd	800	800	clay	level	plowing, threshing, crushing, and moving buildings	8 horses 2 men	tractor	tractor	75	.....	son	20.00	25 fuel 1 oil	10	7	640	4 whl.	when wet	yes
84	10-20	kerosene	3	mouldb'd	150	..	clay loam	level	plowing, packing and harrowing, crushing, wood sawing, threshing and breaking	8 horses 2 men	tractor	tractor	90	ignition	self	..	16 fuel ¾ oil	10	..	160	....	a little	yes
85	10-20	kerosene	3	mouldb'd	190	150	loam, a little clay	level	plowing and cutting straw	4 horses 1 man	tractor	tractor	..	....	son	..	15 fuel 1½ oil	10	..	240	4 whl	no	yes
86	14-28	coal oil	3	.....	300	600	heavy clay and gumbo	rolling	plowing, threshing and moving portable granaries	none	tractor	tractor	30	ignition and gears	self	5.00	25 fuel 2 oil	9	..	160	caterpillar	no	yes
87	9-18	both gas and ker.	2	mouldb'd	160	200	sandy loam	rolling	breaking, discing, harrowing, packing and threshing	none	tractor	tractor	70	magneto and bearing	engineer	200.00	16 fuel 1½ oil.	12	..	320	4 whl	no	yes
88	10-20	kerosene	3	mouldb'd	340	340	chocolate loam	rolling	plowing, threshing, discing harrowing, floating, grinding moving granaries	1 man 4 horses	tractor	tractor	70	.....	self	50.00	20 fuel 2 oil	9	7	320	4 whl	no	yes
89	10-20	kerosene	3	mouldb'd	600	all	clay loam	rolling	plowing, moving, building and threshing	12 horses 1 man	tractor	tractor	..	....	self	2.80	20 fuel 1½ oil	11	..	320	4 whl	no	yes
90	27-50	kerosene	6	mouldb'd	375	all	clay and rocky	hilly	plowing, breaking and threshing	20 horses 3 men	tractor	tractor	..	....	self	50.00	38 fuel 3 oil	12	..	320	caterpillar	a little	yes
91	10-20	kerosene	3	mouldb'd	380	460	sandy	rolling	plowing, cultivating, harrowing, packing and threshing	6 horses	tractor	tractor	120	....	self	15.00	12 fuel	9	..	320	4 whl	no	yes
92	15-30	kerosene	4	mouldb'd	805	650	rocky loam	rolling	plowing and threshing		tractor	tractor	..	very little	self	..	35 fuel 1 oil	12	..	480	4 whl	very little	yes
93	15-30	kerosene	6	mouldb'd	500	500	clay loam	level	threshing, plowing, discing, harrowing, cultivating and hauling rocks	4 horses 1 man	tractor	tractor	125	small engine trouble	son	25.00	30 fuel 2½ oil	10	12	320	4 whl	no	yes
94	10-20	coal oil	3	mouldb'd	550	200	sandy and clay	level	plowing	6 horses 1 man	tractor	tractor	40	.....	self	..	15 fuel 1 oil	12	..	320	4	no	yes
95	12-20	kerosene	3	mouldb'd	500	all	clay loam	rolling	plowing, drilling, harrowing, discing and grinding feed	....	tractor	tractor	200	general adjustments	self	100.00	20 fuel 1½ oil	15	..	160	4 whl.	no	yes
96	10-20	kerosene	4	mouldb'd	250	all	black loam	level	plowing, threshing, chopping grain and sawing	8 horses 1 man	tractor	tractor	50	.....	self	25.00	20 fuel 1½ oil	10	..	320	....	very little	yes
97	20-40	kerosene	5	mouldb'd	175	90	sandy and clay	hilly	plowing, moving granaries, and operating grain separators	4 horses 1 man	horses	tractor	30	hard to start	self	..	35 fuel 2½ oil	10	..	400	caterpillar	sometimes	yes
98	12-25	kerosene	4	mouldb'd	450	all	sandy	level	plowing, discing, harrowing, packing, breaking, threshing and road grading	....	tractor	tractor	..	poor lubrication and burning out boxings	self	300.00	35 fuel 3 oil	10	..	320	4 whl	no	yes
99	10-20	kerosene	3	mouldb'd	1650	all	clay	level	plowing and cultivating	12 horses 2 men	tractor	tractor	..	inexperienced men, poor fuel and breakages	engineer	..	25 fuel 2 oil	10	5	160	4 whl	no	yes
100	10-20	kerosene	..	.....	500	300	loam, rocky	rolling	threshing and grinding	none	tractor	tractor	..	lack of power	self	....	....	..	6	320	4 whl	....	yes
101	10-20	kerosene	3	mouldb'd	220	all	clay	rolling	plowing, discing and drilling	none	tractor	tractor	180	.....	self	50.00	25 fuel 3 oil	10	..	160	4 whl	no	yes
102	15-30	kerosene	4	mouldb'd	268	all	sandy loam	rolling	plowing	none	....	.....	..	.....	self	....	30 fuel 1 oil	10	..	..	4 whl	no	yes
103	10-20	kerosene	4	mouldb'd	285	..	loam	level	plowing	8 horses 2 men	tractor	....	23	.....	son	..	23 fuel 2 oil	10	..	..	4 whl.	slightly	yes
104	16-30	kerosene	5	mouldb'd	480	480	clay	level	plowing	5 horses 1 man	tractor	tractor	35	starting when cold	self	20.00	38 fuel 1½ oil	12	18	240	4 whl	not much	yes
105	10-20	kerosene	3	mouldb'd	140	300	clay	rolling	breaking and discing	4 horses 1 man	tractor	tractor	40	axle too weak	self	25.00	20 fuel 1½ oil	11	..	160	4 whl	no	yes
106	12-22	kerosene	2	mouldb'd	400	480	clay loam	rolling	plowing, discing and moving granaries	4 horses	tractor	tractor	48	spark plug getting dirty	self	5.00	20 fuel ½ oil	12	..	480	4 whl	no	yes
107	10-20	kerosene	3	mouldb'd	500	500	loam	level	plowing, discing, floating, harrowing, moving granaries	10 horses 1 man	tractor	tractor	200	magneto	self	15.00	15 fuel 1½ oil	11	..	320	4 whl	yes	yes
108	13-30	kerosene	4	mouldb'd	800	300	clay loam	level	plowing, cutting feed, crushing grain and sawing wood	8 horses 2 men	both	....	..	spark plugs getting dirty	self	..	14 fuel 2 oil	10	..	320	4 whl	no	yes
109	14-28	coal oil	3	mouldb'd	700	700	chocolate clay	rolling	plowing and threshing	....	horses	horses	..	.....	self	..	23 fuel	..	..	..	....	no	no
110	10-18	coal oil	3	mouldb'd	150	200	loam and rock	rolling	plowing, grinding and sawing wood	7 horses 2 men	tractor	tractor	60	.....	self	....	13 fuel 1 oil	11	..	100	4 whl	no	yes
111	10-20	kerosene	2	mouldb'd	165	all	heavy clay	level	plowing, discing, threshing, grinding feed, road grading, moving granaries	none	tractor	..	45	spark plug	self	75.00	20 fuel ¾ oil	11	..	320	4 whl	no	yes
112	10-20	kerosene	3	mouldb'd	110	200	heavy blue clay	level	threshing and plowing	6 horses 1 man	tractor	tractor	42	.....	self	..	20 fuel 1½ oil	10	..	100	4 whl	yes	yes
113	12-25	gasoline	3	mouldb'd	700	all	rocky	rolling	threshing and plowing	....	tractor	80	....	self	30.00	20 fuel 2 oil	10	..	640	4 whl.	yes	yes
114	12-20	kerosene	3	mouldb'd	430	425	clay loam	rolling	plowing, threshing, road grading and grain grinding	6 horses 1 man	need both	tractor	60	.....	self	....	20 fuel 1½ oil	12	..	480	4 whl	no	yes
115	11-22	kerosene	3	discs	900	900	heavy clay	level	plowing and cultivating	10 horses 2 men	need both	tractor	40	.....	son	7.00	20 fuel ½ oil	12	..	480	4 whl	not much	yes
116	15-30	gasoline	4	mouldb'd	880	1220	sandy loam	rolling	breaking, fall and spring plowing, summerfallowing, threshing, chopping and moving granaries	none yet	need both	tractor	..	too light	self	250.00	30 fuel 4 oil	10	8	320	4 whl.	no	yes



Burns Kerosene

Write for Catalogue

America's Foremost Tractor

WALLIS

There is genuine satisfaction in accomplishing more in the day's work than you had planned. Looking back over the day what a pleasure it is to realize that real progress has been made toward a greater crop. Every hour counts and during each the Wallis is ready with more power as it is required and speed when speed is necessary.

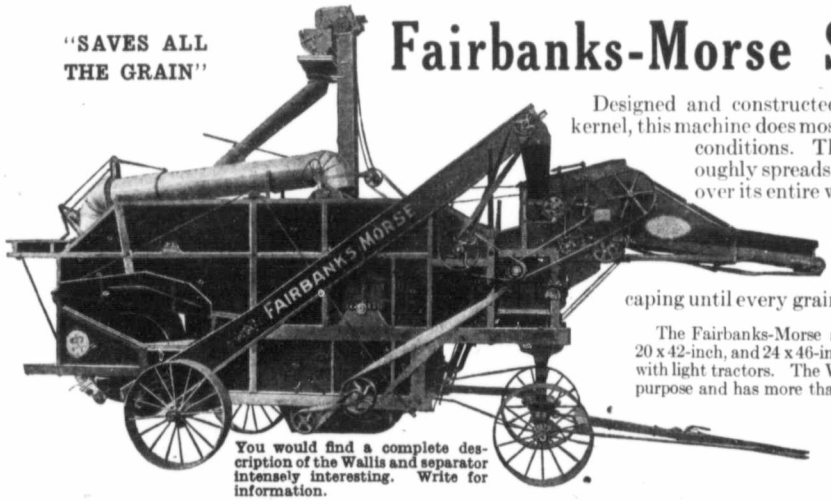
The repetition of this gain in each day's work marks the difference between average and successful farming. The additional profit makes a considerable sum at the end of the season. It is this Wallis performance that makes possible "Lowest plowing cost per acre."

Wallis quality is sufficient reason for this exceptional record. The superiority in quality over ordinary tractors is just as great as the wonderful gains in actual work accomplished. The Wallis actually pays for itself in increased acreage compared with other machines or methods.

This is due directly to the unique design, choice of materials and the care exercised in manufacture. Steel is used in place of heavy cast iron—strengthening the construction and saving needless weight. Each part is made with the utmost care—the motor is as perfectly finished as that of an aeroplane. The design is the outstanding advance in tractor engineering.

"SAVES ALL THE GRAIN"

Fairbanks-Morse Separator



You would find a complete description of the Wallis and separator intensely interesting. Write for information.

Designed and constructed to save every possible kernel, this machine does most effective work under all conditions. The extra wide deck thoroughly spreads and distributes the straw over its entire width, thoroughly teasing and tossing it, separating all the grain. The complete operation leaves no possibility of straw escaping until every grain is beaten or shaken out.

The Fairbanks-Morse separator is built in two sizes 20 x 42-inch, and 24 x 46-inch. They are built to be used with light tractors. The Wallis is an ideal engine for this purpose and has more than enough power for the larger size. The complete outfit on a western farm makes possible larger acreage and bigger profits.

The Canadian Fairbanks-Morse Co., Limited

WINNIPEG SASKATOON CALGARY

No.	Size of tractor	Kind of fuel used	No. of plows pulled	Kind of plows used	Acres under cultivation	Acres that can be worked with tractor	Type of soil	Character of land	Uses of tractor	No. of horses and men replaced by tractor	Which is more satisfactory	Which is cheaper to maintain	No. of days in year tractor is kept busy	Troubles	Who operates the tractor?	Amount of repair bill per year	Amount, gallons fuel and lubricating oil used per day	Length in hours of working day	Average life in years of tractor	Size in acs. of farm before tractor profitable	2, 3, 4 wheel or caterpillar best	Does tractor pack soil	Is tractor successful investment?
117	10–20	kerosene	3	mouldb'd	200	all	clay	level	plowing, crushing and sawing	8 horses 1 man	tractor	tractor	..	bad kerosene	self	....	30 fuel 1½ oil	12	..	320	4 whl.	not much	yes
118	10–20	kerosene	3	mouldb'd	250	500	clay loam	rolling	summerfallowing, breaking and fall plowing	....	tractor	about even	100	.....	self	....	16 fuel 1½ oil	10	..	320	4 whl.	not much	yes
119	10–20	kerosene	2	mouldb'd	200	300	rocky	rolling	plowing, discing and hauling	none	tractor	tractor	..	drive wheels slipping	self	10.00	18 fuel 2 oil	10	..	320	4 whl.	no	yes
120	10–20	kerosene	3	mouldb'd	500	all	....	rolling	moving buildings, plowing, breaking, discing, drilling and chopping	10 horses 2 men	tractor	tractor	150	magneto	son	15.00	15 fuel 4 oil	10	..	300	4 whl.	a little	yes
121	10–20	gasoline	3	mouldb'd	300	320	sandy, heavy clay	level	threshing, plowing, hauling portable bins	....	tractor	....	225	wheels slipping	son	....	15 fuel 1 oil	15	..	320	4 whl.	no	yes
122	8–16	coal oil	2	mouldb'd	150	all	clay loam with rocks	rolling	.....	none	need both	tractor	30	.....	self	10.00	15 fuel 1 oil	10	10	320	4 whl.	no	yes
123	10–20	kerosene	3	mouldb'd	287	287	loam	level	plowing, discing and threshing	5 horses 1 man	need both	horses	..	.....	self	250.00	15 fuel 2 oil	10	10	320	4 whl.	not much	yes
124	10–20	kerosene	3	mouldb'd	320	450	loam	rolling	breaking, plowing, discing, seeding, threshing and moving buildings	none	tractor	tractor	125	.....	self	30.00	20 fuel	10	..	300	4 whl.	no	yes
125	10–20	kerosene	3	mouldb'd	300	320	clay	level	plowing, discing and cultivating	....	tractor	tractor	..	.....	self	....	18 fuel 2 oil	10	..	320	4 whl.	no	yes
126	12–25	coal oil	3	mouldb'd	300	all	heavy clay	level	plowing	none	tractor	tractor	..	.....	self	....	30 fuel ½ oil	10	..	320	4 whl.	no	yes
127	8–16	kerosene	2	mouldb'd	300	480	loam	rolling	plowing, discing, threshing and moving buildings	none	need both	horses	70	overheating and dust	self	10.00	20 fuel ¾ oil	10	..	320	4 whl.	not much	yes
128	10–18	kerosene	2	mouldb'd	80	...	sandy loam	level	plowing and pulling potato digger	6 horses 1 man	tractor	tractor	..	.....	son	....	.....	..	..	..	4 whl.	no	yes
129	10–20	kerosene	3	mouldb'd	200	420	....	rolling	plowing, breaking, threshing, moving buildings, chopping	6 horses 1 man	tractor	tractor	200	.....	self	9.00	21 fuel 2½ oil	14	..	320	4 whl.	no	yes
130	11–22	kerosene	3	mouldb'd	125	315	black gumbo	level	plowing	6 horses 1 man	tractor	tractor	..	.....	self	....	18 fuel ¾ oil	8	10	160	...	no	yes
131	12–25	kerosene	3	mouldb'd	640	all	clay loam	level	plowing, discing, cultivating, hauling granaries	16 horses 2 men	need both	horse	..	.....	son	....	.....	12	..	..	...	no	yes
132	10–20	kerosene	2	mouldb'd	120	160	loam	rolling	breaking sod, discing, harrowing, dragging, floating and hauling	none	....	....	140	pistons, carbon wears rings and cylinders	self	100.00	25 fuel 2 oil	10	..	160	...	no	yes
133	10–20	kerosene	3	mouldb'd	700	800	loam	rolling	.....	....	tractor	tractor	150	.....	self	25.00	18 fuel 1 oil	13	5	800	4 whl.	no	yes
134	8–16	kerosene	2	mouldb'd	800	...	clay loam	level	discing, plowing, harrowing	4 horses 1 man	horse	tractor	..	.....	self	....	13 fuel 1 oil	10	..	640	4 whl.	no	yes
135	10–20	kerosene	...	....	520	...	clay loam	rolling	threshing, pulling scrub	none yet	....	....	..	.....	self	....	.....	..	..	..	...	....	yes
136	10–20	kerosene	3	mouldb'd	250	all	clay loam	level	plowing and threshing	4 horses 1 man	tractor	tractor	..	.....	self	....	20 fuel 1 oil	10	10	320	...	no	yes
137	14–28	kerosene	4	mouldb'd	550	450	sandy	rolling	plowing and threshing	8 horses 1 man	need both	tractor	75	trouble when starting	self	5.00	34 fuel 1½ oil	10	10	150	4 whl.	a little	yes
138	10–20	coal oil	3	mouldb'd	120	120	clay, no rock	level	pulling buildings, plowing, breaking, discing and dragging	4 horses 1 man	need both	tractor	..	.....	self	....	20 fuel 2½ oil	10	10	160	4 whl.	no	yes
139	10–20	coal oil	3	mouldb'd	250	175	loam and rocky	rolling	plowing and threshing	none	....	....	..	spark plug trouble	son	15.00	10 fuel 4 oil	10	20	640	4 whl.	not much	yes
140	9–18	coal oil	3	mouldb'd	300	all	loam	rolling	plowing, harrowing, seeding and cutting grain	6 horses 1 man	tractor	tractor	..	dust in magneto	self and wife	....	10 fuel ½ oil	12	..	320	4 whl.	no	yes
141	12–25	coal oil	4	mouldb'd	900	400	loam	rolling	pulling granaries, plowing, discing and harrowing	12 horses 2 men	tractor	tractor	80	water in oil	self	....	20 fuel	12	..	960	4 whl.	no	yes
142	10–20	kerosene	4	mouldb'd	500	all	clay loam	level	breaking, plowing, discing, grading roads and threshing	....	....	....	..	.....	self	....	16 fuel 2 oil	10	..	640	4 whl.	not much	yes
143	8–16	kerosene	3	mouldb'd	360	all	clay loam	rolling	plowing and breaking	6 horses	need both	tractor	..	.....	self	....	.....	11	..	480	...	no	yes
144	10–20	kerosene	3	mouldb'd	120	120	rocky	level	plowing and threshing	1 man 4 horses	tractor	tractor	..	spark plug	son	....	15 fuel 2 oil	10	..	300	4 whl.	....	yes
145	10–20	kerosene	3	mouldb'd	280	300	sandy loam	level	plowing, threshing, breaking	none	tractor	tractor	90	.....	self	....	19 fuel 1¾ oil	16	25	160	4 whl.	no	yes
146	12–24	kerosene	3	mouldb'd	200	all	clay loam	level	plowing and crushing	2 men 8 horses	tractor	tractor	120	.....	self	....	12 fuel 1 oil	12	..	200	4 whl.	no	yes
147	10–20	kerosene	...	....	235	all	loam	rolling	threshing and chopping grain	....	....	....	..	.....	self	....	.....	..	..	..	....	....	yes
148	10–20	kerosene	3	mouldb'd	325	325	loam	rolling	plowing, threshing, discing, harrowing, sawing wood, crushing	none	tractor	tractor	100	.....	son	20.00	20 fuel 2 oil	14	..	250	...	yes	yes
149	10–20	kerosene	2	mouldb'd	500	450	sandy and clay	level	breaking	none	horses	horses	50	.....	self	....	15 fuel 1 oil	12	..	400	caterpillar	yes	no
150	20–40	.....	5	mouldb'd	400	400	clay loam	rolling	plowing, threshing, crushing and pressing hay	8 horses 2 men	tractor	tractor	70	magneto	engineer	50.00	35 fuel	12	12	200	4 whl.	yes	yes
151	10–20	kerosene	3	mouldb'd	300	300	clay loam	level	plowing	6 horses 1 man	tractor	....	..	.....	self	3.00	27 fuel 2½ oil	13	..	320	...	...	..
152	9–18	kerosene	2	mouldb'd	200	320	clay loam	level	discing and hauling hay and plowing	4 horses 1 man	tractor	tractor	..	.....	son	....	.....	10	..	320	2 whl.	not much	yes
153	10–20	kerosene	3	mouldb'd	...	...	clay	rolling	plowing and threshing	none	tractor	tractor	..	.....	self	....	18 fuel 2½ oil	12	..	200	...	no	yes
154	10–20	kerosene	3	mouldb'd	360	all	loam	level	breaking, plowing, discing, seeding and packing	8 horses 2 men	tractor	tractor	120	ignition	self	10.00	.....	12	..	320	4 whl.	no	yes
155	10–20	kerosene	3	mouldb'd	125	300	clay	rolling	plowing and moving buildings	8 horses 1 man	tractor	tractor	70	poor fuel	self	....	15 fuel 1 oil	10	..	320	...	no	no
156	10–20	kerosene	3	mouldb'd	250	240	sandy and loam	level	plowing and threshing	8 horses 1 man	tractor	tractor	60	leakage in radiator	self	15.00	20 fuel ¾ oil	11	..	100	4 whl.	no	yes
157	30–60	kerosene	6	mouldb'd	900	all	heavy gumbo	level	plowing and threshing	10 horses 2 men	tractor	tractor	90	.....	self	....	45 fuel 2 oil	11	..	320	4 whl.	no	yes
158	10–20	kerosene	3	mouldb'd	500	all	loam	rolling	plowing, cutting wood, discing and moving buildings	none	need both	horse	..	.....	self	....	18 fuel 1½ oil	12	..	250	...	no	yes
159	20–40	gasoline	6	mouldb'd	100	180	sandy	rolling	plowing and threshing	30 horses	tractor	tractor	90	.....	self	100.00	.....	10	..	1000	4 whl.	....	yes

The Grain-Saving Stacker

Has Been Adopted by These Manufacturers of the Standard Threshing Machines of Canada and United States

The manufacturers of North America's standard threshing machines named below are prepared to furnish machines equipped with the Grain-Saving Wind Stacker. Get the facts about this wonderful improvement which saves *one to three per cent more grain.* Full information will be given you by any in this list, many of whom you will recognize as the manufacturers of the best-known tractors and farm implements. Write any of these for descriptive circular.

List of Manufacturers

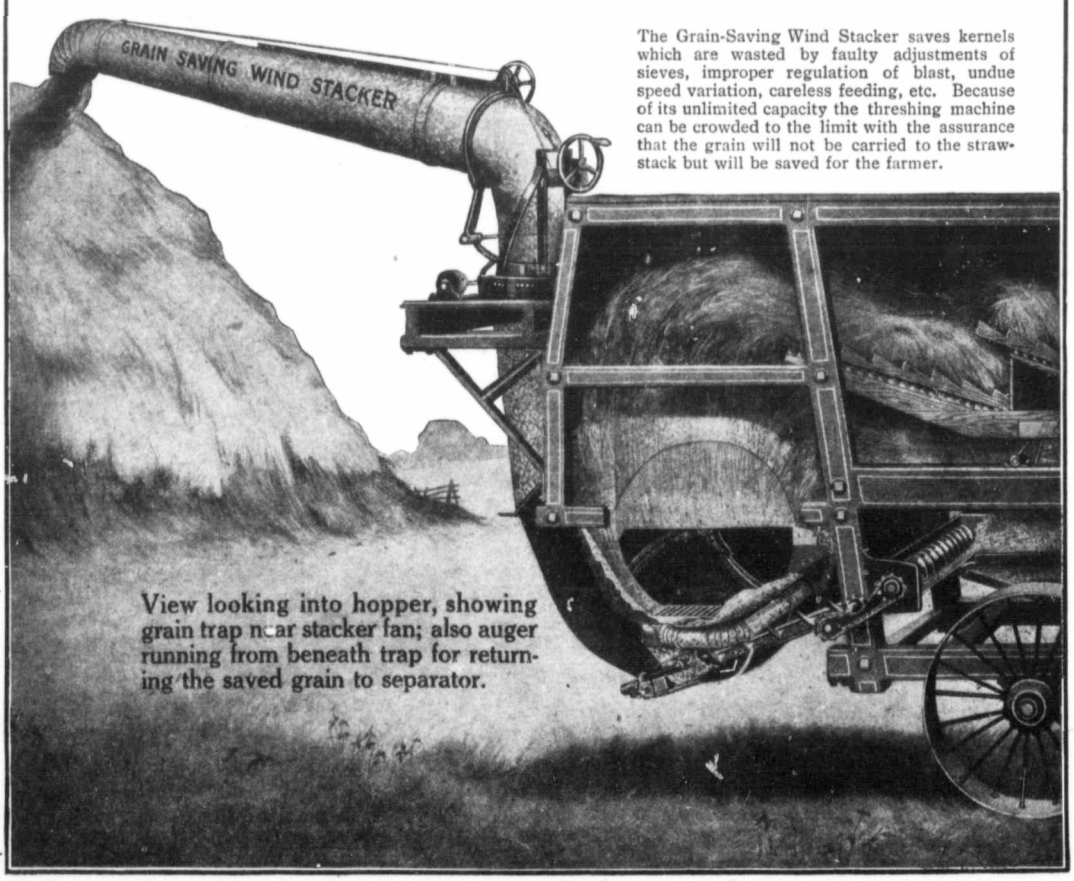
Canada

Robt. Bell Engine & Thresher Co., Ltd., Seaforth, Ont.
Dominion Thresher Co., Ltd., New Hamburg, Ont.
Ernst Bros., Ltd., Mt. Forest, Ont.
John Goodison Thresher Co., Ltd., Sarnia, Ont.
Hergott Bros., Ltd., Mildmay, Ont.
McDonald Thresher Co., Ltd., Stratford, Ont.
Sawyer-Massey Co., Ltd., Hamilton, Ont.
Stewart Sheaf Loader Co., Ltd., Winnipeg, Man.
Sussex Mfg. Co., Ltd., Sussex, N. B.
Waterloo Mfg. Company, Ltd., Waterloo, Ont.
R. Watt Machine Works, Ridgetown, Ont.
George White & Sons Co., Ltd., London, Ont.

United States

Aultman & Taylor Machinery Company, Mansfield, Ohio.
Avery Company, Peoria, Ill.
A. D. Baker Company, Swanton, Ohio.
Banting Manufacturing Co., Toledo, O.
Batavia Machine Co., Batavia, N. Y.
Buffalo Pitts Company, Buffalo, N. Y.
Cape Mfg. Co., Cape Girardeau, Mo.
J. I. Case Threshing Machine Company, Racine, Wis.
Clark Machine Co., St. Johnsville, N. Y.
Ellis-Keystone Agricultural Works, Pottstown, Pa.
Emerson-Brantingham Co., Rockford, Ill.
Farmers Independent Thresher Co., Springfield, Ill.
A. B. Farquhar Co., York, Pa.
Frick Company, Waynesboro, Pa.
Harrison Machine Works, Belleville, Ill.
Huber Mfg. Co., Marion, O.
Keck-Gonnerman Co., Mt. Vernon, Ind.
Minneapolis Threshing Machine Co., Hopkins, Minn.
Port Huron Engine and Thresher Co., Port Huron, Mich.
The Russell & Company, Massillon, O.
Russell Wind Stacker Co., Indianapolis, Ind.
Sawyer-Massey Co., Ltd., (U. S. Agency) Moline, Ill.
Swayne, Robinson & Co., Richmond, Ind.
The Westinghouse Co., Schenectady, N. Y.

The Grain-Saving Device Originated with The Indiana Manufacturing Co., Indianapolis, Indiana, Who Also Originated the Wind Stacker



View looking into hopper, showing grain trap near stacker fan; also auger running from beneath trap for returning the saved grain to separator.

The Grain-Saving Wind Stacker saves kernels which are wasted by faulty adjustments of sieves, improper regulation of blast, undue speed variation, careless feeding, etc. Because of its unlimited capacity the threshing machine can be crowded to the limit with the assurance that the grain will not be carried to the straw-stack but will be saved for the farmer.

No.	Size of tractor	Kind of fuel used	No. of plows pulled	Kind of plows used	Acres under cultivation	Acres that can be worked with tractor	Type of soil	Character of land	Uses of tractor	No. of horses and men replaced by tractor	Which is more satisfactory	Which is cheaper to maintain	No. of days in year tractor is kept busy	Troubles	Who operates the tractor	Amount of repair bills per year	Amount gallons fuel and lubricating oil used per day	Length in hours of working day	Average life in years of tractor	Size in a/s. of farm before tractor profitable	2, 3, 4 wheel or caterpillar best	Drag tractor pack soil?	Is tractor successful investment
160	11-22	kerosene			800	800	black loam	rolling	threshing	none					hired help					320	4		yes
161	20-40	kerosene	5	mouldb'd	435	800	heavy loam	rolling	plowing, discing and threshing	25 horses 5 men	tractor	tractor	100		self		40 fuel 4 oil	12	8	800	4 whl.	not much	yes
162	8-16	kerosene	3	mouldb'd	240	all	mixed	rolling	plowing and discing	5 horses 2 men	tractor	tractor	45	spark plug and kerosene pipe leaking	self	15 00	16 fuel ¾ oil	12		160	4 whl.	yes	yes
163	15-30	kerosene	5	mouldb'd	1300	1300	loam	rolling		4 horses 1 man	tractor	tractor	190		self	200 00	35 fuel 2 oil				4 whl.	no	no
164	12-20	gasoline	3	mouldb'd	260	260	clay loam	rolling	plowing, threshing, discing, harrowing	6 horses 1 man	tractor	about even	105		self	100 00	25 fuel 1 oil	10		160	caterpillar		yes
165	12-24	coal oil	3	mouldb'd	320	all	clay loam	level	threshing, hauling granaries, sawing wood		horses	horses	60		self		24 fuel 1½ oil		6	640	4 whl.	no	yes
166	10-20	kerosene	3	mouldb'd	320		sandy	level	plowing and threshing	8 horses 2 men	tractor	tractor	45		self		15 fuel 1 oil	10		160	4 whl.	no	yes
167	10-20	kerosene	3	mouldb'd	325	all	clay loam	rolling	breaking, plowing and threshing		horses	tractor	60	poor oil	self		20 fuel 1 oil	10		300	3 whl.	no	yes
168	10-20	kerosene	3	mouldb'd	850	800	clay loam	rolling	threshing, plowing, hauling and crushing	12 horses 1 man	tractor		100	poor lubricating oil	self	20 00	17 fuel 2 oil	15		960	4 whl.	no	yes
169	15-30	coal oil	5		350	all	loam with rocks	rolling	threshing		need both				self								yes
170	30-60	kerosene	8	mouldb'd	750	all	clay loam	rolling	plowing, threshing, cultivating, crushing, grading and moving buildings		need both		100		self		46 fuel 3 oil	10	10	320	4 whl.	not much	yes
171	18-35	kerosene	6	mouldb'd	620	80	sandy loam	hilly	breaking and threshing	7 horses	tractor	tractor			self	40 00	28 fuel 1½ oil	11		320	4 whl.	not much	yes
172	10-20	kerosene	3	mouldb'd	210	210	black loam	level	plowing, packing and harrowing, hauling and threshing	4 horses	tractor	tractor	60	dirty spark plugs	self	52 00	26 fuel 4 oil	12		320		not much	yes
173	16-30	coal oil	4	mouldb'd	250	1200	sandy loam	level	plowing and threshing	12 horses 4 men	tractor	tractor	75		self		30 fuel 2 oil	12	5	320	4 whl.	no	yes
174	20-40	gasoline	5	mouldb'd	620	all	loam	rolling	breaking, threshing, grinding and discing	none	need both	horse	100		self	50 00	40 fuel 2 oil	12		320	4 whl.	a little	yes
175	10-20	kerosene	3	mouldb'd	250	560	loam scrubby	level	plowing, harrowing, threshing pulling brush cutter, cutting wood	none	tractor	tractor	90		self		20 fuel 1½ oil	14		320	4 whl.	no	
176	10-20	kerosene	3	mouldb'd	250	400	loam and gumbo	rolling	breaking and plowing	8 horses 1 man	tractor	tractor	90		self	3 00	15 fuel 1 oil	10		320	4 whl.	no	yes
177	10-20	kerosene	3	mouldb'd	550	all	black loam	level	plowing and drawing binders	9 horses	tractor	tractor	100		self		22 fuel 1½ oil	9		320	4 whl.	very little	yes
178	15-30	kerosene	4	mouldb'd	380	300	loam	rolling	threshing, plowing, hauling granaries	6 horses	need both	little dif.	60	trouble in starting	self		30 fuel 1½ oil	10	12	320	4 whl.	very little	yes
179	20-40	kerosene	6	mouldb'd	515	490	clay loam	rolling	plowing and threshing	4 men 8 horses	tractor	tractor			self		30 fuel 2 oil	10			4 whl.	no	yes
180	12-20	kerosene	3	mouldb'd	400	all	clay loam	level	threshing and plowing	8 horses 2 men	tractor	tractor	60		self		15 fuel	10		320	4 whl.	no	yes
181	10-20	kerosene	3	mouldb'd	130	all	clay	rolling	breaking, plowing, floating, discing, harrowing and grading	12 horses	tractor	tractor	90		self	5 00	10 fuel 1½ oil	12		160	4 whl.	very little	yes
182	12-24	kerosene	4	disc	600	560	heavy clay	rolling	plowing, threshing	10 horses 2 men	tractor	tractor	70	nuts working loose	son	3 00	16 fuel 1½ oil	10		640	4 whl.	no	yes
183	12-20	gasoline	4	disc	960	960	loam	level	plowing, discing, harrowing, moving granaries and grinding feed	4 horses 1 man	tractor	tractor	75	carburetor	self		16 fuel ¾ oil	10		320	4 whl.	no	yes
184	9-18	kerosene	3	mouldb'd	275		heavy clay	level	breaking, plowing, crushing and wood sawing	4 horses 1 man	tractor				self		12 fuel 1 oil	12		320	4 whl.	no	yes
185	10-20	kerosene	2	mouldb'd	100	160	light loam	rolling	breaking, discing, seeding, threshing		tractor	tractor		front axles wearing out abnormally	self		15 fuel 1 oil	8	5	160	4 whl.	yes	no
186	10-20	kerosene	3	mouldb'd	1100	all	clay loam	rolling	plowing, discing, grinding and road grading	none	horses	horses	100		self		24 fuel	12	7		caterpillar	packs 1 furrow	yes
187	15-30	kerosene	3	mouldb'd	550	all	clay	rolling	plowing, discing, dragging and floating		need both	tractor	90		self		20 fuel 2½ oil	10		320	4 whl.	no	yes
188	10-20	kerosene	3	mouldb'd	350	300	black loam	level	plowing, threshing, sawing wood, moving granaries	4 horses	tractor				self		20 fuel 2 oil	12		320		very little	yes
189	10-20	kerosene	4	mouldb'd	430	all	clay loam	level	plowing, cultivating, hauling binder and threshing	8 horses 2 men	tractor	tractor	90	little trouble with starting	self		20 fuel 2 oil	10		320	4 whl.	no	yes
190	10-20	kerosene	3	mouldb'd	120	220	clay	level	plowing, cultivating and pulling	7 horses 1 man	tractor	tractor	90		self		14 fuel 1 oil	10		160	4 whl.	no	yes
191	15-30	kerosene	5	mouldb'd	250	250	loam	rolling	plowing, threshing, sawing wood, crushing grain	4 horses	tractor	tractor	50		self		25 fuel 2 oil	10		320	4 whl.	no	yes
192	10-20	kerosene	3	mouldb'd	450	all	black heavy loam	level	cultivating, discing, harrowing and plowing	8 horses 2 men	tractor	tractor	90		self		18 fuel 1½ oil	10		320	4 whl.	not much	yes
193	10-20	kerosene	3	mouldb'd	120		clay and loam	level	breaking, plowing, discing and threshing	6 horses 2 men	tractor	tractor	50		son		20 fuel 2 oil	8		200	4 whl.	not much	yes
194	10-20	kerosene	3	mouldb'd	200		rocky loam	level	breaking, discing, hauling two binders and threshing	8 horses 1 man	tractor	tractor		not enough power	engineer	6 00	16 fuel 1¾ oil	12		80	4 whl.	not much	yes
195	10-20	kerosene	3	mouldb'd	400	200	clay loam	rolling	breaking, plowing and threshing	none	tractor	horse	50		engineer	10 00	20 fuel 4 oil	10	10		4 whl.	no	no
196	15-30	kerosene	4	mouldb'd	400		sandy	level	plowing, discing, breaking, brushing, threshing, road grading	8 horses 2 men	tractor		210		self	10 00	20 fuel 2 oil	15		320	4 whl.	no	yes
197	10-18	kerosene	2	mouldb'd	60	125	sandy loam	hilly	plowing and threshing	4 horses	horse	horse		hard to start	self		10 fuel 1 oil	10	8	320	4 whl.	not much	no
198	10-20	kerosene	3	mouldb'd	325	all	loam	rolling	breaking, plowing, discing and threshing	8 horses 2 men	tractor	tractor	40		self	10 00	18 fuel 1½ oil	10		320	4 whl.	no	yes
199	10-20	kerosene			300	300	black loam	rolling	threshing	none	horse		20		son					160	4 whl.	no	yes
200	10-20	kerosen	3	mouldb'd	600	all	sandy to clay	level	plowing and grinding	none					son					320		not much	
201	10-20	kerosene	3	mouldb'd	200	195	clay and loam	level	plowing and discing	10 horses 2 men	tractor	tractor	120		self		20 fuel 2 oil	12	5	200	4 whl.	no	

Sawyer-Massey Farm Tractors

(CANADIAN BUILT)

Kerosene-Burning Tractors

For 1919 the Sawyer-Massey line will include the following size Kerosene-Burning Tractors: 11-22, 17-34, 20-40 and 25-50. These are standardized tractors of the same general appearance and design. All have four-cylinder kerosene-burning motors, four road wheels with traction drive to both rear wheels, two speeds forward and two reverse, spring mounted radiators with brass tubes, high tension ignition with impulse starter, no batteries. 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, are easy to start, and easy to look after and care for.

Rear-Mounted Steam Tractors

Big, powerful, heavy-duty engines, mounted on Alberta High Pressure Boilers, carrying 175 lbs. pressure, in two sizes, 22-68 and 25-76 horse power. Regular equipment includes jacketed Boiler, Straw-Burning Attachment, Rocker Grates, Duplex Steam Pump, Balanced Valve, Water Columns both side and rear, large Peep Hole at side of boiler for cleaning off ends of flues when burning straw. These engines have exceptionally strong, wide-faced gearing, over-size shafting, cannon bearings, wide, heavy-duty road wheels semi-enclosed gearing. If you are interested in Steam Power for plowing or threshing, the accomplishing of an immense amount of heavy work at low cost in a short time, fill out the coupon below.

We manufacture Grain Threshers in size ranging from 22-inch to 40-inch cylinders and the only Combination Threshing Outfit sold which has a four-cylinder kerosene-burning motor and six wheels.

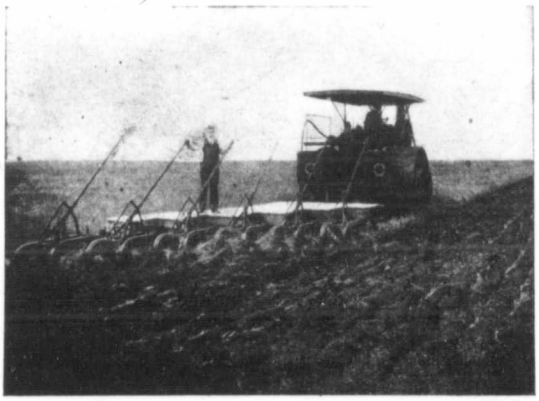
Fill out the coupon below for free literature or talk with our Local Agent in your town. Remember, in dealing with Sawyer-Massey Company, Limited, you are doing business with a strictly Canadian firm, established in 1836, and who have earned an enviable reputation for building honest, serviceable goods, and for dealing fairly and squarely with their customers.

Sawyer-Massey Co., Limited

Head Office and Factory, HAMILTON, ONT.

Branch Offices and Warehouses:

WINNIPEG REGINA SASKATOON CALGARY



Read This Letter From An Owner

Canora, Sask., December 7th, 1918.

Sawyer-Massey Co., Ltd.,
Regina, Sask.

Dear Sirs:—Please accept a few words from me regarding your **11-22** Tractor and **22-36** Separator, purchased in **1917.**

During the summer time my **11-22** Tractor, that I call my little Jack, was doing good work without any trouble. He drew three **14**-inch plows in the stubble field and two **14**-inch in the breaking very easily. I plow one acre an hour in the stubble and one-half acre in the breaking. I broke **100** acres in three weeks, using eight barrels of kerosene, five gallons of gas, and one-half barrel of oil and twenty pounds of hard oil. Total cost of **$125.00.** Is that cheap?

I threshed seventeen days this fall, lost no time. The farmers are very satisfied with the work done. I threshed **22,000** bus. of oats, and in that seventeen days I threshed **45** hours of wheat.

Yours very truly,
JOHN SHABITS,
Box **191,**
CANORA, Sask.

Request for Free Information Coupon (Mail to nearest Sawyer-Massey Branch).

Kindly place my name on your mailing list to receive free 1919 Literature, covering the Machinery which I have marked with an X below.

..... 11-22 Kerosene Burning Tractors.
..... 17-34 Kerosene Burning Tractors.
..... 20-40 and 25-50 Kerosene Burning Tractors.
..... Steam Engines.
..... Individual Threshers.
..... Large Custom Threshers.
..... Combination Threshers.
..... Road Machinery.

Name .....

Address .....

Date .....

No.	Size of tractor	Kind of fuel used	No. of plows pulled	Kind of plows used	Acres under cultivation	Acres that can be worked with tractor	Type of soil	Character of land	Uses of tractor	No. of horses and men replaced by tractor	Which is more satisfactory	Which is cheaper to maintain	No. of days in year tractor is operated	Troubles	Who operates the tractor?	Amount of repair bill per year	Amount gallons fuel and lubricating oil used per day	Length in hours of working day	Average life in years of tractor	Size in acs. of farm before tractor profitable	2, 3, 4 wheel or caterpillar tract	Does tractor pack soil	Is tractor successful investment
202	10-20	kerosene	3	mouldb'd	375	375	loam	rolling	.....	8 horses 2 men	tractor	tractor	120	.....	self	...	15 fuel 1 oil	12	..	320	4 whl.	no	yes
203	10-20	kerosene	...	.....	200	..	loam	level	threshing	4 horses 2 men	tractor	tractor	200	valve no good	self	...	20 fuel 2 oil	..	..	200	4 whl.	no	yes
204	10-20	kerosene	3	mouldb'd	250	400	mixed	level	plowing, crushing and pulling young trees	8 horses 1 man	tractor	.....	..	spark plug	self	5.00	20 fuel 1 oil	12	..	200	4 whl.	no	yes
205	10-20	kerosene	3	mouldb'd	85	85	sandy loam	rolling	.....	6 horses	tractor	tractor	90	.....	self	...	16 fuel 1½ oil	9	..	160	4 whl.	no	..
206	20-40	kerosene	6	mouldb'd	960	850	sandy loam	rolling	threshing, plowing, road grading, grinding and moving buildings	15 horses 3 men	tractor	tractor	70	.....	self	25.00	30 fuel 2 oil	11	10	320	4 whl.	no	yes
207	16-30	kerosene	3	mouldb'd	470	350	loam and gumbo	level	plowing, threshing, pulling buildings and cutting wood	6 horses 1 man	tractor	tractor	50	valves not timed right	self	6.00	40 fuel 1½ oil	10	..	250	4 whl.	a little	yes
208	15-30	kerosene	2	mouldb'd	510	650	heavy gumbo	rolling	plowing, discing	....	tractor	tractor	..	.....	self	35.00	20 fuel 2 oil	10	10	320	4 whl.	a little	yes
209	10-20	kerosene	2	mouldb'd	700	700	loam	rolling	plowing, discing, harrowing, threshing and grinding	10 horses 1 man	tractor	tractor	160	.....	self	3.00	19 fuel 1½ oil	12	..	320	4 whl.	no	yes
210	12-25	gasoline	3	mouldb'd	780	780	clay	level	plowing, discing, threshing and chopping feed	6 horses 1 man	tractor	tractor	90	.....	self	25.00	23 fuel 3 oil	10	..	320	caterpillar	yes	yes
211	10-20	kerosene	3	mouldb'd	250	320	loam	rolling	plowing, breaking, pulling stumps, discing and threshing	8 horses 2 men	tractor	tractor	210	.....	son	...	18 fuel 1½ oil	12	..	..	4 whl.	no	yes
212	10-20	kerosene	2	mouldb'd	100	280	gumbo	rolling	plowing, discing and hauling	10 horses 1 man	tractor	tractor	180	.....	engineer	30.00	.....	12	..	320	4 whl.	no	yes
213	10-20	kerosene	3	mouldb'd	160	350	gumbo	level	plowing, discing, pulling brush, threshing	12 horses 2 men	tractor	tractor	90		engineer	50.00	18 fuel 1½ oil	12				no	yes

TRACTOR RATINGS

Continued from page 7

charted according to the different kinds of soils. A 14-in. plow may require a pull of 200 or 1600 pounds, depending upon the soil conditions. Plowing matches are held at many different places and they offer an opportunity for testing the pull required by the plows. County agents could take the question into account in their rural survey work; it can be done. Then we would know when a man writes in from a certain district that since the average drawbar pull in breaking in that district is 700 pounds that he could with any 10 D.B.H.P. tractor in the list above except the first handle 2 14-in. plows with reasonable hope of success. There would be no hit or miss. There certainly would be fewer misses than we have under the present system.

The remarks of a recent writer on the tractor situation in the United States are very good. "There is no such thing as a best tractor any more than there is the best breed of hogs, or the best breed of cattle or the best best breed of dogs. The reason is perfectly obvious when one stops to ponder. If there were such things as a standard soil, a standard climate, a standard topography, and a standard type of operator, then we might be able to develop a standard best kind of tractor. Moreover, one man takes a certain make of machine and does well. He is pleased with his results. Another man buys exactly the same make of machine, works it on a similar farm and makes a flat failure. Where should the blame or credit be applied to the man or to the machine. In the case of failure we may blame the machine, but if we do then we should also credit the success to the machine. Obviously, however, both the success and the failure were due to a combination of man and tractor. One may take his choice, but the evidence piles up that some men never fit into a machine combination."

In conclusion, let us say that the scrub tractor should follow the scrub bull or the scrub stallion out of the country. They have been tested and turned down by an examining board because they did not come up to the approved standard. Therefore, let us have all makes that are offered for sale tested and approved.

Let us buy from reliable companies who are in a position to render expert and repair services and whose tractors have proved their ability to do what is claimed for them. We look forward to such a step being taken as we have outlined, and feel sure that it would be a long step in the right direction. It would be the means of avoiding many disputes, and there would be more satisfied owners, although we have a large number at the present time. Plowing is "the peak load in our agricultural work," and we need good machinery to carry this load.

Mike got a job moving some kegs of powder, and, to the alarm of his foreman, was discovered smoking at his work.

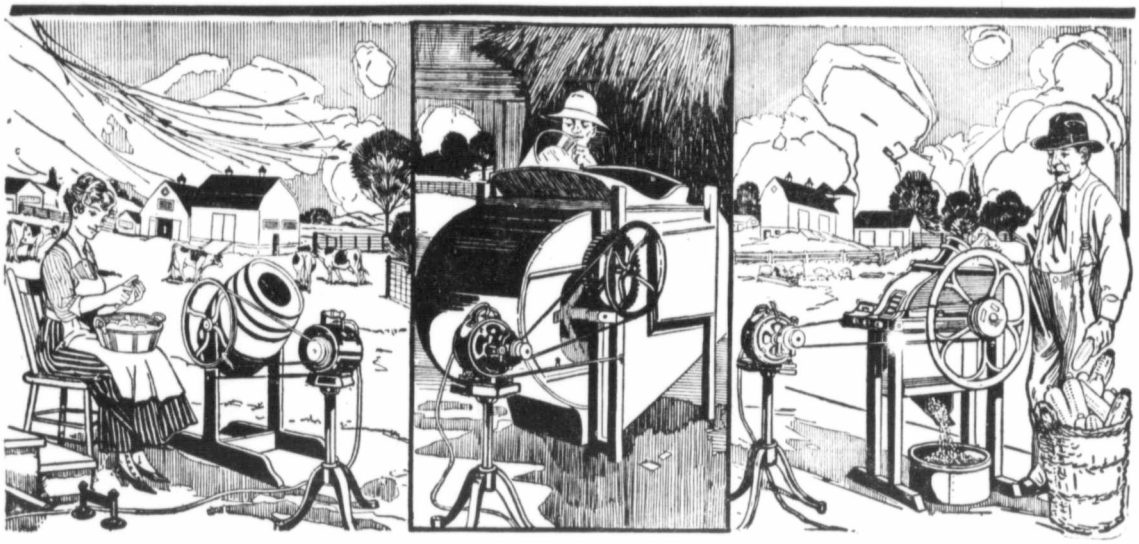
"Je-ru-salem!" exclaimed the foreman. "Do you know what happened when a man smoked at his job some years ago? There was an explosion that blew up a dozen men."

"That couldn't happen here," returned Mike calmly.

"Why not?"

"'Cause there's only you and me," was the reply.

Love him and keep him for thy friend, who, when all go away, will not forsake thee, nor suffer thee to perish at the last.—Thomas A. Kempis.



Earns Money For Farmers

DELCO-LIGHT is a business proposition for business-minded farmers. Here is something that will enable you to produce more on your farm.

It will cut down your working hours.

It will better your living conditions.

It will attract labor to your farm.

You need this farm improvement.

Over 60,000 delighted users enjoy the advantages of Delco-Light electricity—clean, handy, light and efficient economical power. Many chores formerly done by hand are on these farms done with Delco-Light electricity. Better light speeds up indoor work. The farm produces more.

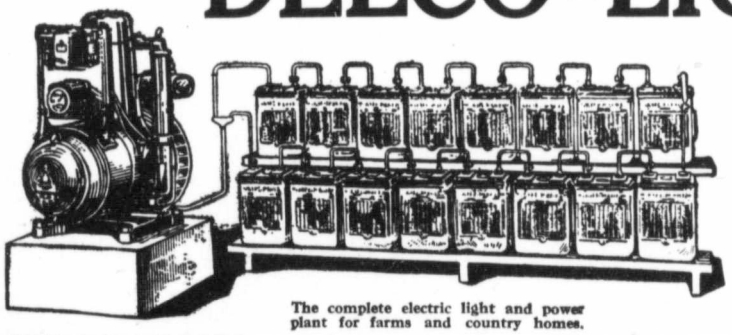
Delco-Light is the result of years of intensive study by famous engineers. It is built for only one purpose—to supply electricity for farm homes. Delco-Light is doing this—and doing it well.

Delco-Light is so simple a child can operate it. Long-lasting and economical, too.

Get complete information about Delco-Light from your nearest distributor. Write for the illustrated Delco-Light booklets that show what Delco-Light is and what it does. Literature will be sent free.

The Domestic Engineering Co., Dayton, Ohio

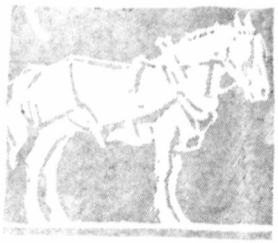
DELCO-LIGHT



The complete electric light and power plant for farms and country homes.

Bruce L. Robinson, Calgary

Breen Motor Co., Winnipeg



Tractor for Deep Plowing

Neither Flies Nor Weather Reduce Efficiency

TWO 1,500-pound horses can pull a 14-inch plow turning a furrow five inches deep.

The actual draft of the plow is about 310 pounds when plowing five inches deep.

One-tenth of his weight is about all the horse can pull at steady work.

FIVE 1,400-pound horses will be required to pull a 14-inch plow eight inches deep.

The actual draft of the plow turning a furrow eight inches deep is 700 pounds

Lack of power is principal reason for not plowing early and deep.

THE question of whether the tractor or the horse is the most economical is much discussed. It is a question where you can take figures and statistics and prove either side of the question. The problem is too broad and covers too many different conditions and types of farming to be answered in a general way. It must be left entirely for each individual farmer to decide for himself. He is the best judge as to whether or not his farm and surrounding conditions will insure the practicability of a tractor or not.

The one thing that is evident is that the average farm is underpowered. It has been shown by careful tests that it requires approximately 310 pounds pull to draw a 14-inch plow five inches deep. The normal working pull for a horse is about one-tenth his weight. It would thus take a team weighing about 3,000 pounds to draw a 14-inch plow five inches deep. To increase the depth to eight inches requires a pull of 700 pounds. This would take five horses weighing 1,400 pounds each. Of course, a horse can pull for a short time an amount equal to about one-half his weight, but he cannot stand up all day long and pull more than about one-tenth of his weight. The figures given are for average soil. The draft may vary all the way from three pounds per square inch of the cross section of the furrow in sandy soil, to twenty pounds in gumbo. To till the land as it should be tilled requires power, and plenty of it. And there are times during the year when extra power is necessary to carry the "peak load." How to supply this extra power most economically and under unfavorable as well as favorable conditions, is the question that confronts every farmer. Horses, no doubt, are thoroughly dependable for furnishing power for the "peak load" provided there are enough of them. But are they the most economical when it is necessary to keep several extra horses a whole year just for the rush season, or in other words to carry the "peak load"?

In figuring the cost of keeping horses a good many things must be taken into consideration besides the cost of feed. The feed bill is the large bill, but by no means the only bill. There are other items such as the interest on the money invested in the horse, veterinary bills, depreciation, shelter, harness, shoeing, labor necessary to take care of the horse. For instance, according to government investigations the time required to take care of one horse for one year amounts to 170 hours. This includes the time spent in feeding, grooming, harnessing, hitching up and unhitching, cleaning out the barns and hauling out the manure.

In figuring the cost of keeping horses one of the items of interest is that it requires considerable land to raise the feed necessary. It is estimated that the average farm in the United States contains 138.11 acres, of which 75.3 acres is improved land. Twenty acres of this land is necessary to furnish the feed for the four horses, which is the average number kept on the average farm. This feed, no doubt, could be fed to other live stock which would return better profits, providing the power needed could be supplied more economically in some other way.

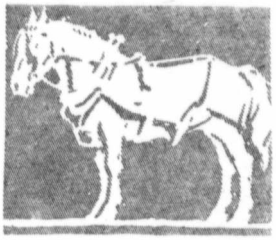
The question then arises, is the tractor the best means for supplying the extra power necessary for carrying the "peak load"? It is difficult also to give definite figures on the cost of owning and operating a tractor. The main items of expense to be taken into consideration are: interest on the money invested in the tractor, depreciation, fuel, cylinder oil, and repairs. The tractor may go dead but can be revived by proper treatment, but if the horse goes dead all his efficiency ceases.

The chief advantages of the tractor for farm work, in the opinion of the operators, are (1) its ability to do the heavy work and do it rapidly, thus covering the desired acreage within the proper season; (2) the saving of man labor, and the consequent doing away with some hired help; (3) the ability to plow to a good depth, especially in hot weather.

There is no discounting the statement that better tillage means better crops. Covering the desired acreage within the proper season and the ability to plow at a good depth in hot weather, is of the greatest importance in crop production. This is brought out in a most striking manner by an experiment that is being carried on by Kansas Experiment Station, and which has been running since 1911.

The table given below is the average for a period of five years from 1911 to 1915:

Time of Plowing	Depth of Plowing	Yield
July 15	7 ins.	25.38 bus.
August 15	7 ins.	22.11 bus.
September 15	7 ins.	16.82 bus.
July 15	3 ins.	19.27 bus.
September 15	3 ins.	15.5 bus.
Disked, not plowed		9.18 bus.



The experiment shows for the extremely dry year of 1913 the following:

Time of Plowing	Depth of Plowing	Yield
July 15	7 ins.	34.95 bus.
August 15	7 ins.	28.80 bus.
September 15	7 ins.	17.55 bus.
July 15	3 ins.	21.57 bus.
September 15	3 ins.	16.39 bus.
Disked, not plowed		9.39 bus.

This is the best argument for deep plowing and plowing at the right time that can be given. Moisture is not the only important factor in the raising of crops. The liberation of nitrates and other plant food is a decidedly important factor. The table given above for the dry year of 1913 is proof enough for this statement.

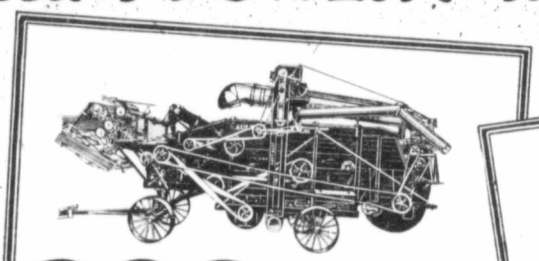
Take for example the figures of the first table of plowing 7 ins. deep July 15 and compare with plowing three inches deep Sept. 15. In the first case the average yield for five years was 15.5 bus. an acre. A difference of 9.88 bus. an acre. Suppose you were raising 100 acres of wheat that would bring $1 a bushel, the difference in dollars and cents would be $988. You will agree that it pays to plow early and plow deep.

But it is true that conditions sometimes will not permit plowing as early as July 15 and plowing seven inches deep. It may be too hot and dry. The horses could not stand such heavy work as deep plowing would be, after the rush of work with other crops such as corn cultivation, wheat harvesting, and others. Here is where the tractor proves itself useful. It could be run night and day. Neither flies nor heat can reduce its efficiency.

Lack of power is the chief reason for not plowing early and deep on the average farm. This is almost invariably the reason on the farm where the principal crop is wheat. Through proper planning and rearrangement of farm methods, many are using the tractor to supply the power deficiency during the season of the year when much heavy work must be done.

At a Great Plowing Match in Manitoba. Puzzle: Find the Horse!

AULTMAN-TAYLOR
FARM-POWER MACHINERY



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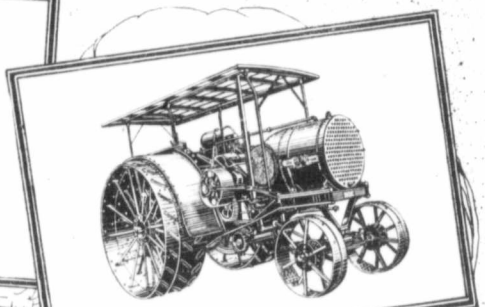
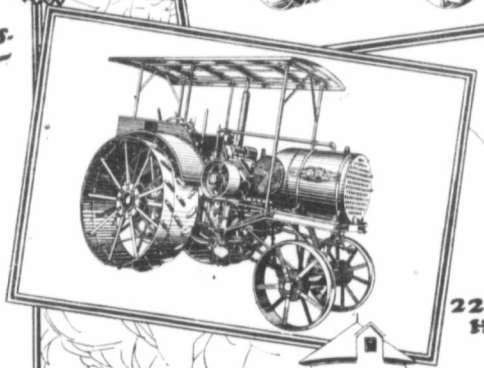
2 Small Sizes for Individual Use



30-60 H.P.



22-45 H.P.

In the lead for fifty four years- Getting better all the while-

For years—54 in all—Aultman-Taylor has been a leader in the designing and building of high-grade power farming machinery. During all these years, the basic principle of the Aultman-Taylor organization has been to build good power farming machinery BETTER. It was on this principle that Cornelius Aultman and his associates more than half a century ago laid the foundation for a business which has since grown to immense proportions and is to-day a recognized leader in the production of the better kind of power farming machinery.

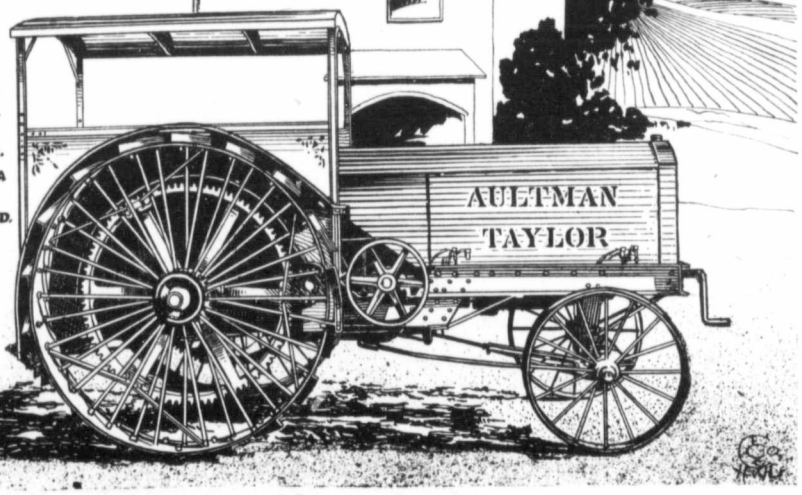
When the demand came for the tractor more than ten years ago, our friends and customers turned to us and said:—"Build us a real tractor. You know what we want. Build it up to the usual Aultman-Taylor standards and it is sure to be a winner." These friends and customers knew from past experience and dealings that if Aultman-Taylor built a tractor, it would out-perform any other just as Aultman-Taylor threshers, steam engines and other power farming machinery have outclassed all others in performance.

It took Aultman-Taylor to build the only really successful large tractor. This tractor set new standards in performance—in design. It was a leader from its very inception and its popularity has grown each succeeding year until to-day it has no competition.

Aultman-Taylor tractors are built in three sizes—all are built up to Aultman-Taylor standards which mean betterments and refinements in construction, which other manufacturers deem unnecessary, but which make Aultman-Taylor tractors BETTER tractors.

Aultman-Taylor New Century Threshers are built in four sizes. These machines differ in size only, there being no variation in the quality. The **33 x 36** size is an ideal thresher for use with the small gas tractor. It is not a "Junior" or a "Baby" thresher, which means a sacrifice in construction.

The New Century has been a favorite with the Canadian farmers for years. Thousands in use in Canada. There's one near you. Ask your neighbor about its wonderful work, or write our nearest Branch House for this information. Insist on having a New Century—accept no substitute. Get our Catalog now.



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Some Fundamental Principles of Tractor Ignition

THE PRIMARY BATTERY

By C. C. HERMANN

A THOROUGH knowledge of ignition principles is essential to every one who comes in contact with the tractor, whether it is the farmer who operates, the dealer who sells, the demonstrator who demonstrates, or the manufacturer who produces the machine. Many troubles that are still encountered, notwithstanding modern improvements, arise from the slight knowledge of this important phase of tractor design on the part of the operator, due to the insufficient instructions on the part of the dealer, which in many cases reverts back to the demonstrator and manufacturer.

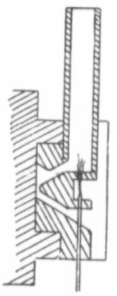


Fig. 1. Naked Flame Ignition

Various means have been employed from time to time, to ignite the charge of combustible mixture within the cylinder of the internal combustion engine. As early as 1860, we are informed by authority, Lenoir brought out his gas engine, in which the charge was ignited by an electric spark when the piston had completed about one-half of its stroke, the expansion of the burned gases then acting on the piston for the remainder of the stroke. The engine was double-acting and did not compress the mixture. In 1866 Dr. Otto brought out an internal combustion engine that compressed the mixture of gas and air and ignited the charge under compression by means of a gas jet. Considerable difficulty was experienced with the gas flame by reason of its often being blown out by the wind. This system of ignition is illustrated in Fig. 1. In these two early designs are seen the forward movement of the principles of using gas as a means of power and a retrogression in the principles of ignition.

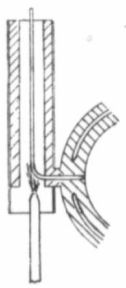


Fig 2. Hot Tube Ignition
Where flame heats a thin tube, which ignites the charge

From the naked flame method of igniting the charge, practice turned to what was known as a hot tube. This method, shown in Fig. 2, consisted in a tube closed at one end and screwed into the cylinder. The tube was kept heated by means of a flame and this ignited the charge. The next system given a trial was the hot ball shown in Fig. 3, which consists in the heating of a round hollow projection on the cylinder head.

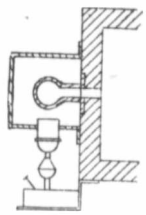
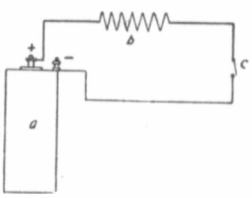


Fig. 3. Hot Bulb Ignition

With the Diesel type of engine was introduced the method of igniting the charge by means of compression. In this type the mixture was compressed to from 250 to 500 lb. per sq. in., and the fuel ignited under pressure by the



4. Where Current Has Continuous Path
a, dry cell; b, coil; c, switch

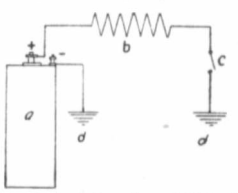


Fig. 5. Illustrating Grounded Circuit
a, dry cell; b, coil; c, switch; d, ground

heat generated during compression.

Close regulation of the charge and its ignition was only made possible by returning to and vastly improving the electrical ignition system of earlier times.

In order to appreciate the value of a controlled means of igniting the charge of combustible mix-

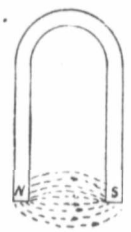


Fig. 6. Form of Magnet Used in Magneto. Magnetic Lines of Force Indicated

ture within the cylinder, it may be well to review some of the exacting requirements of an ignition apparatus.

In the first place the heat derived from the burning of the charge, which ranges from 1800 to 3800 deg. Fah., often heats the cylinder walls and piston beyond the point that a homogeneous mixture can be hoped for, despite the fact that circulated water is ever present to carry off the heat. This intense heat has a dissociating effect which tends towards stratification of the mixture.

A second point of consideration is the pressure existing within the cylinder. The mixture is compressed from atmospheric pressure to from 60 to 90 lb. per sq. in., requiring a spark of such intensity that it will ignite the charge in the least possible time. Take for consideration a four-stroke engine running at 900 r.p.m. and using electric spark plug ignition. Such an engine makes one revolution in 1-15 of a second. If the charge is ignited 20 deg. ahead of dead center, 1-18 of a revolution would be allowed to ignite the charge, or 1-270 of a second. This means that the spark must jump the spark gap of the spark plug, ig-

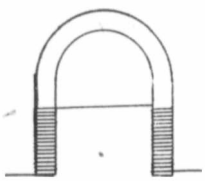


Fig. 7. Simple Form of Electro-Magnet, Typifying General Principle

nite the charge, and burn the gas, all in a very small portion of a second. The after burning must of necessity be of very short duration.

A third consideration is the kind of fuel used in the engine. Gasoline may be used that will test anywhere from 62 to 70 deg. Baumé. Where a system may readily ignite a gas testing 70, the same system may be called upon to ignite a gas that will test as low as 60 and not get out of commission.

From the foregoing it is apparent that a fat spark or a shower of sparks must be available if any degree of success is to be attained. Since the success of modern ignition is due to the application of the laws of electricity, this phase of the subject will be here dealt with in detail.

Electricity as applied to ignition is known as dynamic electricity or electricity that flows through a substance or over its surface in the form of a current. Dynamic electricity may be divided into two classes, namely, direct current, or an electric current that flows continuously in one direction and alternating current, or an electric current that does not flow continuously in one direction, but alternates many times each second, flowing first in one direction and then in the opposite.

Volt, the Unit of Force

Just as a stone cannot be moved from one place to another without force being applied, neither

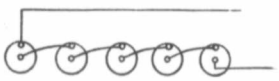


Fig. 8. Cells Connected in Series

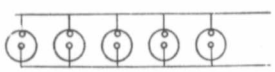


Fig. 9. Cells Connected in Parallel

can electricity be moved from one place to another without some force to do the moving. This force in electrical terms is called electro-motive-force, and the unit of this force is the volt. The volt in turn helps us to define the unit of current or ampere, which is the current flowing over a conductor in one second with an electro-motive-force of one volt, the resistance of the conductor being one ohm.

In order that electricity may move from one place to another, a circuit must be provided. A circuit may be completed by causing its conducting elements to form a path from the source of current back to the same point, or it may be completed by means of a ground. Fig. 4 shows a circuit where the conducting elements form a continuous path for the current, in which *a* is a dry cell, *b* a coil and *c* a switch. When *c* is closed, a current flows presumably from the positive or + terminal of the dry cell over the conductor to the negative or — terminal of the cell. When *c* is open, no current is flowing. Fig. 5 shows a circuit when the re-

turn is made by way of the ground. When c is closed, the current is flowing from the positive terminal of the cell a through the coil b, switch c through the ground d to the negative terminal of the cell a.

Thus far the electricity referred to pre-supposes a source of current. A glass rod rubbed with a piece of dry silk cloth will attract small bits of paper, and this is a manifestitation of electricity. Magnets, either natural or artificial, will attract pins and pieces of steel, and when suspended by a string they will assume one direction, namely, a north and south direction, and resist change. Mag-

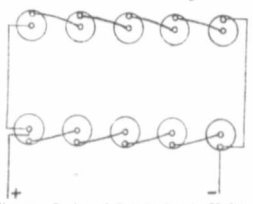


Fig. 10—Series of Connection in Multiple

nets have, therefore, two poles, a north or positive pole and a south or negative pole. Generally magnets are made in the form of a horseshoe, and a small bar called an armature is placed across their poles so that they will retain their strength. It is generally accepted that the direction of the magnetic lines of force are from the north pole of the magnet to the south pole.

Fig. 6 shows the form of magnet usually found in magnetos of ignition systems, with its magnetic lines of force indicated by the dotted lines and their direction indicated by the arrows. As shown in the illustration, the magnetic field is much stronger in the space between the poles than in any other place outside the magnet.

Direct-Current Systems Use Generator

Ignition systems using direct current electricity employ a generator to produce the current. Such generators employ in their design electromagnets. An electromagnet is composed of a soft iron core wrapped around by a wire. As long as current flows in the wire, the core has magnetic qualities. In Fig. 7 is shown a simple form of electro-magnet typifying the principles made use of in direct current generators. In Fig. 7 is a soft iron core bent in the shape of a U, one end being a north pole and the other a south pole. The wire is so coiled about the poles that the current will flow around them in opposite directions.

Primary batteries formed an important part of early ignition systems and are, in some instances, still used. A study, therefore, of tractor ignition would be incomplete without due reference to wet and dry cell primary batteries. In the primary battery is found the fundamental principles upon which the electro-chemical generation of a current depends, that is, if a metal plate be placed in a liquid there is a difference of electrical condition produced between them, causing the metal to take either a lower or higher potential than the liquid depending upon the nature of the metal and the liquid. Now, if two plates of different metals are placed in one electrolytic liquid there is a difference of state produced between them, so that if they are connected by an outside wire a current of electricity will traverse the wire.

In the wet cell the electrolytic liquid is diluted sulphuric acid and the plates are copper and zinc. When the two plates are connected together and the current commences to flow, the sulphuric acid acts on the surface of the zinc plate and forms sulphate of zinc. While the zinc is being dissolved to form zinc sulphate, hydrogen gas is being liberated from the sulphuric acid. Much of this hydrogen collects on the copper plate in a thin film covering it and reducing its effective surface, also tending to produce a current in the opposite direction. This condition is called polarization of the cell, which may be rectified by stirring up of the electrolytic, thus assisting the hydrogen bubbles to detach themselves from the copper plate and make their way to the atmosphere. The wet cell is not adaptable to the conditions existing in an automobile or tractor because of the liability of spilling the electrolyte; therefore, the dry cell was introduced.

Composition of Dry Cell

The dry cell is very similar in principle to the wet cell just explained. The dry cell cannot, as is the case with a wet cell, be depolarized, but must be replaced from time to time by a new cell. Instead of the copper electrode, as used in the wet cell, a carbon rod is used, which is the positive terminal of the dry cell. The electrolyte is enclosed in a zinc cup, which also forms the negative terminal of the cell. The top of the cell is closed with pitch to prevent leakage and evaporation of the electrolyte. The whole is then placed within a paper box to prevent the zincs of adjacent cells from coming into contact when several cells are connected together to form a battery. The average voltage of a dry cell when new is one and one-half volts, and should show from 20 to 25 amperes when tested with an ammeter.

As previously inferred, a number of dry cells are connected to-

Concluded on page 50A

STINSON Tractor

Made for the West at Medicine Hat, Alberta

Sold at the same price the American Farmer pays

Why the STINSON?

After visiting and studying all Tractors in the United States for six months we picked the Stinson to manufacture because we consider it the best value and best construction for Western Canada

What Users Say

Stinson Tractor Co., Drayton, N.D.
Superior, Wis.
Gentlemen:

Wish to say in regard to the Stinson Tractor that I purchased this season, that it certainly is a good one. It is better than any tractor in this neighborhood that I know of. The only trouble we have ever had was a little spark trouble, and we soon found it.

Have plowed over 200 acres this fall and in a very short time, at a speed of about 4 miles per hour. Am using three plows, but the tractor no doubt will handle more, but this soil is very heavy, being black gumbo, and it is hard to make plows scour.

I used from 2 to 2½ gallons of fuel to the acre, depending on the depth of the plowing.

My fourteen-year-old son has operated the tractor most of the time, and he thinks it the best machine I could have bought for the money. We particularly like the speed.

Have told my opinion as near as I can of your tractor, but if there is anything more I can do for you I shall be pleased to have you advise me.

Yours very truly,
(Signed) John Lindquist,
R.F.D. No. 1, Drayton, N.D.

Stinson Tractor Co., Billings, Mont.
Superior, Wis.
Gentlemen:

I have been using your Stinson tractor this fall discing and pulling a set of three bottoms.

I wish to say that I am very much pleased with this tractor, for the following reasons:

First—It has plenty of surplus power.

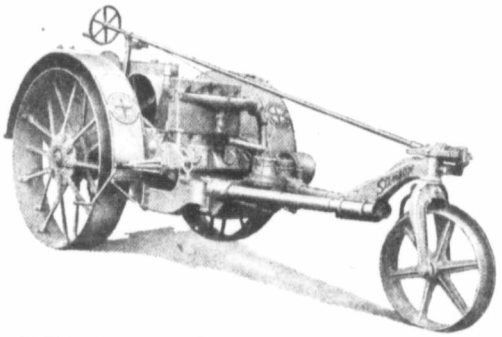
Second—It is the only tractor as far as I know that is a genuinely dust-proof proposition, all the gears are running in oil and thoroughly protected.

Third—The carburetor device which draws the air used by the carburetor through water, insures a perfectly dust-proof carburetion.

Fourth—And a very important feature about this tractor is its great speed. I have been able to go from two to three times the speed in the fields that the best team of horses are able to travel, and in a day's work this is especially an important feature.

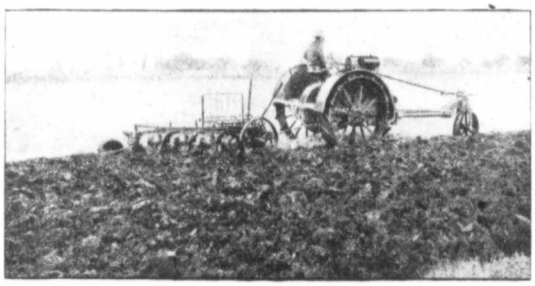
Yours very truly,
(Signed) A. C. Allen.

(Mr. Allen's tractor is equipped with a 4-in. x 6-in. motor. Our regular equipment is now 4¼in. x 6in.)



ABOVE is shown the 18-36 Stinson—a real Tractor without any freak ideas. See column at right for some features of construction.

BELOW is shown the Stinson pulling four fourteen-inch plows in heavy, black soil at three miles an hour — the morning after a three-inch rainfall. The Stinson stays on the job.



Some Stinson Facts

Motor is 36 H.P., 4-cyl., valve-in-head. Power enough to properly drive a 28-in. separator.

It works better on KEROSENE than on gasoline, because it's a KEROSENE motor.

Draw-bar pull is 3000 lbs. at 3 miles per hour.

Pulling 3 14-in. plows, this means 12.7 acres in 10 hours.

Pulling 4 14-in. plows, this means 16.96 acres in 10 hours.

Weight, 6350 lbs.; 85 per cent on drive wheels.

2 drive wheels, 12 in. wide, 60 in. high.

16 angle lugs 18 in. long, 3 in. deep on each wheel.

No side draft, no bevel gears, direct drive to belt pulley.

The best tractor in the world with working parts poorly protected from dust can only be a partial success. The Rainstorm cleaner supplies the motor with clean, moist air, washed through water. It is non-adjustable and trouble-proof. ALL gears, including final drive, are enclosed, running in oil; governor enclosed, running in oil.

Catalog Free

It costs nothing to get a Catalog and see for yourself why the Stinson Tractor excels—Write us to-day

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Manitoba and Alberta is mostly open territory to-day. Write us for information. Splendid Service guaranteed.

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Medicine Hat, Alberta

"THE TRACTOR CENTRE OF CANADA"

THE TRACTOR IN WESTERN CANADA, PAST, PRESENT AND FUTURE

(Continued from page 5)

In Saskatchewan there was up to November 1st, 1918, 8.94 farms per tractor. In other words, for every farm of 160 acres and over owning a tractor there were 7.94 farms that did not own one. In Manitoba there were 18.40 farms per tractor, and in Alberta 10.29 farms per tractor.

The value of the farm tractors in operation in Western Canada at the close of 1918 was approximately 26,000,000, and it is safe to assume that between five and six million dollars will be expended this year.

I simply quote these figures to show that the tractor has had a steady growth. This, despite the fact that it was going through a process of evolution, and was naturally subjected to a lot of experiments from which both the farmer and the manufacturer suffered.

The future should see easier sailing. The units that go to make up the tractor have become more nearly standardized, and consequently more reliable. The engineer has come to know what classes of material are best suited for certain parts. Certain designs have through experience proven to be most suitable for tractor work, and while the end has yet by no means been reached, it is safe to say that we have arrived at a working basis, and the future will largely be a matter of refinement.

In his issue will be found the result of a questionnaire sent out by this magazine to a large number of tractor owners, and any farmer who studies carefully the date given can come to but one conclusion, and that is that the tractor is working out successfully. The farmer is coming to know the tractor, and to appreciate it. He is coming to realize that it is a machine to be used and not abused, and he is further coming to realize that he cannot have too much mechanical knowledge to handle a tractor successfully.

The tractor began in Western Canada. It spread to the border states just south of the line, and to-day it is found from the Gulf to the northern limits of land cultivation, and from the Atlantic to the Pacific wherever farming operations are carried on, outside of the garden plots, and even here tractors have been designed and successfully operated in garden cultivation.

Regard it as prophecy if you will, but accept it if you please as a statement to be carefully watched, that sooner or later every farm will have its tractor.

THE COMNG FARM POWER

Alexander, Man., Feb. 3, 1919.

WITH reference to the style of tractor I use, I might say as follows: It is a Heider tractor, manufactured by the Rock Island Plow Co., and handled for Manitoba and Western Canada by the Waterloo Mfg. Co., Portage la Prairie. The belt power is 20 h.p.; draw-bar, 12 h.p.; Waukesha motor; 4-cylinder, 4½-in.-bore, 6¾-in. stroke, Dixie magneto and Kingston carburetor. The tractor weighs 6,000 lbs., and the power is transmitted from the motor by the Heider special friction transmission.

The work done was plowing and threshing. In plowing, I used a 14-in. Rock Island three-furrow plow, equipped with their C.T.X. bottoms.

In the spring I plowed from four to five inches deep, the same as for fall plowing; but in summerfallowing about six and a half inches. The summerfallow was very hard, being pastured off with stock. In this I used about 1¼ gallons of kerosene, averaging an acre per hour. I have no account of the lubricating oil used per acre; but I can say it is not at all hard on oil.

For threshing I run a 24x36 Waterloo separator complete, and had surplus power at all times, averaging from 600 to 700 bushels of wheat per day. The fuel and oil were much the same as used while plowing. The amount of threshing per day depends a great deal on the crop to thresh. Upon the men feeding the machine depends a lot so as to have the separator handling its capacity at all times.

To my mind, the tractor is the coming farm power. While I don't think it will entirely replace horses, yet it will have the foremost place for all the heavy work, such as plowing. They will also be used for hauling, pulling packers, etc., so that no farmer will need to tie up his money in a machine to merely get power for operating a grain separator.

I will be pleased at any time to answer any questions referring to tractor work.

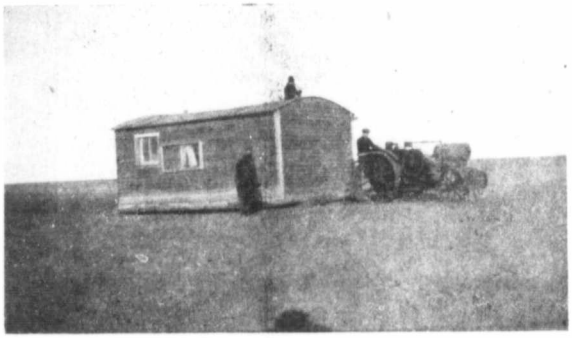
Yours truly, C. E. McEvoy.

Our anger and impatience often prove much more mischievous than the things about which we are angry or impatient.—Marcus Aurelius.

Its Flexibility of Power

St. Norbert, Man.
Feb. 18, 1919.

IT was late in the spring when we had our tractor—a Heider 12-20 with a 3-bottom, 14-in. Rock Island plow. The Waterloo people, of Portage la Prairie, shipped the outfit to Winnipeg, where we took charge of it, and drove it by road 12 miles to the farm. It was seeding time then and, being anxious to rush the work, we immediately started in on a 40-acre piece of backset, without waiting for the expert to come and put the machine "on the go." We first hitched the engine on an 8-foot disc harrow with a six-section drag harrow, hooked tandem 3 by 3, and ran this outfit all over that field ahead of the horse drill. Notwithstanding the quality of work performed we did not feel quite satisfied with the results, the ground being deeply plowed and still wet; the engine



W. G. McLaughlin, Chinook, Alta., hauling a 14x22 shack (to be used as a temporary school)—a trip of 1½ miles

was sinking deeply, drawing heavy and was packing the ground visibly.

After the seeding was through we thought we would give the engine its trial on plowing. We had close at hand a strip of low prairie about a mile and a half long, part of which had been tampered with by the plow a couple of years previous. We, therefore, set on plowing, going one way, turning sod, and backsetting when coming the other way. Although we were only plowing slightly over five inches deep, we found out that the engine was taxed to its limit, pulling the 3-bottoms in the sod, while on the other hand it travelled with apparent ease, plowing six inches in the backset. We were averaging at that around 7 acres a day at an acreage cost of 80 cents for fuel and oil.

We then proceeded on another lap of prairie that had once been seeded to Timothy, and here is where we had the first opportunity of working the engine under normal load and figure the actual cost of fuel under average conditions. In this piece of land, which was a mile long, we averaged little over 10 acres a day, and our total expenses were as follows:

10 gallons gasoline at 37c.....	$ 3.70
135 gallons kerosene at 21½c...	28.92
13 gallons cyl. oil at 70c.	9.10
1 gallon differential oil at 22c.	0.22
2 lbs. cup grease at 12½c.....	0.25
	$42.19

This brings us to a cost per acre of a fraction over sixty cents. This work, of course, not including the time of the operator, depreciation on the machine and interest on the investment.

We plowed later, 6 inches deep, in tough gumbo land, growing willows, and also backsetted some of the same land, where we discarded one plow and travelled at a higher speed. This, however, proved to be at a higher cost per acre in every case. Although a good part of this was custom work, for which we received a reasonable price, it proved to be a paying proposition only when it did not interfere with our own farm operations and did not hinder us with our own work. The last bit of work we did before threshing was discing.

With an 8-foot John Deere tandem disc harrow, loaded with rocks, it was a snap for the engine, discing 65 acres in two days at a total fuel and oil cost of $15.

In September of the same year we purchased an Avery 19 by 30 separator complete, and set out threshing our own crop, after which we did a bit of custom threshing. We received 10 and 12 cents in wheat and oats respectively. We used our own teams, and one man looked after both engine and separator, and mostly all the time after the grain boxes also. With three stook teams and one pitcher in the field we could thresh an average of 650 bushels of wheat and 1,000 bushels of oats

a day in good yielding grain. I have no figures on hand by which I can accurately estimate the daily cash in threshing, but I know the engine would consume more kerosene, more cylinder oil and more water than it would use in plowing, and I will add right here that with us we started experiencing trouble only when threshing, and this evidently because we had to run the motor at a higher rate of speed than that for plowing.

I figure the yearly repairs on the engine would amount to about $10 with the average operator, and less with a first-class engineer. We ran the tractor ourselves without any previous experience. We must admit, however, that this particular engine is a master in simplicity and use of operation, and the beauty of it is the flexibility of power delivered by the friction drive, thereby eliminating many little breakdowns that might otherwise happen.

As to the number of horses the engine displaces, we believe it is a poor policy to run an engine on wet ground in the spring, therefore we need horses for surface cultivation, and we personally look to the tractor for relieving the horses of the hardest work only, such as plowing and discing, and do the threshing. With the lighter work to do and the hauling, the required horses can, with ordinary care, be kept economically and in good condition all the year around.

Hoping to have set plainly the little of experience we had, we are,

Yours truly,
Dunfort Bros.

NO PREVIOUS EXPERIENCE AND NOT A CENT FOR REPAIRS

Chinook, Alta., Feb. 7, 1919.

IN April, 1918, I bought a 10-20 h.p. Titan tractor and a 3-bottom Little Genius P&O engine plow with breaker bottoms. The first piece of work I did after bringing home my tractor was 30 acres of spring plowing for oats. This was stubble plowing (backsetting), but the breaker bottoms worked splendidly.

After this, on account of the shortage of help, I had to leave the tractor idle and attend to some building which had not been completed before seeding. It was about May 24th before I got started breaking on a half-section which I had bought a mile from the section where I live. This is where I found the tractor of great advantage as I travelled to and from work in a car, and so lost very little time as compared to what I would have lost with horses.

I started in breaking with three bottoms, which worked very well for a while; but as the season became very dry I took off one bottom and continued breaking with two until I had about 80 acres broken. By this time nearly all breaking outfits (both horses and tractors) had quit on account of dry weather. I put my tractor to help the outfit of horses finish the summerfallow on the home section, in which work I dragged a section of drag behind the plows. In this work the tractor went along on high when we had eight horses on a 12-in. gang working in the same field.

When this was finished the tractor was again left idle until rain came shortly before harvest. Then we did about 40 acres custom plowing. In all, I plowed about 200 acres and could have done a great deal more had the land been in a condition to plow.

Our soil is a chocolate loam with a very hard subsoil and with spots of very stiff gumbo. The land is also somewhat rolling, but this did not bother the little tractor very much, especially when the third plow was taken off. In breaking I plowed from 4 inches to four and a half inches deep and in summerfallow about 7 inches. In the breaking especially we did very nice work.

I could plow about three-quarters of an acre per hour, and the cost for fuel and lubricating oil amounted to about 80 cents per acre, which is much less than it would have cost to feed horses to do the same work with feed prices as they were the past season.

I have found the tractor very useful in hauling grain bins, and I also hauled a 14-ft. x 22-ft. shack (double boarded and lined) a distance of 1½ miles on skids. This put the Titan to the test, but it pulled it that distance.

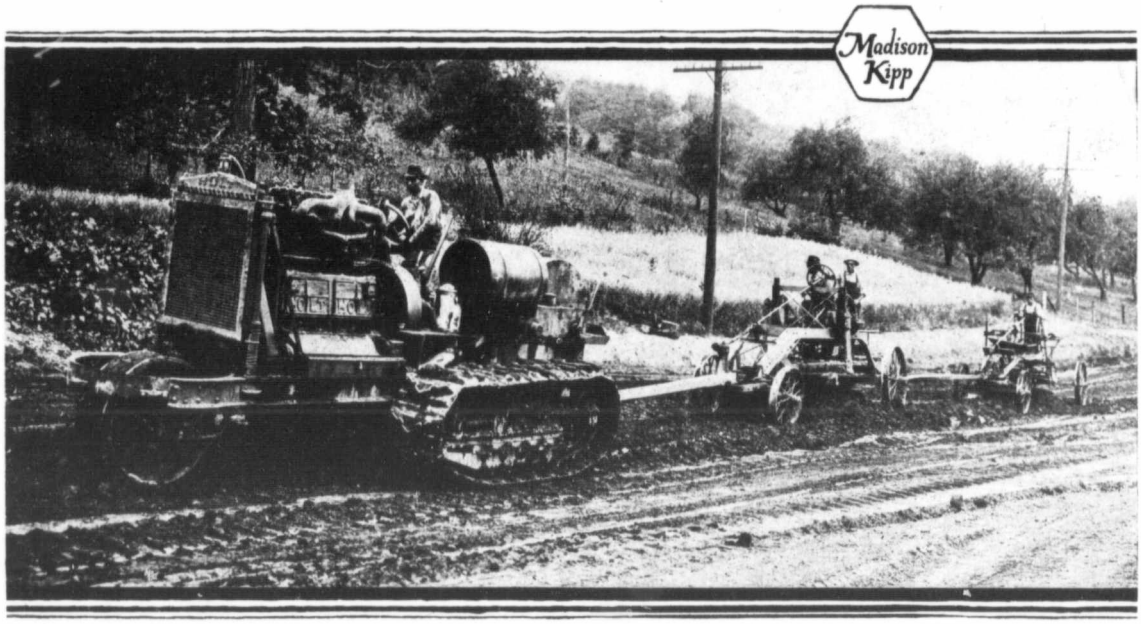
I have not done any belt work with my engine as yet, but intend to get a small separator this season to thresh my own crop. I think the price of the machine can soon be saved in this way.

Quite a number of these light tractors are in use in this community and some of them have been used quite successfully in running separators.

I had no experience whatever with a tractor before I bought the Titan, but so far it has given me no trouble, and I haven't had to pay out a cent for repairs.

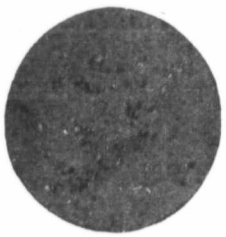
Hoping this bit of experience, told in a somewhat rambling way, may be of use to you.

Yours very truly,
W. A. McLaughlin.

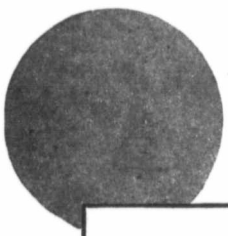


Powerful Holt Caterpillar Tractor on which Madison-Kipp fresh oil systems are standard equipment.

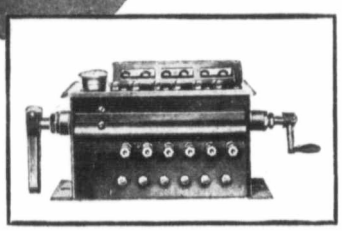
Tractor Fuel and Fresh Oil



Drop of oil from a crank case, as seen through the microscope. Note the punctures. Photograph by Crowder and Klapka.



Drop of fresh oil as seen through the microscope. Note the unbroken smoothness. Photograph by Crowder and Klapka.



Six Feed Madison-Kipp Lubricator

Tractors equipped with Madison-Kipp Fresh Oil Lubricators give you more horsepower per gallon.

They prevent the leakage of gas past the piston-rings.

They do it by providing the fresh oil needed for a real oil-seal between the piston rings and the cylinder wall.

A thin film of fresh oil—a thousandth of an inch thick—is enough.

No amount of used oil is enough, because used oil does not form a perfect film.

The microscope plainly shows why.

Used oil is full of dirt and worn-out oil equivalent to holes in the film.

Only in fresh oil is the film whole and tough.

Madison-Kipp Lubricators feed only fresh oil.

The tough film formed by it often saves as much as several gallons of fuel in a single working day.

Almost as important is the 10% to 40% saving of oil that their drop by drop feeding effects.

Protect Yourself

There are only two kinds of lubricating systems; those using oil over and over again, and those using fresh oil only.

The first kind is described by many names—such as circulating, force-pump, splash, crank case system and the like—but they all mean that the oil is used over and over.

The fresh-oil kind is commonly described in specifications by naming Madison-Kipp Lubricators.

Kipp-Equipt tractors cost you no more and are worth much more.

They need less repair, less oil, less fuel; they deliver more power and last longer.

Madison-Kipp Corporation, Madison, Wisconsin

Madison-Kipp Lubricators

FRESH OIL SYSTEMS

Stories of the Men who have "Done It"

SMALL TRACTOR STILL A LONG WAY TO GO

Jan. 25th, 1919.

MY outfit is a 10-20 Titan, purchased last spring; also a John Deere 3-furrow plow. I started work with it about the first week in May. I was plowing for oats, and after making a few adjustments I got along fine. The ground was still a little sticky underneath and I found that after the wheel passed over the ground the second time it seemed to pack it so that I was afraid the grain would not stick unless we got rain, so I put over drive-wheel in furrow and adjusted the steering device to work ahead of the front wheel, which also ran in furrow.

A MAN

W. E. Peto, of Emerson (who used his "Iron Horse" Night and Day

This arrangement worked fine, and did not pack the land, and I would go from one end of the field to the other without touching anything. I was plowing about five inches deep and pulling a 6-foot section of Acme harrows behind. This did a very good job, as part of land would be harrowed twice and was in good shape to drill.

I used the engine all through seeding and was able to get in a great deal more than if I had to rely on the horses and hired help.

Before starting to plow they summerfallowed. I thought I would try and make it a little more comfortable to work in the hot weather, so I put on extension on the mud guards to cover up the angle lugs, and I also put a hood on made out of four bits of angle iron, some tar paper and ½-inch lumber.

This made a very light and cheap canopy, but it certainly did the trick as I could work in the very hottest day and not feel the heat as much as riding a horse gang. I also pulled a 12-ft. I.H.C. cultivator, which did very good work. During harvest and threshing the engine stood idle as I had enough horses to do the cutting, and a steam engine to do the threshing, except when I was cutting 40 acres of Early barley and 50 acres of rye.

AND HIS WIFE

Taking part with her husband on the day shift

I followed the binder with the engine and plow, and a 3-furrow horse gang, and stooked it in the plowing. This, I consider, was nearly as good as a summerfallow for killing weeds.

I was late in getting started at the fall plowing as I did a lot of threshing, so I decided to run the engine night and day. I took the cook car and the young fellow who I had firing on the steam engine. We stayed right in the field and worked 20 hours a day; 4 hours on and 4 off.

This, I found, a very good way to operate a tractor in the rush season, as it is easy on the operators, and we could average 20 acres a day; so I got most of my plowing done.

I also ran a 12-in. crusher with high bagger and put the chop up in the loft of the horse barn. Last spring I broke up some brush land and I pulled a 24-in. brush breaker. Of course, I had to go in low gear, but I found it much handier than the steam engine for that job. Altogether, I used 40 barrels of kerosene and about 3 barrels of lubricating oil. I figured it took about 2 gallons of kerosene per acre for plowing.

In regard to repairs, it has not cost me much this year, as my engine was new in the spring. I am going to overhaul it this winter and, as far as I can see, it should be good for a few years yet. I think the small tractor has come to stay, but it has a long way to go yet before it can take the place altogether of the faithful old horse; both have their places in this part anyway.

Yours truly,
M. E. Peto.

EVERY FARM OVER 160 ACRES NEEDS A TRACTOR

Irricana, Alta., Jan. 30, 1919.

I WILL give you the best information I can as to my tractor and its work. I have a 10-20 Titan tractor. I plow, disc, float, harrow, move bins, grind feed, and any heavy work around the farm is done with the tractor. I plowed day and night, from 20th of April, 1918, till 10th of June, 1919. We had no engine trouble at all; it didn't get time to cool off except on Sundays. Our reply trouble was dodging mud holes at night.

We used just common kerosene lanterns for light, one in front and one behind to see the plows. And we couldn't see far enough ahead to keep out of the bad places. A good light system would have paid for itself. Of course, we used a steering device, and I'll say right here that I wouldn't try to run a one-man outfit without one. We aimed to have the tractor going 22 hours per day.

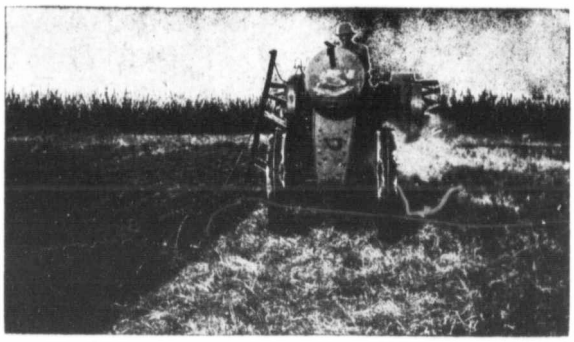
Is not Twelve Times the Contents of this issue Worth the Subscriber's price for a year of the Canadian Thresherman and Farmer—$1.50—or $2.00 for two years?

We pulled a P. & O. 3-bottom automatic lift plow, and sometimes one section of harrows behind running on high gear. It will pull two breakers on high or three on low, and do it easily in any kind of sod. Low gear means about 1¾ miles per hour; high about 2¾ to 3 miles per hour.

A CHAMPION FOR THE TRACTOR

Elrose, Sask., Feb. 4, 1919.

I ARRIVED in Canada in 1910; started on a homestead with one thousand bucks and lots of faith in the future. In 1911 tractors appeared in our locality, but no success was noticeable to



ANOTHER MAN
J. T. Prickett, of Irricana, Alta.

I can do more and better breaking when plowing three bottoms in low, and it's easier on the outfit. Last spring I pulled two 16-16 double discs on breaking, running on high. Also pulled one 16-16 double disc and a heavy float behind.

I moved bins 14 x 16 with roof on through stubble fields. I moved a small house for a neighbor this summer; house, 14 x 16, shingle roof, and on skids. Moved 2½ miles over graded roads and irrigation ditches. I can jump out and move two or three bins with the engine while I would be getting horses harnessed for the job.

Every farm of over 160 acres needs a tractor; the larger the farm the larger tractor is needed. I am sending photographs of outfit. No. 1 is my wife and son running the outfit, breaking prairie while I ate dinner and supper. No. 2 is myself breaking. No. 3 is the same. We plowed 150 acres and broke 150 acres for crop last spring, besides a lot of discing and other work.

Yours truly,
J. T. Prickett.

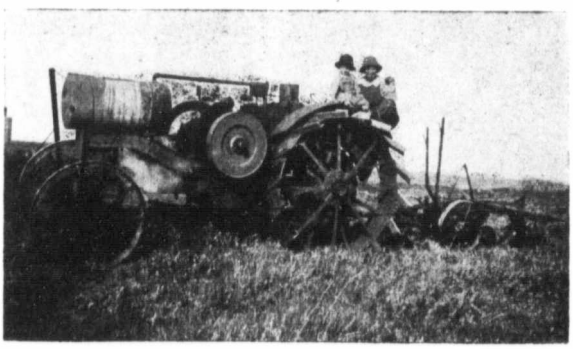
the owners, rather the opposite.

I was wanting a tractor, but I could not see the advantage until in the fall of 1916 when I bought my first outfit and started threshing and made good.

In 1917 I started breaking, and broke my own land and also for my neighbors, making good money and doing first-class work. In 1918 in the spring I bought another outfit—same size (30-60). That outfit alone broke last year from the first of May until the first of October 2,000 acres at $6 and $6.50 per acre; the other one, my old outfit, doing nearly as good.

I have not as yet done much stubble plowing, but when it is dry I can plow 9 or 10 ins. deep. When I am starting out to plow in the spring I hire the best engineers I can get and pay so much per acre, paying a good wage.

I find this is a very good way, as the men are more willing to work, and in that way I also get the machinery looked after in the very best way, as it is to the engineer's interest to keep everything in tip-top shape.



WITHOUT "ENCUMBRANCES"
Mrs. Prickett and the Chick cheer the toiler at lunch time

As I am doing custom work I have to plan according to the wants of my customers. Some prefer 3 inches deep in breaking; others 7 inches; but, as a rule, I find 4½ inches the ideal depth for this locality.

Now, in order to plow 4½ inches deep it takes 6 1500-lb. horses to pull one plow and one man to handle them. My tractor pulls 8 plows, 2 men to handle, and I can do fully as good breaking with the tractor as with the horses.

So I consider the tractor has a great advantage over the horses. As to packing the soil, it is, in my opinion, not to any disadvantage as the injury will not take place before a heavy tractor is put to do cultivating work.

My advice is to keep the tractor at the land after your plowing is done; if the tractor is properly handled it is a very useful implement to the farmer as well as a first-class investment.

As to the amount of plowing done, it is very hard to give an estimate, but an outfit properly looked after should plow 20 acres per day. My record is 164 acres in one week, breaking 7 inches deep, but an average of 400 acres per month is very high. There are very few tractioneers who can get up to those figures.

I find that it cost me about one dollar per acre for fuel and 18c for lubricating purposes. Last year $2.50 per acre covered all the cost of breaking.

As I have not used my engines for other work than plowing and threshing I cannot give any information, but as I have been watching my neighbors trying most everything, I have come to the conclusion to keep away from everything the heavy tractor cannot perform with success.

My engine is a Rumely 30-60 OilPull, a very hard engine to beat, as it has more reserve power than any tractor of its size built. This engine is first-class for pulling separators, as it develops very steady power. I have threshed 44 days without one hour's engine trouble.

Yours truly,
Carl Sylven.

A GOOD, ALL ROUND EXPERIENCE

Choritz, Man., Jan. 31, 1919.

IN regard to your inquiry as to our experience in tractor farming, I wish to say that we operate a 10-20 Big Bull tractor which my father purchased in June, 1916. We have used it in plowing, discing, threshing, road grading and other light work. In plowing we use a J. I. Case Enicar plow with 2 14-inch bottoms, plowing 5 inches deep, about 2/3 acres an hour, or 6 to 7 acres in 10 hours.

J. S. Rempel, Chorlitz, Man., making good on heavy soil

As our soil is very heavy it takes about 3 gallons of kerosene and ⅛ gallon of cylinder oil to plow an acre. With kerosene at 22 cents a gallon and lubricating oil at 65 cents the cost per acre plowed is about 75 cents. I double discing we used two 6-ft. disc harrows, one outthrow and one inthrow, working 18 acres in 10 hours at a cost of 20 cents per acre.

In threshing we have used it on our 20 x 36-inch Case separator with all attachments. We averaged about 700 bushels a day with fuel and oil amounting to about $6 a day. The separator is easy running and does excellent work. It keeps four stook teams busy; one man attends to both engine and separator.

We also did some road grading with a six-horse grader, which seemed to be just the right size for the engine. We made 21 miles with 15 gallons of kerosene in 7 hours, which is about 2/3 gallon per mile.

In feed grinding we have run a 7-inch plate grinder which, at 40 bushels of barley per hour, was only play for the engine. Cost of fuel was about ½c per bushel.

We have not had any experience in pulling binders, but think it would do good work as it is very short turning and travels about 3 miles per hour.

I do not think the tractor will take the place of horses entirely as it cannot be used for spring work, such as seeding and discing, on account of the soil being too soft in sporing.

Yours truly,
Peter P. Rempel.

AN ASSET WORTH HAVING

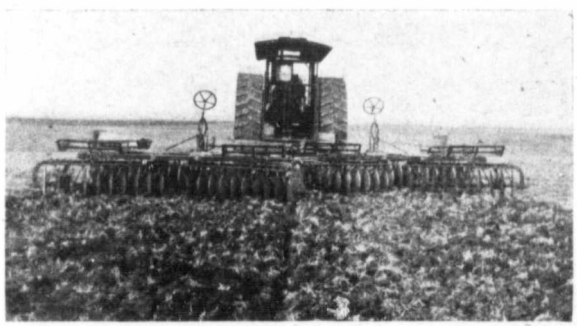
Plenty, Sask., Jan. 27, 1919.

IN reply to your letter about use of tractor, I might say that in fall of 1912 we purchased a four-cylinder tractor from the Minneapolis Threshing Machine Co. (25 horse-power on draw-bar and 50 on belt).

We have used this engine seven seasons for threshing and find that it gives a good, steady flow of power; just as steady as steam. We are pulling a 36 x 56 Minneapolis separator, which is a little too large. We use about 45 gallons of gasoline and 2½ gallons of polarine for a day's threshing of about 1800 bushels of wheat; about one pail of water per day is all we use.

We have broken about 800 acres of prairie with engine, plowing about 4½ inches deep. This kind of work will use about three gallons of gasoline an acre and about three gallons of polarine per ten-hour day. We pull five 14-in. rod bottoms in breaking.

We have also plowed about 1400 acres of stubble ground, always pulling six bottoms, plowing all the way from three to six



J. J. Rogers, Plenty, Sask.

inches deep, plowing 1½ acres per hour.

We use about the same amount of gasoline as breaking, as wheels will always slip a little on soft ground. We have also double disced about 4000 acres with I.H.C. double engine, discs weighing 2400 lbs. each, and each ten feet wide. Can disc about 50 acres per day, using about 55 gallons of gasoline per day and about three gallons of polarine. We find engine a great slave for this kind of work. We always use engine for moving granaries and anything that it will pull.

Might also state that all the original gears are still on engine, although some of them are getting quite thin. Have had quite a number of breaks on machine; most of them when we had a high-priced engineer running. We think that an engine is an asset worth having on a farm as it will always help to catch up with the work when the horses get behind; and most engines now will give service if the man behind will but give them a show.

Just one word to the wise: Always try and run your own engine.

Yours truly,
J. J. Rogers.

There is no royal road to anything. One thing at a time, all things in succession. That which grows fast, withers as rapidly; that which grows slow, endures. —J. G. Holland.

When we look into the long avenue of the future and see the good there is for each one of us to do, we realize after all what a beautiful thing it is to work, and to live and be happy.

DID HIS BIT

Old Scot: "Ay, miss, they've a' done their bit. There's Wullie, he was in Mes'pitamia, Tam was a mine sweeper, an' wee Jock, he's jist seven past."

Lady Visitor: But Jock can't have joined up?"

Old Scot: "O, No! But he earned aichteen-pence a week sleepin' wi' an auld wife that was feared o' the Zepplins."

Some little things which owners overlook are frequent causes of tractor trouble

By C. V. HULL

A SERVICE man was asked about the purchase of a second-hand tractor. Naturally he found this a hard question to answer easily. In the first place he advised the questioner not to pay much for the rig. This was mighty good advice, because it takes an exceptionally clever man to tell much about a second-hand tractor until he can test it out thoroughly. He also warned the man to look for heavy wear and broken parts.

Most important of all, he suggested, that the second-hand tractor be of a standard and comparatively recent model so that repairs could be obtained. This was especially good advice, because there are too many experimental and half-assembled machines on the market, which do not do good work and which will soon be out-of-date, so that it will be hard to get repairs. The dealer should also give these matters careful attention before he buys or trades for a second-hand engine. No dealer can afford to load up a customer with a worn out engine for which it may be impossible to get repairs.

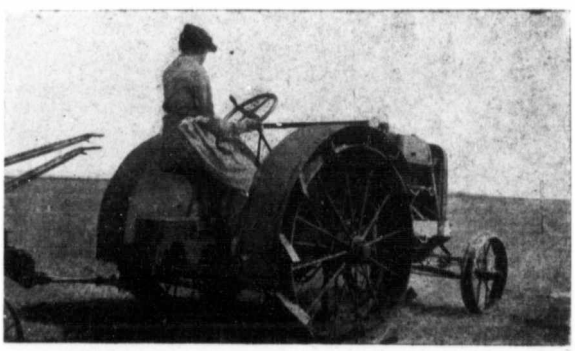
No Cylinder Rings

A tractor would not pull as it should. The owner had several ideas while the hired man insisted that the pistons were in bad order. The owner would not believe him and refused to pull out the pistons. Finally the tractor pulled so poorly that a service man was sent for. When this man came he listened to the farmer and to the hired man. Then he did the same thing with the pistons. As the flywheel was turned around he easily caught the sound of compression, leaking past the pistons. The pistons were taken out at once. One was short two rings, and the other lacked three out of five. The service man ordered new rings at once. These were put on and the tractor worked out on a light load, after which it pulled a full load easily. In going over the tractor, the service man found several pieces of the broken rings in the crankcase. Had the owner been careful enough in his search he could have found them and saved the service man some time.

This is a typical service case. Many and many times a service man must look after such a deal as this. Generally speaking, the owner should pay the dealer for such a trip because of poor piston rings, and the greenest operator can tell if the compression leaks badly. Because compression leaks so seriously affect power, the dealer should teach his customers the importance of this matter.

Why Tractor Was Stalled

An owner hired a good man to run his tractor during the season. Late in the fall, after the man had gone, the owner wished to move his tractor. As far as he could remember, he did all the operator had done in preparation. When started, the tractor ran well until he tried to cross a small ditch. There the tractor engine stopped and he could not start it again. He knew it would be unwise to leave the tractor in the ditch all winter and so sent for a service man. This man discovered that the spark plugs were filled with dirty oil, and on further investigation he found that the crankcase was too full of oil. Though the tractor ran well on level ground, the case contained so much oil that the oil ran over the baffle plates and caused an excess of oil in the two front cylinders on the down grade into the ditch. Then when the tractor started up the grade, the two rear cylinders got it, and the motor just "naturally died."



Wm. S. Giffen of Lethbridge is never short of efficient help when any of his women folk are around.

It seems foolish to call a service man for a case of too much oil. However, it is quite likely that a great many service men's trips are made more from a lack of oil than because of an excess of it. The dealer will find that it pays well to get it into the customers' heads that good lubrication is half the battle in tractor operation. Nothing else has so much to do with long life and profitable results as does the careful and systematic but not wasteful oiling of the machine.

Frozen up

A tractor was being used after crimpy fall weather set in. At night the operator cut off the radiator, or cooling tank, and drained the cylinders as usual. Next morning when he started the cylinders became very hot. Without stopping to look, he hitched up and drove to town for a service man. The service man found the water in tank and connections frozen, but not enough to crack anything. So he got a piece of hose and connected to the suction side of the circulatory pump. He put the other end of the hose in the top of the cooling tank and started. In this way he pumped water from the top of the tank through the cylinder jackets back to the tank. The circulation of hot water soon thawed the shell of ice in the tank and allowed connections to be made as usual. Of course, this plan is out of the question where a radiator and thermo-syphon circulation are used. In such a case water should be drained from every corner and crevice. In fact, the wise dealer will not tell any customer that the tractor can be used in cold weather without some trouble and inconvenience. More than that, he has a right to expect a customer to pay for a freeze-up trip.

Once Upon a Time

Once upon a time a certain man purchased a tractor from a branch house salesman. As was usual, a service man spent a week with the new owner. When the service man left, the owner started out to make a record. He did it, too, but not as he expected. In a short time the gears began to howl. After a few days of that record the owner called for a service man. The one who had started the tractor came again and found that the owner had broken all records for wear and tear. The heavy rear axle bearings had not been greased since the service man left the rig. As a result, gears were badly out of mesh. New bearings, etc., were ordered and put in place after considerable work. In order to put in the new bearings it was necessary to jack up the rear end of the tractor to make the frame clear of the rear axle bolts. This was no easy job

on soft ground without much equipment to work with. While I don't know a thing about it, I suppose that owner felt that the tractor company should pay all expenses. Like as not he even asked for damage on account of lost time. However, I have no idea that the company allowed any claim. Beyond question, a dealer would be very foolish indeed if he did not collect in such a case as this. Lack of proper lubrication is one thing for which the dealer cannot be held responsible. Fortunately, later tractors are to some extent equipped with roller and ball bearings, which do not require quite the attention the plain ones do.

Frozen Fast

A service man was sent to start a tractor which had been standing out during very severe weather. Every part of it was chilled through and through. Besides, the pistons were stuck. So the service man decided to warm up the engine with a blow torch. The cylinders were vertical and had portholes near the lower end. The flames of the torch were shot into these ports to warm up the cylinders. However, the engine was so very cold that the vapor condensed on the cylinder walls, froze there and held the pistons tighter than before. It finally became necessary to pull the tractor under cover where it was warmer. The situation would have been an awkward one but for the nearness of another tractor which could be easily started. In order to prevent such a condition as this, every reader should instruct his customers to house their tractors. At best it is an unpleasant job to start up and use a tractor on a real cold day. Every user should also be instructed to use oil suitable for winter.

Cold-Weather Starting

Once in a while a tractor must be started in cold weather. One service man told me his plan. If the pistons are stuck with cold lubricating oil he cuts the oil by putting in some kerosene. Then he heats spark plugs, air intake pipe and carburetor bowl. In some cases he also warms the can of gasoline which he uses for priming. If he can find nothing better he makes a ball of cloth, fastens on a wire handle and soaks the ball with gasoline. He prefers a blow torch, though, for he can then direct the flame to suit. The dealer must be quite certain that his service men and customers know just how to heat up the motor parts before advising such a plan. It is well to get the engine men to use high test gasoline for priming, for quite often an engine can be started with high test without heating. However, no wise dealer will sell a tractor with a guarantee that it will start easily in cold weather. This is a physical impossibility, because fuel does not vaporize at low temperature.

Ice in Carburetor

A service man was called to help an operator in cold weather. The operator could not keep the tractor going because ice formed in the air spaces of the carburetor. The service man arranged a pipe so that hot air was drawn from the exhaust pipes. This ended the trouble, of course. This trouble is not apt to occur with the later makes of tractors, because most of them have some pre-heating device. But if it does become necessary to put on some heating device, the service men must be careful not to get too much hot air. One can tell best by the operation of the tractor. The wise dealer who sells in Canada and northern States will be sure that his tractors are provided with heaters and protected from cold.

Cold Oil

A service man tried to start a tractor on a very cold day. He was unable to do so alone. Finally he called a man to help him and the two of them tried it. The trouble was due to thick, cold lubricating oil and snug-fitting pistons. This thick oil made the pistons move so hard that the engine could not be turned fast enough to get good compression. The men finally put in some kerosene, which cut the oil and made it possible to turn the flywheel rapidly enough to get the engine

Labor-savers, with 200 acres to their credit. The outfit and help-mates of J. W. Corden, Miami.

started. Of course, they heated the plugs, etc., as usual.

When the service men, who have travelled about considerably, as these men had, have trouble, the dealer should watch for it, too. It is a good plan to carry suitable winter oils for tractor use and so keep tractor owners coming for supplies.

Moving in Snow

A service man had to move the tractor through rather deep snow. So he put heavy chains about the driver rims so that they made a tire or tread. Then he fastened a big heavy bracket to the frame, on either side of which he ran the chains. By this plan the chains were pulled away from the driver and the snow cleaned off so that the chain tread was always clean. Perhaps heavy spools or pulleys would have been better, but at any rate the tractor was moved. I have heard of putting log chain crossways of the driver, like auto chains, but think this man had a better plan. Surely any dealer would be justified in charging the customer a good price for such ingenious service as this.

SUN LIFE TOTAL ASSURANCES $340,000,000

IT IS evident from the report published elsewhere in this issue that the Sun Life Assurance Co. not only closed the best year in its history, but easily maintained its lead over other Canadian companies.

The figures show that the big Montreal company made new high records in volume of business transacted, in its total assurances in force, in income received, in total assets, and in net surplus.

The amount of new policies paid for amounted to $51,591,000, while the total assurance in force now stands at $340,900,000, a gain of nearly $29,000,000 during the year. This large gain furnishes ample evidence of the careful methods employed by the company to obtain only the best business and to conserve it when secured. The total income received during the year was in excess of $21,651,000, while total assets now amount to $97,620,000, a gain of nearly seven and a half million dollars. The undivided net surplus over all liabilities and capital stock exceeds $8,000,000, showing that ample provision has been made for safety.

No Vegetarian

Coogan, the Customer—There's as much nourishment in a pint av peanuts as in two pounds av thot steak.

Grogan, the Butcher — But there's no gravy, an' nothin' for th' cat, an' no hash the next day!

The Modern Farm Tractor

By W. S. GIFFEN, Lethbridge

AS the war is over and we have time to take our breath after our strenuous efforts at greater production, it may be of interest to some if the experiences of the past couple of years were briefly put on paper. Men are heard here and there contending, some in favor of horse-power, and others for tractor power.

While horses were high, oats scarce, and hay also, it would seem that the tractor would have the advantage, as the fuel it consumed could not be used as food during the shortage now, though we find kerosene going up and oats coming down, while horses are a drag on the market, and the only market for many is the butcher at 5c a pound, the pendulum swings first to one side, then to the other.

Well, the tractor became the rage we all know, and every now and again some new company would produce the acme of perfection, so-called, until the makes of tractors are legion. In the spring of 1918 I purchased my first tractor. It was built by a firm of high repute and long experience, and I think it will live up to the expectations I had when I ordered it.

The agent sent an engineer out to my farm with it one afternoon in April, and we tried it out on a piece of level prairie. It worked very nicely, and I proceeded to learn how to handle it myself. I did not break much prairie, as I wanted to double disc a lot of stubble that had just grown one crop since fallowing, so I went out and bought a new engine disc.

I hitched a 3-section harrow behind and went to work. It would pull all this on high gear, though the traction wheels slipped in the loose soil a lot and reduced the mileage travelled. At first I had trouble starting in the mornings as I did not notice that the dust was preventing the little sliding trips from falling out to accelerate the armature in the magneto in starting.

When I dropped a little gasoline on those it would start easily. In this engine the oil is forced down to drop on the crank shaft and connecting rods, and does not depend on the splash in the crank case. One day the rods got knocking, and as I did not know how to make adjustments properly went to the city and brought out the company's repair man, who remedied the trouble. We turned on more oil and did not have any trouble there for a long time.

It seems a common trouble with tractors to get connecting rod bearings loose. There ought to be close attention given to keep them tight. I take out a shim on the top and one on the bottom, and tighten it up. If I can't crank her, I take the cap off again and put in two thinner shims of tin. This usually takes up the slack properly.

On another day, a little later, the tractor seemed to become out of order and would only pull with one cylinder. After studying quite a while and losing valuable time, I found one of the lock nuts on intake valve stem loose, and the tapped rod was not opening and shutting it properly. I didn't understand how they should be, but I changed it until I had it as nearly like the one on the other cylinder as I could judge. That remedied that difficulty.

I then thought I was learning to be an engineer at last. Another day one of the wings of the radiator fan cracked and chafed the radiator, so that I had to have it fixed as well as a new fan. The company furnished me with a new and better cast steel fan, which has worked ever since. One bearing a double-row S.K.F. ball bearing on the fan shaft burnt out one day and I lost a lot of time trying to patch it up, but had to have a new shaft and bearing in the end.

W. S. Giffen with his New Hart-Parr.

The oil hole was found insufficiently opened to admit the oil. Later on the set screw that holds the brass bushing around the cross head pin came out, and the result was the bushing started to cut out the eye of the connecting rod instead of oscillating on the cross head pin. This necessitated a new connecting rod, bushing and pin; but the company made it all good. They also gave me a new set of cylinders free as they expected the old one might be scored. This is about all the trouble I had, but a thoroughly attentive experienced man, instead of a novice, could have avoided most of these so-called troubles.

My engine is a twin-cylinder motor, sliding gear transmission, direct drive, and her final drive is the internal gear. It will operate perfectly with the device, the New Dray kerosene shunt, under any variable load, as long as that shunt does not get fouled with dirt and carbon. It cools splendidly, and is a pleasure to steer; in fact, it runs in the furrow all the time when plowing.

It has great reserve power for hard places. She will break prairie, three furrows, four inches deep, on high gear three miles an hour, if it is wet enough, and will, I judge, use 2½ to 3 gallons of kerosene an acre, and a quart of Mobil B.B. in the oil box, exclusive of grease and hand-oiled places. About a pint of gasoline will start it when cool, and none is needed if you only stop a minute or so.

I have had no experience yet at any other work than I have spoken of and can give you no data. My engine, I consider, pulls about what 10 good horses would. A few outstanding lessons I have learned is to listen for different sounds than usual; that is the first warning of trouble, and if detected then often can be easily fixed.

Be positive it gets enough oil everywhere to do. Use high-grade oil and don't change for some other kind if your engine runs well. The chances are the next kind won't do at all. Watch for nuts getting loose all the time and fix them. Use only clean water in your radiator. Rather underload than overload. Try and keep the engine clean. Railroads demand that theirs be kept clean.

W. S. Giffen,
Lethbridge.

"Ye darn fool, ye oughta know better than to pick him. His father killed thirty Germans."

It Might Have Been

A noted Sunday school worker, living in Kansas, was once asked to talk to the children on the subject of temperance. He is very earnest in the cause and wears a bit of blue ribbon as a badge of his principles. Rising before the school, he pointed to his bit of blue ribbon and said, "Now, can any of you children give me a reason why I am not a drunkard?" There was no reply for a moment; then a childish voice piped out, "'Cause this is a prohibition town."

When writing Advertisers please mention The Canadian Thresherman and Farmer.

The Best Varieties of Grain

By CHAS. E. SAUNDERS, B.A., Ph.D., Dominion Cerealist

IN order to reap the largest and most profitable crops, it is not only necessary to maintain the fertility and tilth of the soil, by the use of a judicious rotation and the addition of sufficient manure or fertilizers, but care must be taken to sow thoroughly clean seed derived from varieties best adapted to the soil and climatic conditions of each farm. The following deals with the choice varieties and presents conclusions drawn from the tests which have been conducted on the various Dominion Experimental Farms and Stations for many years.

As a rule it is not advisable for farmers to experiment with new sorts which are recommended by the vendors only; but those grain growers who have a special liking for experimental work will find the testing of new kinds a very interesting, though expensive occupation. For most people, it is better to leave to government institutions all preliminary experiments, and not to grow on their own farms any varieties that have not already been shown to be good. There will always be plenty of scope, among recommended sorts, for very interesting comparative trials, which may be made with little or no loss of either time or money.

It is not the policy of the Dominion Experimental Farms to advise the cultivation of new varieties of grain until they have been carefully tested in, at least, some parts of Canada, though, of course, it is impossible to withhold new sorts from the public long enough to try them in all sections of our great country. Furthermore, new varieties, whether originated at Ottawa or elsewhere, are not recommended unless they have shown some point of superiority over the older and better known sorts. Novelty ought to be recognized as a disadvantage unless accompanied by some definite and significant gain.

One small corner of the Illimitable Grain Garden of Canada.

In order that grain growers may be able to make an intelligent choice among the varieties recommended, brief descriptions of them are here given. Other very good sorts, almost or quite equal in value to some of those which are recommended, could have been added to this list, but it is manifestly undesirable to mention the names of all unnecessarily large number of varieties.

It should be explained that all those varieties to which Ottawa numbers are attached are new cross-bred sorts or selections produced by the Dominion Cerealist at the Central Experimental Farm, Ottawa.

Spring Wheat

Red Fife Group — Late Ripening Varieties

Red Fife—Formerly the standard variety of Canada. Beardless, straw rather long and fairly stiff, kernels red and usually hard. Gives a good yield under a variety of conditions, but is too late in ripening for the greater part of Canada. This wheat is in the highest class for milling and bread-making. The selected strain grown on the Dominion Experimental Farms, Red Fife Ottawa 17, is exceptionally pure, but not otherwise materially different from the ordinary stock.

White Fife—Practically identical with Red Fife, but has yellowish instead of reddish bran. The popular ideas about the superior adaptability of White Fife to certain special field conditions are incorrect, as are also those about its inferiority to Red Fife for bread-making. This variety should not be sown unless the farmer can secure an extra high price for a "white" wheat. As a rule "red" wheats sell better in Canada.

White Russian—Ordinary, commercial White Russian ripens with Red Fife, though some selected strains ripen earlier. White Russian differs from Red Fife chiefly in having longer heads, and larger and softer kernels, which produce flour of poor bread-making quality, though very suitable for biscuits and pastry. This variety often gives excellent crops, especially on light soils in Eastern Canada. It suffers very badly from rust in some sections.

Marquis Group — Early Ripening Varieties

The wheats in this group are extremely productive, surpassing those in the Red Fife group, and maturing usually from 3 to 12 days earlier.

Marquis Ottawa 15—The leading wheat of Canada; straw stiff and rather short, heads beardless, grain does not readily shell out before cutting, and is, of course, a little harder to thresh than other

(Cont'd on page 44)

A Great Welcome

ALL over the country the announcement of the 15-27 kerosene tractor was received with intense interest. Throughout the industry, men have expressed their admiration for this superior machine.

No tractor is finer. And we know of no equal. Farmers who judge carefully, realize that they cannot afford to make any decision until they have studied this new Case offer.

The range of power provides for handling either 3 or four plows according to field conditions. In fields where plowing is difficult, tough or baked soil, grades, etc., this tractor pulls 3 plows easily.

Where conditions are favorable, this tractor can pull 4 plows.

With reasonably good footing this tractor delivers a normal pull of 3000 pounds at the draw-bar. Its reserve power makes it possible to attain 3600 pounds pull or over.

Under variable soil and field conditions, the operator may take advantage of the two-speed transmission, using low speed ($2\frac{1}{4}$ miles per hour) for hard pulls and high speed ($3\frac{1}{2}$ miles per hour) for normal pulls.

While rated at 15 h.p. on the draw-bar this Case 15-27 can deliver fully 20% more. While rated at 27 h.p. on the belt, it can deliver 20% more.

As has been our consistent policy for 77 years, we give Case tractors a conservative rating, allowing sufficient reserve for emergencies.

Your field conditions will determine whether you should pull 3 or 4 plows or whether you should pull 3 plows on high or low gear.

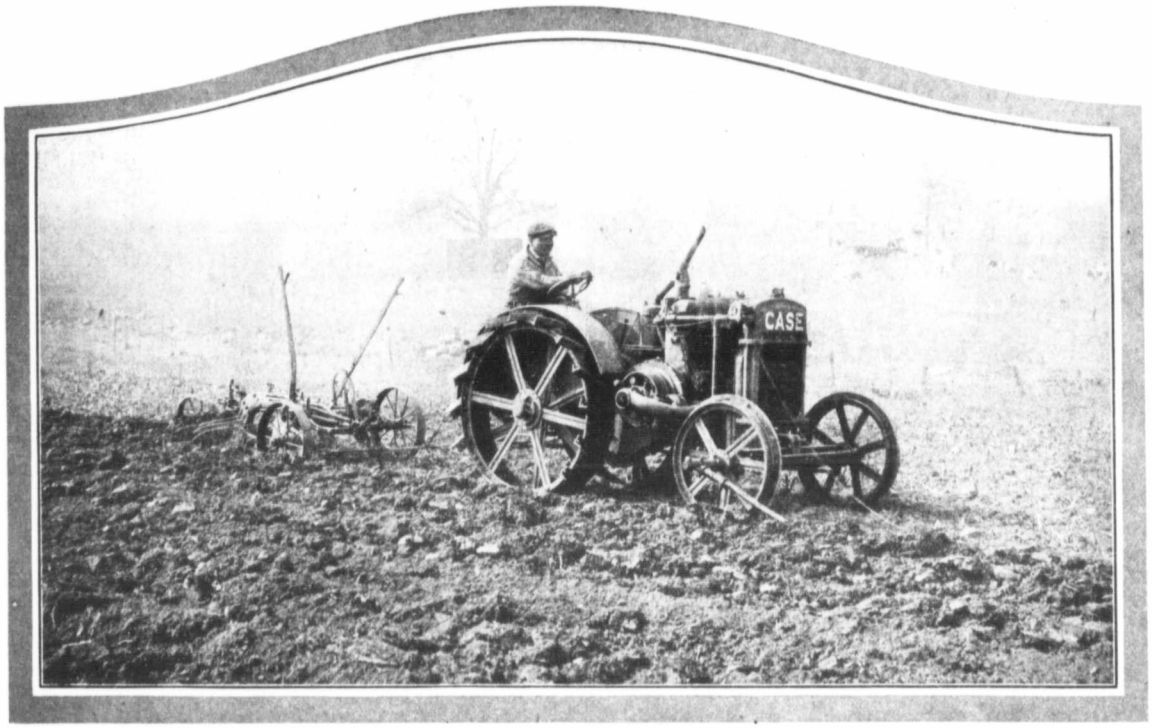
When you become an owner of this Case 15-27 you can depend, first—upon our conservative rating and, secondly—that it will accomplish what it has been built to do.

Our illustrated and descriptive booklet describes this and other Case kerosene tractors completely. Write for a copy to-day.

J. I. Case Threshing Machine Company, Inc., (Founded 1842) 1796 Erie Street, Racine, Wis., U. S. A.

CASE

KEROSENE TRACTORS



A Super Tractor

AS you study the specifications of the Case 15-27 kerosene tractor which we will gladly send upon request you will realize that here is a tractor such as no one has ever built before.

You will be impressed with the fact that we have built continuous service and long life right into the tractor, avoiding all short-sighted cheapening. You will note the modern practical engineering ideas. For instance, the main frame is a one-piece casting constituting a dust-proof housing for rear axle, bull-pinion shaft, transmission and crank case. This construction assures permanent alignment of bearings, shaft or gears. Dozens of similar betterments are included.

As you come to know this Case 15-27, you will appreciate its accessibility. You will note the removable covers for gear housing and the motor, which allow you to get at all parts quickly. No dismantling is necessary.

Your further study of this tractor will divulge the finest materials in its construction. For example, all traction gears are cut steel, hardened, no rough castings. All gears are fully enclosed and run in oil.

For belt work this 15-27 delivers a steady flow of power. It has a 4-cylinder valve-in-head motor, governor controlled. You can be assured of uniform speed which is so necessary for threshing and similar jobs.

The belt pulley is mounted on the crank shaft and is fitted with clutch and brake, both operated by the same lever. It is easy to "line up" this tractor with belt driven machine. To become better acquainted with this better tractor, we encourage people to make comparsions because it always shows up Case superiorities.

The line of Case Kerosene Tractors is fully described in a new booklet we have just prepared which includes illustrations and all details. Write for a copy of this booklet to-day.

J. I. Case Threshing Machine Company, Inc., (Founded 1842) 1796 Erie Street, Racine, Wis., U. S. A.

CASE

KEROSENE TRACTORS

J. I. CASE THRESHING MACHINE CO. RACINE, WIS. U.S.A.

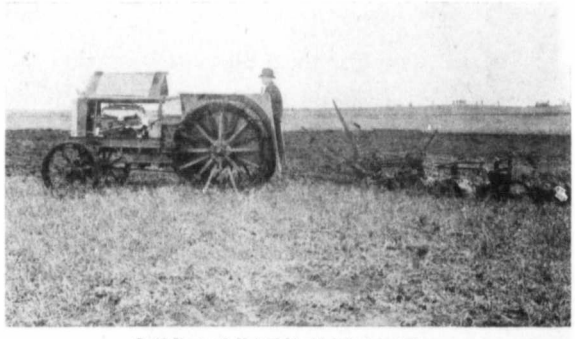
Some Farm Management Problems

Address delivered by A. H. BENTON, Professor of Farm Management and Rural Economics (M.A.C.), to the Convention of Agricultural Societies, Winnipeg.

(Continued from page 36, March issue)

The raising of live stock requires more and better fences, and particularly so if the smaller animals, such as sheep and hogs, are kept. The question of pasture also arises. Some favor the permanent pastures, and others the rotated pastures. The solution of this question usually rests on the presence of land unsuited for cultivation. To the person interested in live stock the question always presents itself as to the advisability of purchasing pure bred or grade stock. If cattle are being raised there is always the question of dairy cattle versus beef cattle. On large farms beef cattle will be the prevailing type, without question, but on the smaller farms it appears that there is a trend towards the keeping of more dairy cattle, even though at the present time the price of milk is lower than it should be in proportion to the cost of feed and labor.

It should be borne in mind that the profits in live stock come largely from two sources. First, the use of bulk and cheap feeds that otherwise would bring no return at all. Consequently, any return from this source is likely to be a profit. A pound of beef secured through the feeding of straw is practically the same value as a pound secured through the use of high-priced feeds. The second source is that of making use of labor which would otherwise be unemployed. This labor men who have slack times between seeding and harvest, and during the winter; the young people who supply a great deal of labor without extra cost that adds greatly to the family income. The keeping of live stock, however, complicates the labor problem, as it takes a high-class labor, a class that must be dependable and constant. Work on live stock has some advantages as to the laboring men, since it affords continuous employment. It is interesting to note at this point that some farms in the grain growing sections object to keeping live stock. Live stock farming districts usually are the most prosperous. The live stock industry affords an opportunity of securing a premium for the products that is scarcely possible in grain growing. Grain competes on a world-market, whereas good live stock is sold on its individual merits. To be successful with live stock, men must have experience, particularly in the dairy industry, and at the present time this is one of the real needs of the province. The final solution of the labor problem on the farm will, undoubtedly, be that owners will put up small houses and hire men with families, who will remain there the year through. This is the tendency now in many parts of the United States, and even in Minnesota, where condi- is of two kinds: the able-bodied



Goold Shapley & Muir 12-24 with 3 Cockshutt Plows.

tions are similar to those of Southern Manitoba.

Efficient direction of the men is most necessary, and data available indicates that one of the weakest spots in farm organization is usually in handling the labor problem. Statistics from some investigations in Minnesota show that the average man on the farm works a little more than nine hours for every working day of the year, and the boys a little more than three hours. Another important problem in connection with labor is that of farm machinery, since it is a labor-saving device. The tractor question is the most vital of any of these at the present time. It is the consensus of opinion that more men, up to the present time, have lost money in buying tractors than have made money by their use. There are at least two reasons for this. First, that the tractors have not been well built, and that men capable of operating them have not been available. Second, that very few horses have been displaced, consequently the cost of production has been increased unduly.

The organization of farms along the lines indicated brings up another problem, which is frequently the limiting one; that is, the capital problem, or the obtaining of sufficient capital to put into operation a plan which is deemed the proper one. Increasing land values require higher net returns, above direct crop production expenses. Diminishing yields, on the other hand, have made these larger net returns increasingly difficult. The farmer thus is being forced between two ever-increasing forces, the true strength of which will not be realized until grain prices fall back to their normal level. More live stock also means that more capital will be needed if the proper transition is to be made from grain to diversified farming. To meet this problem there are two institutions available to the farmers of Manitoba that are worthy of mention.

1. The Manitoba Farm Loan Association, which has loaned more than one million dollars at a satisfactory rate of interest, and for long terms, whereby the farmer will be able to realize on his borrowings before returning payment.

2. The Rural Credit Society's Act, which provides short term loans for the purchasing of seed, the breaking of land, the acquiring of live stock and other purposes, through which an income will be realized and the debts incurred rapidly paid off.

The topics thus far discussed have deal with the production side of the problem, but it is evident that before the farmer is through he must market what he has produced.

The marketing problem is an immense problem, with which the most capable men of the world have been wrestling during the past few years, but from the broad point of view it is not a farm management problem. Farm management deals with individual farmers and individual farms. From this angle there are one or two suggestions that may well be included. For the individual farmer co-operative marketing offers great possibilities. The Grain Growers' Association has recognized this, and has been of wonderful service to the farmers to secure a higher price for what they have raised, and in general there is, at present, little opportunity for criticism of grain marketing.

With the development of diversified farming, and the increased amount of live stock being put on the market, the live stock marketing problem comes to the forefront. There will immediately arise in the mind some of the criticisms and attacks being made on some of the packers and their methods. This is another social or state problem, and not one which the individual farmer can in any wise solve, but he still has the same opportunity to use co-operative methods in placing his live stock on the central market.

In the States of Minnesota and Wisconsin, where co-operation has developed quite extensively, no other kind of a co-operative marketing organization has developed so rapidly, and with such satisfaction to the farmers, as the

The "White All-Work" 13-27 pulling 4 Rock Island Plows.

co-operative live stock shipping associations. The reason for this is two-fold:

1. They have been able to see definitely the saving that can be made by employing one of their number to act as a manager, and take charge of the ordering of cars to ship all the stock and the distribution of the returns, after the expenses save been paid.

2. No subscription of capital is required, since no buildings or other equipment are necessary; the only requirements are that the people agree to ship together and hire someone to take charge of the shipping. In Minnesota in 1914 there were 115 local shipping associations that shipped over six million dollars worth of live stock, with an average saving of approximately one thousand dollar per association.

The question may well be asked, "What is being done, or what can be done to aid in solving some of the farm management problems, that is, problems of the individual farmer and his farm?" In answer to this, it may be definitely stated that one of the most fruitful fields for giving aid along this line is to investigate actual methods of farm production and operation being used in various localities by the farmers, and to secure from them a statement of their expenses and receipts. From these statistics it will be found that some are succeeding and others are failing, and by finding out what the farmers who succeed do different to those who do not succeed, we have a basis for making suggestions for profitable types of farming for the locality investigated. It must be recognized at all times that the factors which determine profitable farming in one locality may not apply to another, where conditions are different. This form of investigation, known as the Farm Management Survey, has been of immeasurable value in the United States, where work of this character is being carried on from the Atlantic to the Pacific Coast, and from Minnesota to the Mexican border. The theory of this work is fundamentally sound, since conclusions are drawn from actual facts, being from real farmers operating their own farms, and not from theoretical statistics worked out on experimental farms. Experimental farms are indispensible to the development of agriculture, but not along the line of farm management.

The second line of effort is that known as studies in cost production, whereby definite and exact data is secured from farmers for the purpose of determining the cost of producing different crops and kinds of live stock, and the relative profitableness of them.

If price fixing is to continue, cost of production is one of the factors necessary for proper understanding of the problems that arise, and it can be secured only through careful investigation by experienced men. It cannot be secured in any one year, since an average must be secured. The results of a single year would not be dependable as representing average conditions.

In the United States, where both farm management survey work and cost of productions studies have been carried on by the various colleges and experimental stations for a number of years, it is the consensus of opinion that these two lines of work are essential, and must be carried on in conjunction, if the best results are to be obtained as a basis for bringing farming to a more business-like and well-ordered industry.

PEAS AS A PROFITABLE CROP FOR THE PRAIRIES

(Experimental Farms Note)

THE advantages of growing field peas by the dry land farmer on the prairies have never been given the consideration that the possibilities warrant. That satisfactory yields can be obtained when they are sown on summerfallow has been established beyond peradventure by the results at the Dominion Experimental Station at Lethbridge, where the average yield for the past eleven years has been 27 bus. per acre. The cash value of the crop is particularly high at the present time, and is apt to remain so for some time owing to the demand for seed. The high feed value of peas, especially when fed along with other grains, such as barley or oats, is so well known and appreciated by stockmen that no special mention of the fact is required. Being a legume, it enriches the soil rather than being a drain on it. This is an important consideration for the dry land farmer who, on account of the necessity of his having to summerfallow his land at least once in three years, is compelled to stick to annual crops to a greater extent than is his brother farmer in districts where the rainfall is greater. Grain following peas will always yield much heavier than grain following grain.

On account of the bulky nature of the vines there is sometimes inconvenience met with after harvest due to them being blown about by the wind. This difficulty may be overcome by either allowing the peas to become fully ripe and then cut and thresh the same day or else stacking as soon after cutting as circumstances will permit. They are cut with the mower

with a pea harvesting attachment fastened to the cutting bar.

The seed should be sown about the same time as wheat at the rate of two to two and a half bushels per acre, depending on the size of the pea. When being sown for the first time on a farm it is well to inoculate. This is not absolutely necessary, but at the Lethbridge Station it has been found that inoculation increases the yield by fifty per cent. This can be done either by scattering soil obtained from a field on which peas have previously been grown over the field to be planted at the rate of about 200 pounds per acre, or by obtaining a prepared culture with which to treat the seed itself. This culture can be obtained gratis by applying to the Dominion Botanist, Central Experimental Farm, Ottawa. Any of teh standard varieties will do well, but Arthur or Mackay are recommended on account of their earliness. Prussian Blue has proved to be a good yielder, but is a little late.

THE BEST VARIETIES OF GRAIN

FOR many years the Dominion Experimental Farms and Stations have been conducting tests in the various provinces to determine the best varieties of cereal crops for cultivation in Canada. In Circular No. 16 issued by the Cereal Division, and distributed by the Publications Branch of the Department of Agriculture at Ottawa, the merits of the leading varieties are discussed and such information given as will be a guide to farmers in selecting the varieties to sow this spring. After a general discussion of the varieties the best kinds are arranged approximately in the order of merit for the different parts of Canada. Wheats are divided into six classes. Following are the leading varieties in each class: Fall wheat, Dawson's Golden Chaff; spring wheat, late ripening, Red Fife; early ripening, Marquis; very early, Ruby; extremely early, Prelude; Durum, Kubanka. These several early sorts are recommended for northern areas. In oats the Banner is placed first; six-rowed barley, Manchurian; two-row barley, Duckbill; hooded barley, Success and Champion; hulless, Guy Mayle; Emmer and Spelt, common emmer is named as the best sort. Arthur is placed at the head of varieties of peas. Navy, a pure white bean of medium size, is highly recommended, and Novelty is the name of the best flax for seed, while Longstem is considered best for fibre. Rye buckwheat is the best sort so far decided.

STANDARD WHEATS FOR THE PRAIRIES

(Experimental Farms Note)

IN the prairie provinces high baking strength and earliness are essential in any variety of wheat. Canadian wheats command a place in the markets of the world on account of the high baking strength that they possess, while earliness is the farmer's protection against loss by frost, and enables him to produce grain having a sound, plump berry and of a uniform quality.

Now, there are being grown over the prairies varieties that are unsuitable as wheats for export. Being low in baking strength, poor in color and shape of kernels, these varieties are a menace to our reputation for hard spring wheat. The most of these have been brought in by speculators or else have been introduced by men who see a strange head in their field of wheat and immediately are possessed with the idea that they have found a new and wonderful variety. No disparagement is intended by this remark to the work of those men who have carefully selected and produced varieties of value; it refers only to the hasty introduction by some enthusiast of a kind of wheat which has not been tested out and of which neither he nor anyone else has any certain knowledge. For the introduction of unknown sorts of wheat, the grain grower is as much to blame as the speculator. Instead of procuring varieties of proven merit, he is anxious to try something new that will surpass in yield any variety known. Too often these much-lauded varieties are absolutely inferior sorts, and their propagation threatens the reputation that we now hold for our wheat, a reputation that we cannot afford to lose, especially at this critical time of trade readjustment.

The ideal wheat is a hard, red wheat of high baking strength, maturing sufficiently early to escape frost, and giving the highest possible yield in conformity with these other requirements. The varieties Marquis, Early Red Fife, Pioneer, Ruby and Prelude are wheats that have been introduced by the Experimental Farms to meet the varied conditions of the prairies. These wheats all conform to the above standard, and their adoption according to their adaptability for local conditions would do more than anything else to reduce the annual injury from frost and maintain the quality of our wheats on which our place in the markets of the world depends.

Teacher—"Johnny Smith, how did you get that black eye?"

Johnny—Please, miss, I sprained it doin' sums."

THE NEW LORDS OF HEIGHT

Man's Highest Climb in the Sky —Six Miles Up—An Australian and a Canadian Assails Heaven's Gates and Return

BRITISH sportsmen will feel a glow of pride at the achievement of the world's record for altitude by Captain Lang, R.A.F., and Lieutenant Blowes, in a British biplane with a British-designed and British-built engine.

"The air climbers have now not only beaten the mountain climbers, but also in their frosty flight they have risen into thinner air than is pierced by the spire of Mt. Everest," says the "Daily Mail."

The Pluck of this Air Feat

"The pluck of this air feat was magnificent; the pilot knew that if he lost consciousness from lack of oxygen or the withering cold his life was forfeit; but still, although suffering, he soared upwards to his record of nearly six miles, and but for engine stoppage he would have risen even higher.

"It would seem, from the physical experiences of these two gallant airmen, that six miles is near the limit to which man will ever ascend unless new devices are found for cold protection, and oxygenisation.

The Spires of the World

"The dream of Jules Verne of a trip to the moon will remain a dream, and even the mountaineers will have to dismiss their speculations as to whether Mt. Everest (29,002 ft.) will ever be climbed. The airmen had to withstand only diminished atmospheric pressure and cold, and even that they were able to relieve with oxygen and warming apparatus. Climbers attempting the highest mountains could not carry such apparatus; they would have intense and prolonged muscular exertion; they would have to spend several nights in tents above 20,000 ft.; for several days they would have to subsist on a minimum of nutrition, because coolies or porters could not be taken very high. When the nerve strain of the technical difficulties of the climb is likewise taken into account, it does not seem likely that the spires of the world will ever be climbed. The new lord of height is the airman."

Six Miles Up

The world's altitude record of 30,500 ft. (nearly six miles) in 66 minutes, 15 seconds, made on January 2, and achieved by Capt. Andrew Lang, R.A.F., and Lt. Blowes, on a British-built and British-engined biplane, near Ipswich, was made with a D.H.9, the machine being fitted with the Napier Lion engine, of 450 h.p. The D.H.9 was designed and used for bombing the German Rhine towns in daylight, the machine being very fast and carrying big weights. When carrying full military load and passengers it attains a speed of 140 miles per hour at 10,000 ft.

The Two Men

Captain Lang had made two previous attacks on the atitude record, which had been held by America. He is well known in Australian motor circles, and in 1910 drove a motor car across Northern Australia for his Government in an exploring expedition. Lieutenant Blowes is an experienced pilot, who in France brought down several Hun planes. He comes from Mitchell, in Ontario, Canada.

Through a fault in the oxygen apparatus Lieutenant Blowes collapsed, and at 28,000 ft. the heating apparatus began to work erratically. The machine was brought to a stop through lack of petrol pump pressure, owing to

Artist (to Tommy, home on leave, acting as model for picture to be entitled "Going over the Top"): "Ah, dinna ken what it is. It doesna seem realistic enough. Have we forgotten anything?"

Tommy: "Don't think so, guv'nor, unless it be the tot of rum yer didn't serve aht."

rarefaction of the air. Luckily Captain Lang was able to descend slowly, and at 20,000 feet Lt. Blowes recovered consciousness.

The two airmen have suffered badly from frost on hands and face. The younger, Lt. Blowes—who is only 19, and has been in the Air Force one and a half years—has serious injuries to his hands, which are very painful. Captain Lang, who has been flying since 1915, is very keen on experimental work, and while delighted with his performance, regards it as little more than part of an ordinary day's work.

Busy Up on High

"'I have,' said Captain Lang, 'far more instruments to pay attention to than the observer' (to whom he paid warm tribute for his pluck under a terribly trying ordeal). 'I have to make the most minute observations at every thousand feet, and these are recorded on a board strapped to my right leg. I have also to note down how the temperature changes, the speed at which the machine is climbing, the revolutions, water temperature in the engine, oil temperature, petrol pressure, and gallons of petrol consumed per hour, and occasionally to look over the side to note our bearings.'

"This flight, Captain Lang said, had been contemplated for some time, and to prepare for it he and his colleague had remained strict teetotallers and had never indulged in a smoke for weeks. The machine they used was a De Havilland bombing machine, fitted with a 450 h.p. Napier engine. They started at half-past eleven a.m. in a gale of wind.

Seventy Degrees of Frost

"Both men were specially clad for the occasion, and the need for this is indicated by the fact that when the machine reached an altitude of 30,500 ft. they encountered about 70 degrees of frost.

"'During the first 8,000 ft. the machine tossed about like a leaf,' said Captain Lang, 'but afterwards we settled down to far more comfortable flying. Generally we climb by taking big sweeping circles, but we were blown out of our course, and when we were nearly six miles up we were about 25 miles out at sea, off Yarmouth.'

"Asked what were the prevailing conditions at that height, Captain Lang said the sun was shining brightly, and, although it was a little hazy, he could see ships far away out at sea, and occasionally glimpses of the Thames.

Eye Trouble

"'At 2,000 ft. I had to take off my goggles owing to the oxygen frosting on the glass. Thereupon my left eye watered and froze, and was soon as big as a plum. For the next 10,000 ft. I was flying with only one eye. After the first 8,000 ft. flying became gradually better, but at 20,000 ft. the cable in the revolution counter unfortunately broke. Being unable to take the records of the revolution counter I took the atmospheric temperatures, and it was lucky that I did so, for Lieutenant Blowes had, unknown to me, collapsed through the breakage of the tube which was supplying him with oxygen from one of the two cylinders specially fitted for the flight.'

"Captain Lang said it was most fortunate he was able to continue Lieutenant Blowes' work and take the atmospheric temperatures. Without them the test would have been worthless.

Most fortunately, Lt. Blowes regained consciousness when the 'plane came down to 20,000 feet altitude.

Developing a New Clover Seed District

THE experience of farmers in the United States shows that in the production of many kinds of seed, those in the West seem to have a great advantage over their brothers in the East. The drier atmosphere of the western states is productive not only of a better quality of seed, but also of larger yields than are obtainable under the more humid conditions of the East. A given area of clover, for instance, will yield twice to three times as much seed in Idaho as the same area will produce in one of the Eastern States.

The same thing is true as regards Canada. Of course, the farther north we go, we find a different variety of plants from those grown farther south. We also find a number of the same plants, and in the production of seed for these plants, a more vigorous and better sample is secured the farther north it is grown. This assertion is borne out by the hardy strains of wheat, oats, barley, flax, timothy and other seeds Western Canada produces. As the northerly limit within which certain seeds can be grown is gradually extending, it follows that a number of new varieties of seed are being grown with increasing success in more northerly latitudes every year, which, on account of their superior hardiness, have taken a foremost place on the market. It is in this capacity to grow seed of a high grade that the Prairie Provinces of Western Canada possess one of their greatest assets.

Field of Alsike Clover at Tilley, Alta.

During the last three years Mr. Don H. Bark, chief of the Irrigation Investigation Division of the Department of Natural Resources of the Canadian Pacific Railway, has been conducting a number of experiments in the growing of clover seed in Southern Alberta, and has met with surprising success. Before coming to Alberta in 1915, Mr. Bark was for several years connected with various irrigation enterprises in Idaho, where he had seen the production of clover seed grow from nothing to an industry bringing a revenue of millions of dollars annually. It is no wonder then, that after having lived and been prominently identified with the agricultural interests of the Idaho seed growing district during this important period, he should be interested in investigating the adaptability of other districts for the industry.

Alsike Clover at Carseland, Alberta.

His experienced eye noticed that the clover growing on lawns, ditch banks and waste places in Alberta from the boundary line to as far north as Edmonton gave promise of good results. This promise was fully confirmed when he shelled hundreds of heads that he gathered. They revealed a large quantity of seed of unusually good quality.

The following year, therefore, he arranged for several plots to be planted on the various Demonstration Farms of the Canadian Pacific Railway situated in the irrigation block, east of Calgary, Alberta. The results of these experiments, which have been continued ever since, have been very satisfactory. Not only have they proved that clover seed can be grown successfully in Southern Alberta, but they have also shown that the seed obtainable is of an exceedingly high quality, with the yield well above the average.

One of the largest plots planted during the first year was three and a half acres, which were planted to alsike clover at Tilley, Alberta. This area produced the following year 2,617 pounds of an excellent quality of machine run seed per acre; an average yield of 748 pounds, or approximately twelve and a half bushels per acre. This seed could have been sold readily, without recleaning, to dealers at twenty cents a pound, which would have given a gross revenue of $149.60 per acre. But such was the quality that after a thorough recleaning there remained slightly over ten bushels per acre of the highest possible grade of seed. At this spring's retail prices each acre produced a gross revenue of upwards of $240.

At the same place another plot, comprising almost an acre and a half, was planted to white Dutch clover in 1916. This crop had not looked very well throughout the season, the stand having been thin and the growth rather indifferent, yet a total yield of 205 pounds of seed of an excellent quality was secured from this area in 1917. The average yield was 142 pounds per acre. As this seed was worth at least fifty cents a pound, the returns secured were very satisfactory, despite the poor stand and indifferent growth of the clover. Last year the yield from this plot was somewhat better, 205 pounds of seed of an equally good grade being produced. On the above basis, this represents a gross return of more than $100 an acre.

The following example related by Mr. Bark shows the prolific nature of clover under conditions in Southern Alberta:

In the fall of 1917, a one-acre lawn of Kentucky blue grass and white clover at Cassils, a small station west of Medicine Hat on the main line of the Canadian Pacific Railway, appeared to contain enough ripe clover heads so that it would pay to harvest it. This accordingly was done, and the area threshed 105 pounds of white clover seed of an excellent grade and quality. This lawn, therefore, produced over $50 worth of seed, though it was not planted for seed production purposes.

Mr. Bark has gradually extended his experiments over a larger territory with equally favorable results. Three and a half acres planted to alsike clover at Rosemary, north of Brooks, Alberta, were harvested for seed in 1918, and although the stand was only fair, an average yield of 250 pounds of seed per acre was produced. Complete records were kept of the cost of handling this area and at the rate of forty cents per hour per man and fifteen cents an hour per horse worked out at $62.07, or $17.73 per acre. The total seed produced was 865 pounds, which at twenty cents a pound is worth $177.00. The net profit from the three acres, therefore, amounted to $114.93, or $36.31 per acre, not

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a bad return for one season from land that cost only $50 an acre, although the crop was considered rather disappointing.

But much better results were secured with white clover on the same farm. Of this three acres produced 1,144 pounds of machine run seed, which when thoroughly recleaned weighed 1,033 pounds. White clover seed is now being sold on the Calgary and Winnipeg markets at sixty-five cents a pound. The grower, therefore, might reasonably expect to receive fifty cents a pound for recleaned seed in large quantities. On this basis the gross return from the three acre plot would be no less than $501.50. As in the case of the alsike clover, the actual cost of handling was carefully kept. It amounted to $110.20, or $36.73 an acre. It will be seen, therefore, that the actual net profit from these three acres was $391.30, or over $130 an acre. With such results it does not take many acres to provide a man with a good income.

Alsike Clover at Tilley, Alta., after Cutting.

Now that the possibilities of growing clover seed on the irrigated lands of Southern Alberta have been practically demonstrated it will not be long before every farmer in the district is growing at least a few acres. The demand for high class seed is so great, and likely to be greater in the future, that the danger of causing a glut on the market is very remote, and the grower can rely on good prices. There is little doubt that within the next few years the industry will assume considerable proportions in Southern Alberta.

THE BEST VARIETIES OF GRAIN

Continued from page 33

sorts. The kernels are rather short, dark red and hard, and yield excellent flour. Very productive, especially on rich soils and in rather dry climates; not particularly desirable where the climate is moist.

Huron, Ottawa 3 — Straw stiff and rather long, heads bearded, kernels rather long, dark red, hard. Makes very good flour and bread of a somewhat yellowish color; the bread being light, but not usually so light as that made from Marquis or Red Fife. Extremely productive under a variety of conditions; probably the best wheat to grow in most places where the highest baking quality and extreme earliness are not required. Preston (bearded) and Stanley and Percy (beardless) are similar in most respects to Huron. On the whole, they are inferior to this latter.

Early Red Fife, Ottawa 16—This is a selection from ordinary Red Fife, from which it differs in some respects; it is distinctly earlier in ripening, has larger kernels and somewhat blunt heads, and is (in some climates) rather more susceptible to rust than the parent sort. Its milling and baking qualities are the same as those of Red Fife. It is one of the best sorts to grow in rather dry districts in central and western Canada where a rather early-ripening wheat is needed and where rust is not much feared. It does very well in the eastern provinces also.

Ruby Group—Very Early Ripening Varieties

These varieties usually ripen from 3 to 12 days earlier than those in the Marquis group; but as a rule the latter are more productive.

Ruby, Ottawa 623—A beardless wheat, ripening considerably earlier than any member of the Marquis group. Kernels hard, red, yielding flour of excellent color and high quality. Straw of very fair length and strength. The grain threshes out easily. Very valuable for localities where there is a moderate rainfall and where Marquis ripens too late. This variety is new, having been introduced in 1918.

Pioneer, Ottawa 195—A bearded variety with hard, dark kernels. Milling and baking qualities excellent. Threshes out easily. Is susceptible to disease in moist

climates and is rather weak in straw when the straw grows long. Adapted to certain rather dry districts where Marquis ripens too late.

Prelude Group—Extremely Early in Maturing

Prelude, Ottawa 135 — Stands alone at present in a class by itself on account of ripening 5 to 8 days earlier than Ruby. Prelude should not be expected to give as high a yield as later-maturing sorts, in seasons favorable to the latter; but it gives very good crops under reasonable conditions. Its kernels are hard, red, plump and extremely heavy. As they shell out readily, this wheat should always be cut on the green side. Flour from this variety is of very high baking strength, but not pale enough to be given the highest rank for color. The heads are short, downy and bearded, and the straw is short, but stands up well. This is the best wheat for districts where there is a tendency towards the production of too long straw and where the greatest possible earliness is essential. One or more new varieties will probably be added to this group very soon.

Durum Group—The So-called "Macaroni" Wheats

It is necessary to mention these wheats as a separate group because they are so different from the ordinary varieties: the large size and excessive hardness of their kernels rendering them very unpopular with most Canadian millers. While it is true that some durum varieties are used for the manufacture of macaroni, to designate the whole group as "macaroni" wheats gives an incorrect impression. Some of the varieties here included are excellent for bread-making, while others are very poor. The great outstanding quality of the durum wheats, which will ultimately make them important in some parts of Canada, is their ability to resist drought. Most of these wheats are bearded, late in ripening and not very strong in the straw.

Kubanka is of the highest quality for bread-making. The color of the flour is bright, pale yellow.

Goose or Wild Goose is a productive variety of inferior bread-making quality.

Oats

Banner or American Banner—The most popular variety and certainly one of the best. Straw of good length and fair strength, kernels long, not early in ripening, very productive, succeeding best on rather heavy soil. The selected strain of this variety grown on the Dominion Experimental Farms is called Banner, Ottawa 49.

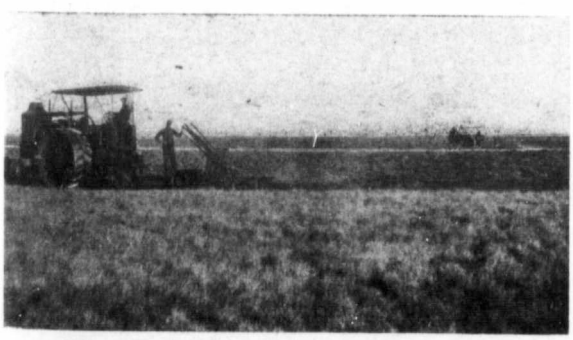
Victory (also called Seger and Conqueror)—A Swedish variety which closely resembles Banner and is perhaps equally desirable.

Siberian — A selected strain of this oat has been introduced as Ontario Agricultural College No. 72. This is very productive, but late in ripening. The straw is longer, and appears to be weaker, than that of Banner, but, especially on light soils and in districts where the season is long, the O.A.C. No. 72 is one of the very best sorts.

Gold Rain or Golden Rain—An excellent Swedish sort, the rapid spreading of which is hindered by the fact that the hull is of a decided yellow color, instead of being straw-colored as in most varieties. This objection should be of very little importance. Gold Rain is slightly earlier than Banner in ripening, gives an excellent yield and has a higher weight per bushel, as a rule, than any other common variety. In strength of straw, it is about the same as other good sorts.

Ligowo—Usually a little below Banner in productiveness, but somewhat earlier in ripening. On the whole not quite so desirable, in most localities, as Banner.

Daubeney—Very early in ripening. Generally produces straw of satisfactory length. Kernels long and thin, but with a good percentage of kernel to hull. The selected strain of this oat grown on the Dominion Experimental Farms is designated as Daubeney, Ottawa 47. There are other varieties which ripen earlier than



Carl Sylven with his two Rumely Engines preparing for a big crop at Elrose, Sask.

Daubeney, but they are inferior in some respects. Daubeney is early enough for almost any special purpose or short season. Very early varieties are not expected to yield as large crops as later sorts, but Daubeney is remarkably productive, considering its earliness.

Hulless oat: Liberty, Ottawa 480—An early ripening sort, producing straw of fair length and giving a good yield. Not equal in productiveness, however, to the best oats of ordinary type. On account of the fact that it gives up its hull in the threshing, this oat is of very great value for grinding to produce feed for young pigs and young chickens. It also makes remarkably good oatmeal for human consumption.

This is a new cross-bred variety introduced in 1918.

Barley (Six-rowed Varieties)

Manchurian, Ottawa 50 — This is a selection from a kind of six-row barley supposed to be af Asiatic origin. It ripens early (as do practically all the six-row types) and has straw of fair length and strength. In very windy climates, this barley shows a tendency for the heads to break off and the kernels to be knocked from the heads. The awns are sometimes persistently retained when the grain is threshed. Both of these features are objectionable, but, nevertheless, the great productiveness of this variety makes it very popular over large areas of country.

Ontario Agricultural College No. 21 is also a selection from barley of supposed Asiatic origin. This is a very good variety which resists wind better than Manchurian and drops its awns more readily. It gives a large yield. The O.A.C. No. 21 has two slight disadvantages: it is very liable to smut and the threshed grain is of an unattractive color.

Albert, Ottawa 54 is an extremely early-ripening six-row barley which is valuable whenever the maximum of earliness is essential. It gives very fair yields. This is a new variety introduced in 1918.

Barley (Two-row Varieties)

These are much less commonly grown in Canada than the sixrow sorts, but are more desirable for certain conditions.

Duckbill, from which Duckbill, Ottawa 57 is a selection, is one of the most popular sorts and the only one which can usually be found in commerce in this country.

Chevalier is occasionally grown. There are several strains of this type, among which Charlottetown No. 80 deserves special mention. This selection was made on the Dominion Experimental Station for Prinec Edward Island and is well suited to conditions there. In some seasons, this barley drops most of its awns before harvest.

Gold is a very prolific variety of Swedish origin. It has very short straw.

Hooded Barleys

Beardless, or more properly hooded barleys are attractive because of the absence of awns and on account of their earliness in ripening, but all those kinds which are now in commerce are unsatisfactory. Success and Champion are two of them.

Hulless Barleys

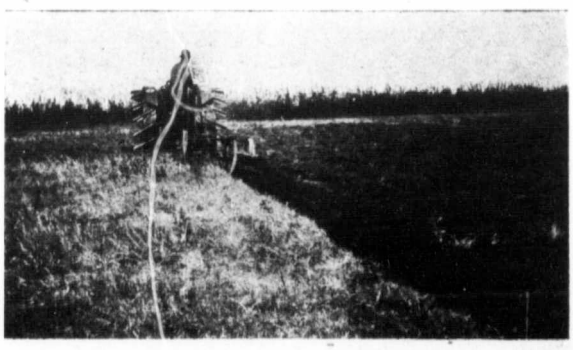
These are very desirable for feeding purposes, but, up to the present, no very satisfactory sorts have come before the public. Perhaps the best kind is one from the Himalaya mountains which often goes by the strange name of Guy Mayle, a corruption of a foreign word Guymalaye. In Alberta this is occasionally grown with good success. Hulless White (beardless) and Hulless Black (bearded) are also obtainable in commerce.

Rye

Spring Rye and Winter Rye—Though different names are used for selected strains of these grains, there are no distinct varieties which can be recommended as superior to all others. Farmers purchasing winter rye would do well to secure seed grown as far north as possible, so as to be reasonably sure of the hardiness of the strain.

Emmer and Spelt

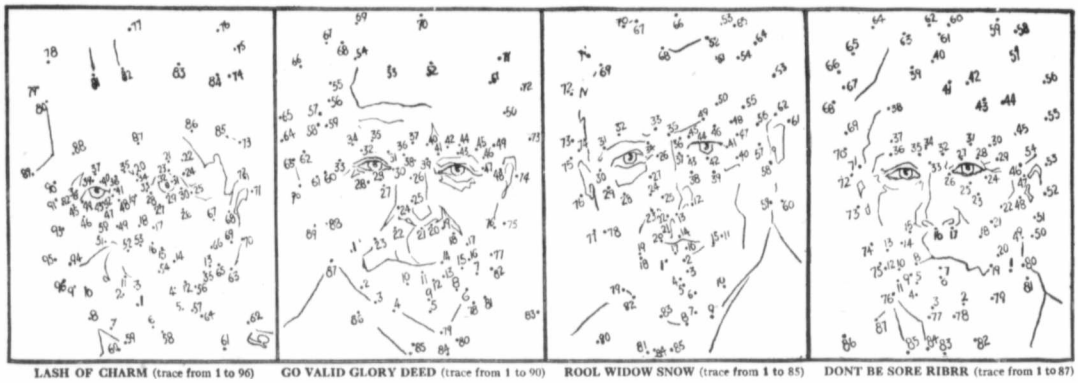
There are several distinct types of these grains, of varying degrees of coarseness. The best



J. T. Prickett, Irricana, Alta., who plows day and night. No "cooling off" except on Sundays.

FAMOUS FOLKS IN FIGURES

$500.00 in Cash for Best Solutions



LASH OF CHARM (trace from 1 to 96) GO VALID GLORY DEED (trace from 1 to 90) ROOL WIDOW SNOW (trace from 1 to 85) DONT BE SORE RIBRR (trace from 1 to 87)

How Familiar Are You With the Features of the Great Men of To-Day? Here is a Real Test.

THE above four diagrams represent incomplete pictures of four of the world's greatest men—men you read and hear about every day of your life. Complete the four pictures by tracing from number 1 to 2 to 3 to 4, and so on until the pictures are finished and the faces of these great living men will be revealed to you so that you should quickly recognize them. Can you make them out?

Below each picture in jumbled letters is the correct name of the great man represented in the diagram above it. Unscramble the letters of his name so that you can correctly name him. In the far column will be found a list of a few of the world's outstanding great men. This list may prove of service to you.

The best completed pictures with the names correct can win $500.00 in cash. The completed pictures must be clipped from this paper and attached to a separate sheet containing the names of the great men represented by the diagrams, together with complete name and address of contestant in the upper right-hand corner of paper. Complete list of grand prizes to be awarded is shown in the next column.

This Great Contest Is Absolutely Free of Expense—Send Your Answers To-Day!

This great contest is being conducted by the Continental Publishing Company, Limited, one of the largest and best-known publishing houses in Canada. That is your guarantee that the prizes will be awarded with absolute fairness and squareness to you and every other contestant. Frankly, it is intended to further introduce EVERYWOMAN'S WORLD, Canada's Greatest Magazine. You may enter and win the best of prizes whether you are a subscriber to EVERYWOMAN'S WORLD or not—and moreover, you will neither be asked nor expected to take the magazine or spend a single penny of your money in order to compete.

HERE IS THE IDEA.—EVERYWOMAN'S WORLD is so popular everywhere that it now has the vast circulation of over 100,000 copies a month. But our motto is "EVERYWOMAN'S WORLD in every woman's home." We want more Canadian magazine readers to become acquainted with this famous publication. Therefore, when we acknowledge your entry to the contest and you know your standing for the prizes, we shall send you, **without cost,** a copy of the very latest issue and a review of many of the fine features soon to appear. Then, in order to qualify your entry to be sent on for the judging and awarding of the grand prizes, you will be asked to assist us in carrying on this big introduction plan by showing your copy to just three friends or neighbours, who will appreciate this really worth-while, All-Canadian magazine and want it to come to them every month. You will easily fulfill this simple condition in a few minutes of your spare time, and we will even send copies for each of your friends, if you wish.

		CASH
1st	Prize,	$200.00
2nd	"	100.00
3rd	"	50.00
4th	"	25.00
5th	"	15.00
6th	"	10.00
7th to 26th,	each	5.00

PRIZES GUARANTEED

How To Send Your Solutions.

Use only one side of the paper that contains names of the great men represented by the pictures, and put your name and address (stating Mr., Mrs. or Miss) in the upper right-hand corner. If you wish to write anything but your answers, use a separate sheet of paper. Attach this to your completed pictures clipped from this paper.

Three independent judges, having no connection whatever with this firm, will award the prizes, and the answers gaining 300 points will take the First Prize. You will get 25 points for every picture completed correctly and 25 points for every name solved correctly. 15 points will be awarded for general neatness, style, spelling, punctuation, etc., 10 points for hand-writing, and 75 points for fulfilling the conditions of the contest. Contestants must agree to abide by the decision of the judges.

The contest will close at 5 p.m. on Thursday, July 31st, 1919, immediately after which answers will be judged and the Prizes awarded. Address your answers to-day to—

FAMOUS FOLKS COMPETITION,
Continental Publishing Company, Limited
226 Continental Building :: TORONTO, ONT.

A FEW NAMES OF GREAT MEN LIVING TO-DAY

Lord Reading
Marshal Foch
Andrew Bonar-Law
Herbert C. Hoover
G. H. Roberts
H. G. Wells
Woodrow Wilson
Georges Clemenceau
Raymond Poincare
Stephen Pichon
David Lloyd George
Samuel Gompers
Lord Robert Cecil
Sir Eric Geddes
Sir Robert Borden
Thomas Alva Edison
Vittorio Orlando
Sir David Beatty
Col. William Avery Bishop
Ignace Paderewski
General Jan C. Smuts
General Louis Botha
E. K. Venizelos
General Sir Arthur Currie

---

emmers are superior to the best spelts.

Common Emmer is the best sort. It is often sold under the corrupted name "Speltz." It is not a kind of spelt. This grain has been too much advertised. It may be of value in some very dry districts, but is quite unprofitable in most parts of Canada.

Varieties Recommended by Dr. Saunders

The varieties are arranged approximately in the order of their merits, those most generally suitable being put at or near the head of the list. Varieties, the names of which are enclosed in brackets, are considered less desirable than the others, for most conditions.

Manitoba

Spring Wheat — Marquis Ottawa 15, Red Fife Ottawa 17, Ruby Ottawa 623 (very early), (Prelude Ottawa 135, earliest).

Oats—Banner Ottawa 49, Victory, Gold Rain, Daubeney Ottawa 47 (very early), (Ligowo), Liberty Ottawa 480 (hulless).

Barley — Manchurian Ottawa 50, O.A.C. No. 21, Albert Ottawa 54 (very early).

Field Peas—Arthur Ottawa 18, Mackay Ottawa 25, Prussian Blue.

Field Beans — Norwegian Ottawa 710, Yellow Six Weeks.

Flax for seed—Novelty Ottawa 53, North Dakota Resistant No. 52, Premost.

Saskatchewan

Spring Wheat — Marquis Ottawa 15, Red Fife 17, Early Red Fife Ottawa 16, Ruby Ottawa 623 (very early), Prelude Ottawa 135 (earliest), (Pioneer Ottawa 195, Kubanka.

Oats—Banner Ottawa 49, Victory, Gold Rain, Ligowo (slightly early), Daubeney Ottawa 47 (very early), Liberty Ottawa 480)hulless).

Barley—O.A.C. 21, Manchurian Ottawa 50, Albert Ottawa 54 (very early), (Duckbill Ottawa 57).

Field Peas—Arthur Ottawa 18, Mackay Ottawa 25, (Golden Vine).

Field Beans — Norwegian Ottawa 710, Yellow Six Weeks.

Flax for seed—Novelty Ottawa 53, North Dakota Resistant No. 52, Premost.

A "Massey-Harris" 12-25 with three Massey-Harris plows

Alberta

Winter Wheat — Turkey Red and Kharkov.

Spring Wheat — Marquis Ottawa 15, Early Red Fife Ottawa 16, Red Fife Ottawa 17, Huron Ottawa 3, Ruby Ottawa 623, (Pioneer Ottawa 195), Prelude Ottawa 135 (earliest), (Kubanka).

Oats—Banner Ottawa 49, Victory, Gold Rain, (Ligowo), Daubeney Ottawa 47 (very early), Liberty Ottawa 480 (hulless).

Barley — O.A.C. No. 21 Manchurian Ottawa 50, Duckbill Ottawa 57, Albert Ottawa 54 (very early).

Field Peas—Arthur Ottawa 18, Mackay Ottawa 25, Prussian Blue, Golden Vine.

Field Beans — Norwegian Ottawa 710, Yellow Six Weeks.

Flax for seed—Novelty Ottawa 53, Premost, North Dakota Resistant No. 52.

Flax for fibre — Longstem Ottawa 53, (Kostroma).

CANADA'S "SHOCK TROOPS"

(We commend the following to the thoughtful attention of all our men folks in Western Canada. It is an editorial from a recent issue of an exceedingly bright little magazine called "The Threshold"—the "house organ," so to speak, of the Manitoba Military Hospital, Tuxedo, Winnipeg, and is entirely conducted, printed and published by "the wonderful boys" of that institution.—Ed.)

THERE is a great deal of speculation as to the part the soldier-civilian will play in the future of Canada. We have several veteran associations, but all of these disclaim that they are political associations, that is from a partisan standpoint. They have been organized simply to look after the interest and welfare of the soldiers' dependents, but what these different associations will develop into in the future no one can tell. Very few veterans want to be partisans. Their great ambition is to forget the war and forget the army and get back to civilian life.

But the problems of peace will demand that every person with the power of the franchise take an active interest in the governing of our country. We have been fighting for democracy. Now we must wage a different warfare to make that democracy safe. Free speech, the secret ballot, etc., all have their responsibilities, and to make our democracy what it ought to be, and what it can be, every man and woman must play their part, be that part small or great. Canada will have in the near future a new element, a new force, which we believe will play a big part in the political life of our own country, and that is the women's vote.

There is no womanhood that ranks higher than our Canadian womanhood. If we have had our doubts, the experiences of the last four years have driven them away. Canada's greatness could never have been revealed on the battlefield if her sons had not been reared in homes that breathed that spirit. Canadian womanhood is that clarifying influence that has made our social, political and commercial life as pure as it is. The moral and spiritual tone of a nation can never rise higher than that of its homes. The thought of these homes, the memory of the mothers and wives who have been left behind have been the great anchor that has held thousands of our men faithful to their highest and noblest ideals. The last thought before going over the top has been of wife or mother, and the last word on the lips of the dying has been mother or wife.

As we stand on the threshold of the future with its great problems to solve, would it not be wise, would it not be sane, for the returned soldier to ally himself with this great womanhood? We still need its purifying influences, and as we allowed it to be our anchorage to hold us steady and our star to lead us in the past, why not continue? The women and the soldier-citizens of Canada could be the greatest power for good—linked together from ocean to ocean—not merely by organization, but by the same ideals, and in one great and mighty determination to make these ideals real. By the hearty co-operation of these two great and new forces Canada would have always in reserve a shock troop that would stop any onslaught of her worst and greatest enemy.

CHRISTIAN CHARITY

AN army of British women have been maintaining the national life at home while their brothers defended it in Flanders and France. One of these productive militants has been carrying on in a government office, her work of forestation. To our question: Would she go into welfare work when peace came, she said.

"Welfare work? Oh, no. The life has gone out of it. Give me for choice the administration of a business, where I can put into practice modern ideas on hours of work, rest periods, safeguards against fatigue, everything tested by efficiency in the workaday world. Welfare work is off the main current of influence. The

A Case 10-20 doing fine work with 3 plows.

world has moved beyond it."

The age of philanthropy has gone by. Good food, a decent place to live, enough pay to rear a household in comfort, will no longer be left to kindly college graduates, visiting tenement families. A standard of living will be public policy, not private generosity. The worker will demand it. The employer will grant it. The state will enforce it. These rights to a full life will be fought for by the persons concerned. They will not be handed down by leisured altruists from above. They will not be made the subject of obscure experimentation in slum settlements. In time past, one set of persons underpaid a portion of the community, and another set came along and built them hospitals and refuges. Or sometimes the same man grew rich by underpaying his workers, and then, after he had accumulated his surplus, used the interest money to give them relief.

There will be no time in the coming world for pleasant experiments. Every one will have to work in productive occupation. There will be no money for philanthropy. War debt will keep all hands hustling for the next fifty years. The rich will be rich no longer. Spare capital will be in demand for commercial enterprises—for housing roads, waterways, factories, organized industry for France, Russia, the Balkans, ships to replace the submarined fleet.

The poor will no longer beg a dole from poor relief. They will organize for a living wage. Charity is dead; the war killed it.

A REAL ONE

UPON a wharf where the Yanks were disembarking a reporter buttonholed a rosy-cheeked private.

"Are you one of the heroes?" the newspaper man asked, with notebook ready to record a stirring tale of heroism.

"Naw," was the blushing reply. "I'm only a common doughboy. But the lieutenant, over there, is one."

To the officer indicated went the reporter.

"I'm told you're a hero, sir," he said.

"No," laughed the lieutenant. "I merely happened to be on the job when something needed to be done, and I did it. However, I can refer you to the simon-pure article." And he pointed out a sergeant with three wound stripes upon his sleeve.

"Not guilty," declared the sergeant, when questioned. Then, his eyes kindling with admiration, he waved toward a figure standing somewhat aside from the throng. "Talk to the major. You couldn't string on a fat man's bay window the medals he's got, and ought to have."

"Nonsense!" ejaculated the major, amusedly.

"That's what you all say!" cried the reporter, in despair. "Is hero-ing a criminal career?"

Chuckling, the major beckoned to an ebony-hued stalwart.

"Rastus," the major said, when the Senegambian saluted and stepped forward, "this gentleman is looking for a hero. I think you are one."

"You might say I am, sah. Dey wasn't a wusser, dangerouser job in de army dan mine."

"What was it?" eagerly inquired the reporter.

"Mistah," Rastus solemnly informed him, "I drove a mule team plumb thoo dis wah."

Terrell Love Holliday.

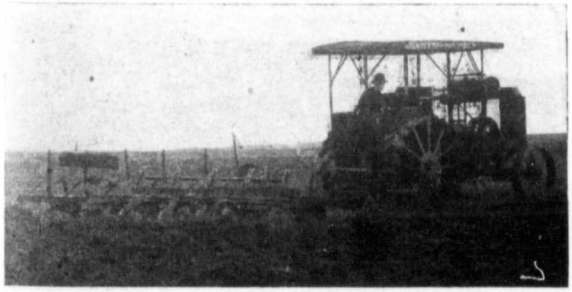
Transients

A kind-hearted gentleman was walking through the back streets of an American town, when he came across a colored woman unmercifully beating a little boy. "Here," he said, seizing her by the arm, "you must not do that. What has he done, anyway?"

"Mustn't do that! What has he done?" ejaculated the enraged mother. "If you want to know, he's been and lef' de chicken house door open, an' all dem chickens got out."

"Well, that is not so serious," said the gentleman, soothingly; "chickens always come home to roost."

"Come home," snorted the woman. "Dem chickens will all go home!"



Sawyer Massey 20-40 towing a 5 Cockshutt Gang

Wiring Repairs on the Road

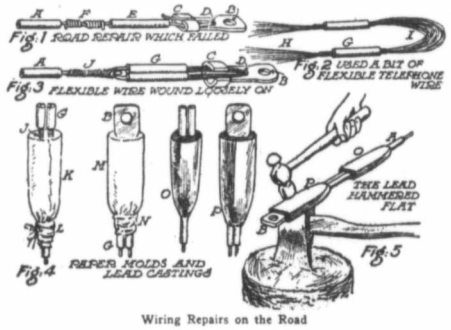
A MAN who ran a small car was troubled by poor ignition while driving in a country district, remote from service stations and repair shops. Frequent stops to hunt trouble did not improve matters. Finally, becoming stalled near an abandoned farmhouse, he determined to camp right there until the trouble had been located and cured—or something "busted."

The ignition circuit, from the storage battery out, was removed and carefully gone over, and right next to the battery a break was found in the wiring, which had been patched but not soldered. It was this old road repair, as shown in Figure 1, which had failed. The ignition wire A had broken away from the battery lug B and repairs had been made with the bit of light bell wire E, which had been twisted to A at F and clamped into the lug at C and passed through the hole D, but had not been soldered, though taped out of sight.

The looseness of the connection had permitted oxidation to take place,possibly by passage of heavy currents, until the connection could not be depended upon to carry current. Sometimes it would, sometimes it would not. The owner found a bit of flexible telephone cord G, Figure 2, in the tool box, scraped both ends and the middle, as at H and I, then twisted it into place as shown by Figure 3. Clamp C had also been scraped clean and was not hammered down tight. The joint at J was also twisted loosely.

"Wish I had a soldering copper," said the owner. To take its place he twisted bits of writing paper round both joints, as shown at K and M, tied them securely below the joints with twine, as at L and G, Figure 4. Then he propped up the joints one at a time in a sand pile, tore a bit of sheet lead off the shed roof where it joined the house, built a little fire in the road and melted some of the lead in an old spoon found behind the farmhouse. Both the paper molds were filled in turn with the melted lead and after the paper was removed were found as shown at O and P, Figure 4.

In the shed was found an old, rusty axe, which was converted into an anvil, as shown in Figure 5, the chopping block serving as anvil block this time. Fetching his hammer from the tool box, he hammered the lead joints flat, one after the other, as shown at O and P, the flexible wire G being thus solidly connected between lug B and ignition wire A; and the resulting connection proved to be as good as though the wires and the lug had been soldered in the most approved manner.



Wiring Repairs on the Road

Both connections, O and P, were then well taped, the ignition wire returned to place and the ingenious driver found no more trouble with the ignition system of his car. But he says that hereafter he is going to carry some kind of a soldering outfit, probably a small gasoline blowtorch, a box of vaseline mixed with muriate of zinc, a little coil of wire solder, a crumb of rosin and another of sal ammoniac, together with a very small soldering copper.

He also said that the blowtorch was worth $100 a minute when he wanted to heat up the carburetor.

J. F. H.

Another Hatchet, Please

In a Canadian camp "somewhere in England," a second George Washington has been found. He, in company with several others, had been granted four days' leave, and, as usual, wired for an extension. But no hackneyed excuse was his. In fact, it was so original that it has been framed in a prominent spot in the battalion orderly room. It ran as follows:

"Nobody dead, nobody ill; still going strong, having a good time, and got plenty of money. Please grant extension." And he got it.

Help the Y.M.C.A. Finish Its Work for the Soldiers

CANADIAN Y.M.C.A.

Help the "Y" Construct the Manhood that will Reconstruct Canada

CANADIAN Y.M.C.A.

ALL the world now knows that the Red Triangle of the Y.M.C.A. was the "Sign of Friendship" to thousands of your brothers, sons, nephews, cousins and neighbours' boys in the last four and a half years. Wherever the Canadian Soldiers went, the "Good old 'Y'" went, too. And now it is coming back home with them!

For the support which has made possible the war work of the Y.M.C.A., we thank you. Your money has been well expended. We have rendered full account.

We ask now your continued sympathy and support for Red Triangle Service for our soldiers during Demobilization, and for Y.M.C.A. work for Canada generally during the Reconstruction period. The Annual Red Triangle campaign will be held throughout Canada May 5th to 9th, 1919. The objective is $1,100,000.

For what purpose is the money required? We will tell you.

For Our Men Returning

For the soldiers and their dependents, returning from Overseas, we have provided as follows:

1. A Red Triangle man on board every ship when it leaves Great Britain, with a full equipment of games, gramophones and records, magic lantern, literature and writing materials. Where possible, also a piano or an organ. Lectures, concerts, sing songs, instruction re Government repatriation plans, and Sunday services.

2. Red Triangle comforts and facilities for the men on arrival at Halifax, St. John, Quebec, and Montreal, including coffee stalls with free drinks, free eatables, cigarettes, candies, etc.

3. Red Triangle men on every troop train to provide regularly free drinks, eatables and cigarettes, organize games and sing songs and furnish information.

4. Red Triangle free canteen service, information bureau, etc., at each of the 22 dispersal centres in Canada.

5. Red Triangle Clubs in the principal cities of Canada in the shape of large Y.M.C.A. hostels to furnish bed and board at low rates and to be a rendezvous for soldiers.

6. Seventy-five Secretaries to superintend Red Triangle service in Military Hospitals, Camps and Barracks throughout Canada.

7. Tickets entitling soldiers to full Y.M.C.A. privileges for six months at any local Y.M.C.A. furnished.

In addition to our work for the returning soldiers, we have to maintain the Red Triangle service to the full for the soldiers in Siberia, as well as the work of special Secretaries in Northern Russia, Palestine and Poland.

Canadian Y.M.C.A.
Red Triangle Campaign
$1,100,000 May 5th to 9th
Canada-Wide Appeal

For Canada's Manhood

The reconstruction program of the Y.M.C.A. includes the following vitally important developments:

1. An increased service to 300,000 teen-age boys in the Dominion—the development of Canadian Standard Efficiency Training; Bible Study Groups; Summer Camps; Conferences; Service for High School Boys; for Working Boys in the towns and cities; for boys on the farm and for boys everywhere, who have lacked opportunity for mental, moral, physical or social development.

2. Inauguration of Y.M.C.A. work in the country, and the smaller towns and villages lacking Association buildings and equipment, on a plan of country organizations. This will include the establishment of Red Triangle centres for social, recreational and educational work among boys and men, in co-operation with the churches.

3. The promotion of Y.M.C.A. work among Canada's army of workers in industrial plants, both in Y.M.C.A. buildings and in the factory buildings, organizing the social spirit among the industrial workers of our cities by meetings, entertainments, games and sports.

4. The establishment of the Red Triangle in isolated districts where lumbermen, miners and other workers hold the front trenches of industry.

5. Besides these main fields of increased activity for 1919, we have to provide for enlarged work among railway men, college students and for our campaign to encourage physical and sex education. Under all our work we place the fundamental foundation of manly Christianity.

Y.W.C.A.

For the wives and children Overseas, dependent upon Canadian soldiers, and for Y.W.C.A. work in Canada generally, a sum of $175,000 from the Red Triangle Fund will be set aside for the Dominion Council of the Y.W.C.A. which is caring for the soldiers' women folk, and their little ones on the long journey from Liverpool to Canada, and is also extending its work for Canadian girls.

For their sake also be generous when you make your contribution.

FOR the sake of our victorious soldiers and their dependents, and the happiness of their home-coming; for the sake of our future citizens, our teen-age boys; for the sake of rural life in Canada; for the sake of the social betterment of the toilers in factory and workshop; for the sake of lonely men and boys in our mines and forests; for the sake of Christian Society and Canadian manhood—we appeal to you. Give us your contribution, little or big. Be as generous as you can.

Hand your contribution to the canvasser when he calls, or if you live where it is difficult for him to call, send it by check, money order or registered letter to the National Treasurer, Red Triangle Campaign, 120 Bay Street, Toronto.

Please Note:

We are not asking for money to carry on our work Overseas, with the Army in Great Britain, France or Belgium. That work will continue at its maximum for some months, financially provided for by the liquidation of our assets Overseas, and will not cease till the last man has sailed for home.

National Council, Young Men's Christian Associations of Canada

The Red Triangle Campaign is being conducted under the distinguished patronage of His Excellency, the Duke of Devonshire, K.G., G.C.M.G., G.C.V.O., P.C.

Hon. Campaign Chairman:	*Campaign Chairman:*	*Campaign Treasurer:*	*Campaign Director:*
JOHN W. ROSS, Montreal	G. HERBERT WOOD, Toronto	THOMAS BRADSHAW, Toronto.	CHAS. W. BISHOP, Toronto

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TESTED SEED GRAIN FOR SALE

Seed Purchasing Commission, Regina, Sask.

Canada Western Seed Grain

Bulk Car Lots, F.O.B. Calgary

	Per bus.
No. 1 Seed Wheat, Marquis	$2.28
Seed Barley, Six-rowed	1.25
No. 1 Seed Oats, Alberta orders	1.06
No. 2 Seed Oats, Alberta orders	1.00

Car Lots, One or More Kinds of Grain, Sacks Included, F.O.B. Calgary

	Per bus.
No. 1 Seed Wheat (2 bus. per sack)	$2.43
Seed Barley (2½ bus. per sack)	1.37
No. 1 Seed Oats (3 bus. per sack)	1.15
No. 2 Seed Oats	1.09

Less-than-car-lot (L.C.L.) shipments carry extra charges per bushel: Wheat, 5 cents; barley and oats, 3 cents, to cover cartage from elevators to stations. Freight rates are also higher.

Bulk Car Lots, F.O.B. Moose Jaw and Saskatoon

	Per bus.
No. 1 Seed Wheat	$2.30
Seed Barley	1.25
No. 2 Seed Oats	1.04

Car Lots, Sacks Included, F.O.B. Moose Jaw and Saskatoon

	Per bus.
No. 1 Seed Wheat	$2.45
Seed Barley	1.37
No. 1 Seed Oats	1.19
No. 2 Seed Oats	1.13

ONTARIO OATS, No. 1 Seed

Bulk Car Lots, Delivered

	Per bus.
Sask. and Alta. points, freight prepaid	$1.12
All Manitoba points, freight prepaid	1.10

Approximate Freight Charges

Bulk Car Lots

Dis. from Elevator Miles	Wheat per bu. c	Barley per bu. c	Oats per bu. c
100	4½	3½	3
200	6	4¾	3½
300	7½	6	4½

L.C.L. Shipments

Dis. from Elevator Miles	Wheat per bu. c	Baley per bu. c	Oats per bu. c
100	9	7¼	5½
200	13	10½	7½
300	16½	13¾	9½

Seed Sold at Cost

The prices asked by the Commission represent the average cost of the seed grain, including the premiums paid for the superior stocks, which could be cleaned to the seed grades, also charges for storage, cleaning, shrinkage in cleaning, sacks and sacking where required. The service of the Commission and the Seed Inspection Staff are provided free of charge by the Dominion Government.

Sales on Cash Basis

The Commission is permitted to make sales on cash basis only. Bank draft is attached to bill of lading for orders to open stations. Send cash with orders for shipments to closed stations.

Send Orders Promptly

Municipalities, farmers' organizations, groups of farmers and individuals who are depending on the Commission for seed grain should forward orders at the earliest possible date so that shipments may be made to arrive in good time for seeding.

Quality of Seed Offered

Our No. 1 Seed Wheat is No. 1 Hard or No. 1 Northern, selected cars of Marquis, clean and free from all weed seeds, and very superior quality.

The Seed Barley is Six-rowed of strong vitality, practically free from other grain, and cleaned to Seed Grade for purity.

No. 1 Seed Oats are white oats, free from wild oats and other noxious weed seeds, and practically free from other grain.

No. 2 Seed Oats are the same quality as No. 1, but may contain up to ten wild oats per pound.

The average germination of our No. 1 and No. 2 Canada Western Seed Oats is 90 per cent and the weight per measured bushel, 45 pounds.

Our Eastern shipments germinate 98 per cent, and weighs 40 pounds per measured bushel.

Dominion Seed Inspectors inspect all cars and issue a Seed Certificate on each.

Every car or smaller shipment is tested for germination at a Dominion Seed Laboratory.

PREPARE STUBBLE LAND FOR WHEAT

(Experimental Farm Note)

UNDER the conditions generally prevailing in Manitoba, stubble land that is to be sown to wheat should be plowed. In some of the new districts of the West where weeds are not as yet so prevalent, it may be practicable to re-seed without plowing, but in the province of Manitoba, where in practically all parts weeds are a considerable menace, plowing should not be omitted.

The choice between fall and spring plowing should be determined largely by local experience. Some soils do best with one, some wth the other. Generally speaking, heavy soils give best results when fall-plowed, though some types of heavy soil are almost impossible to plow in the fall. Light soils are usually most productive when plowed in the spring.

Fall plowing is best from the standpoint of saving time, as it leaves more time for spring work and usually means earlier seeding.

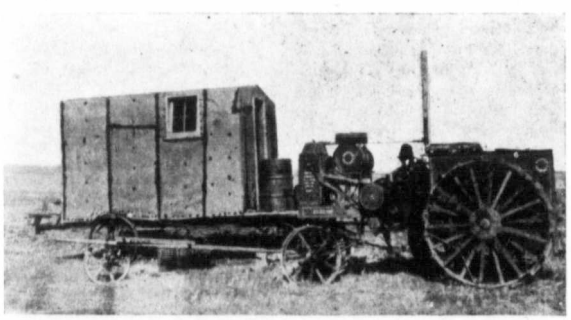
Spring plowing is more effective in the control of weeds, as, being turned under just before seeding, they have less chance to crowd the grain.

Fall plowing for wheat will give best results if done early. The fall rains are then absorbed much better, weed seeds are started and killed by frost, and almost always a better yield will be obtained than from plowing just before freeze-up.

Provided the plowing of the summer fallow in the previous year has been deep, as it should be, there is little advantage in deep fall plowing for wheat. About four or five inches will bury the stubble satisfactorily and will not be so much in danger of leaving an open dry bottom to the seed bed as where a large amount of stubble is turned in too deeply. This is even more true of early spring plowing, where a moderate depth is decidedly preferable.

No advantage is derived from cultivation of the land in the fall after fall plowing. The rough surface holds more snow and exposes the earth to the frost to a greater degree than where a smooth, level surface is left. Fall plowing should be well worked down in the spring before seeding. The kind of implements and amount of work that are best will vary greatly with different types of soil and no general rules can be given safely.

Spring plowing should be



J. C. Bryan—Oiling up at the Lunch Hour

Old Gent (to loafer in rough neighborhood) — What terrible language these people use! Loafer —You're right, guv'nor. It's abaht the only thing wot, ain't controlled nowadays.

"I understand that the young man in the house next to you is a finished cornetist?" "Is he? Thank goodness! I was just screwing up my courage to finish him myself. Who did it?"

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worked down as soon as possible after plowing and seeded as soon as possible after preparation. Prompt working of spring plowing is necessary to prevent loss of moisture which takes place rapidly in the windy days of spring. Prompt seeding is necessary so that the grain plants get the advantage over weeds; where worked land lies for a time before seeding, the weeds get the start over the crop.

On most soils packing of spring plowing is advantageous. Some heavy soils do not require it. Experiments go to show that packing after seeding has the greatest benefit as compared to packing at any other time.

Wheat should be sown on stubble land only when the previous crop has been on summer fallow.

OIL CONTAINERS MADE IN WINNIPEG

THERE are few things requiring greater care than the selection of storage facility for fuel oil. Safety and economy here makes a call for something far beyond the average of the ordinary tank, for the various mineral fuel oils have a way of developing strange and dangerous freaks.

We have seen something in this way made by the Winnipeg Ceiling & Roofing Company which seems to be the last thing in efficiency and economy. Sheet metal of unblemished quality is the only thing that an honest manufacturer will use in the building of anything of the kind, and the assurance of this tip-top quality is written on the face of these products.

Over a hundred thousand of these oil containers have been manufactured and placed in the hands of Western Canadian farmers—a wonderful tribute to the demand for these essentials and to the capacity for turning them out at our own doors.

These containers take the form of drums of all sizes and wagon tanks (made in single or double compartments) with a capacity of 305 and 435 Imperial gallons, and notwithstanding the prices to which all manner of metal products have run up within recent date the drums and tanks we speak of are remarkably inexpensive, having regard to the very important part they play in the equipment of men who are handling gas engines, etc.

If the reader is not within hail of a dealer who handles the Winnipeg Ceiling & Roofing people's goods, he can get fixed up by applying direct to the company.

SOME FUNDAMENTAL PRINCIPLES OF TRACTOR IGNITION

Continued from page 18A

gether to form a battery. This is done in order to increase either the total voltage or the total amperage available, as the case may be. There are three methods of connecting cells to form a battery, namely, in series, in parallel, or in series multiple.

A series connection consists in joining the positive or carbon terminal of one cell to the negative or zinc terminal of another cell, as shown in Fig. 8. By connecting them thus the voltage is increased by the voltage of a single cell multiplied by the number of cells. In Fig. 8 five cells are so connected. If one cell has a voltage of one and one-half volts, the battery has a total voltage of seven and one-half volts on the external circuit. The amperage of the battery will be the amperage of one cell.

Result of Parallel Connection

Fig. 9 illustrates a parallel connection, in which case the positive terminals of all the cells are connected together and all the negative terminals are connected together. This battery should have a voltage equal to the voltage of a single cell, but an amperage equal to the amperage of one cell multiplied by the number of cells in the battery. In the battery shown, if one cell has an amperage of 20, then the amperage of the battery is 100 with a voltage of 1½ volts.

Fig. 10 illustrates the series of multiple connection. In this case two sets of cells are first connected in series, and then the two batteries thus formed are connected in multiple. The voltage is equal to the voltage of one cell multiplied by the number of cells in one battery, and the amperage is equal to the amperage of one cell multiplied by the number of batteries. In the figure there are two batteries of five series connected cells, giving a voltage of seven and one-half volts in the outside circuit, and there are two batteries giving a total of 40 amperes.

In the second part of this series of articles on tractor ignition the writer will discuss storage batteries.

SPARK PLUGS AND CABLES

BEFORE you start your engine wipe the plug insulation clean and dry of water and dirt. Then wipe the cable clean and dry also. Then see that the cable is not touching any part of the engine and that it stays supported in this way while the engine runs so that vibration will not shake it down on to hot parts where oil may get on it or on moving parts.

If you will observe these simple instructions each time you start the engine it will give you better results. Water, heat, dirt and oil are the enemies of high-tension systems.

The water shorts the plug, making it hard to start the engine. Oil eats up the rubber insulation of the cable and allows the spark to leak away. Heat bakes the rubber so hard that it cracks and through these openings the spark may jump to ground. Dirt on the plug helps to short the plug. The moral is:

Keep things clean. J. G. Z.

Answered

Cholly (handling his friend's revolver gingerly) — "I suppose, now, if this should go off while I'm holding it like this it would blow my bwains out?"

His Friend — "No, it wouldn't do that, but it would bore a hole clean through your head."

FITTING PISTON RINGS

IT IS not expected that a man will often want to fit new rings into the engine pistons of his car, but there may come a time when the required "know how" would be valuable and desirable. It is not a hard task to fit a set of rings into a piston. Any man with the usual amount of patience and mechanical ability can do the work acceptably, provided he knows what to do—and how to do it!

Having procured a new set of rings suitable for the pistons, go over each ring and each slot as shown in Figure 1, and determine which ring may best be fitted into which groove. There may—or may not—be a slight difference in the widths of the new rings and of the slots also. Sometimes the lower slots wear a bit more than the upper ones. Be this as it may, try the several rings against the several slots, as shown in Figure 1, until the wide rings, if any, have been portioned out to the wide slots, and vice versa.

Under no circumstances select a ring for any slot in which the ring will slide into the slot and permit any vertical movement therein. By moving the outer portion of the ring up and down, the looseness of the ring, if there be any, will be magnified, so to speak, and be very evident under the test mentioned.

After all the rings have been apportioned to slots, proceed with the grinding, as shown in Figure 2. This operation is really very simple. Procure a few sheets of emery cloth—one sheet coarse for the rough fitting, and a sheet each of medium and fine for the fitting and finishing of the rings—and use the emery cloth, as shown in Figure 2. Do not try to fit the rings with sand-paper. While it may be possible to do so, sand-paper is not so desirable as emery cloth for the purpose.

Having tried a ring into one of the slots, as shown in Figure 1, and found which portions of the ring must be reduced in thickness to fit the groove, lay the ring flat upon the coarser emery cloth, place the thumb and all four fingers lightly upon the ring and give it a slight circular movement upon the emery cloth — not a twisting movement of the ring, but a real circular motion, as large as convenient without getting over the edge of the emery

Fig. 1. TESTING A RING

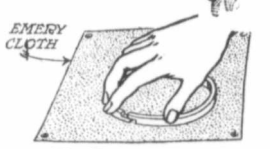


Fig. 2. GRINDING A RING

cloth. If the test shows that all parts of the ring need about equal grinding, space the fingers evenly round the ring and bear evenly upon it. But if some portion needs more grinding than other portions, let the fingers bunch themselves somewhat over that place and it will be ground more than the rest of the ring.

As the grinding proceeds, test the ring frequently by applying all parts of its circumference in turn to its groove, as shown in Figure 1. Change from coarse to finer emery cloth as the grinding approaches completion, and after the ring has been exactly fitted remove any sharpness of both inner and outer corners by rubbing with a bit of the finest emery cloth or, as some men do, with a fine file. This part of the work requires care.

Clean the rings thoroughly before placing them in their grooves. Also clean the grooves, and make

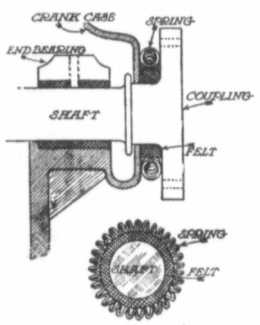
doubly sure that no emery dust gets in either the rings or the grooves. Oil the rings and grooves well before putting in the rings, and work the rings in the slots until you are sure that they fit well and that there are no tight or too lose places. If the former, grind them off. If the latter, throw away the ring and fit in another, and do it more carefully, so there will be no loose spots to waste compression, power and gasoline.

James F. Hobart.

STOPPING THE OIL LEAK

HERE is a trick worth knowing for those who are bothered with an oil leak that is wasting oil round the shaft, near the crank case. Good engine oil costs so much that it is well worth saving.

On my auto-truck engine I noticed a considerable drip of oil round the shaft where it comes through the crank case and connects with the clutch. I opened up the hand-hole plate of the case and I found that the oil was very low. I had experienced this loss of oil before, but I had never felt that enough could leak out to cause such a drop in the oil



height. I got a light and examined close to the end bearing and I noticed that the clearance of the casing hole round the shaft was a good sixteenth of an inch.

My first plan for stopping this leakage was to tie a piece of felt round the shaft, but after experimenting I hit upon the idea of cutting a strip of felt to fit round the shaft and holding it in place with a coiled spring. The spring causes it to pull tight all the time, thus working the felt packing up against the end of the crank case and closing the leak. The spring was obtained by cutting off a length of one like those used to close screen doors in summer—one that measured on the outside diameter three-eighths of an inch.

I think by a study of the accompanying sketch anyone will be able to understand the stunt.

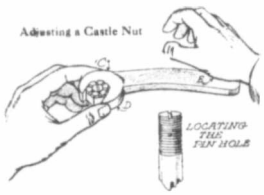
C. H. Wiley.

ADJUSTING CASTLE NUTS

WHEN a castle nut is to be screwed home and the cotter pin put in place, the operations should be done easily, quickly and without losing time in hunting for the hole, perhaps covered by one of the castle towers, and without having to turn the nut backward a part of a revolution in order to uncover the pinhole in the end of the bolt.

Two things are necessary in order to adjust a castle nut easily with no loss of time or patience. The first thing is to locate the hole in the bolt so that its direction may be known, no matter what may be the position of the castle nut. To do this, first clean the bolt. Wipe off all dirt and grease and clean the pinhole in the bolt. Next mark the location of the pinhole as shown in the figure.

To locate the pinhole place a bit of wire or a cotter pin temporarily in hole; then with a file or a hack saw make a cut in the end of the bolt, exactly parallel with hole. Then, when the castle nut



is being screwed home, the position of the pinhole may be always known by simply watching slot and stopping the turning operation when slot is fair with an opening between two of the castle towers.

But sometimes even an experienced workman will have trouble in turning the nut just far enough to bring the towers fairly off the pinhole. To adjust the castle nut easily and exactly, proceed as shown in the figure. First, place a well-fitting wrench upon the castle nut and turn it home as far as it will go easily. When it is judged that the nut can go perhaps no farther than the next opening, turn the wrench the remaining distance in another way. If it seems impossible to get the nut tight use a washer under it.

The figure shows how to adjust a castle nut. Place the wrench securely upon the nut, then hold the tool with the thumb and fingers of one hand, as shown at C and D. Then, using the fleshy part—near the base of the thumb—of the other hand as a driver, strike upon the end of the wrench, as shown at E, and the impact of the blows, though seemingly light, will drive the wrench forward and enable the nut to be moved a very short distance at a time until it is quickly brought fair with the pinhole in the bolt.

The same method of driving a wrench will also often enable a nut to be removed when the bolt turns round under a direct pull upon the wrench. For removing the nut from the mandrel of a grinding wheel or from a circular-saw mandrel, the method here described will do the business quickly and well.

DISKING MADE EASIER

I HAD long been bothered with soil clods clogging the disks of my harrow even when the mud guards were thrown into gear. After trying various schemes to obviate the trouble I noticed that some relief was secured by slightly changing the slant of the cutting blades of the machine. However, it was not until I conceived the idea of supplementing the mud guards with strands of wire that my harrow worked with maximum efficiency.

To carry out my plan I used ordinary baling wire, cut in two-foot lengths. One end of each strand was attached securely to the frame above the disks while the other was wrapped round the shaft between them and then twisted about itself so as to be firmly held in place.

With this arrangement the clods are thrown up by the moving disks and are caught and sliced by the strands of wire so that clogging does not occur. In no way do the wires affect the draft of the harrow, and they are even helpful when one is working moist, heavy sod land. Aside from dispensing with the necessity of frequently stopping the team to clean out the blades, the attachment seems to assist in making a more level seed bed.

C. A. LeClair.

Too Much of a Good Thing

A certain old lady was never happy unless she had something to grumble about, and her pastor tried hard to cure the propensity. One season her potatoes were the finest in the district. The pastor greeted her in the village street.

"Ah, Mrs. Sprodkins," he said, "you must be pleased this time. Everybody's praising your potatoes."

"They's purty good," cried the old lady indignantly, "but where's the bad 'uns for the pigs?"

JUST WHAT IS NEEDED

Simpson, Sask., Feb. 6, 1919.

IN reply to your letter of Jan. 15th asking for information regarding our tractor, I am sending you the following: Last April we ordered a 15-30 "Pioneer Special," made by the Pioneer Tractor Co. of Winona, Minn., known in Canada as the "Winona Special," and sold by the Winona Tractor Co. of Regina, Sask., and a four-furrow engine gang, with power lift, sold by the United Grain Growers.

The price of the tractor was $2,100 cash, and the plows, both bottoms and extra shares $353. The outfit did not arrive until June owing to the great demand for these tractors, so we did not do very much spring work with it. Our land here is very rolling with quite a number of rock. The soil is a black loam with a chocolate loam subsoil. In summerfallowing we pulled the four plows, plowing a good seven inches deep on the intermediate gear, which is two and a half miles per hour.

This land had not been plowed very deep before, so it was turning about three inches of subsoil. The land had also been disced and harrowed before plowing, which left the ground very loose, giving rather poor footing for the engine. With this load it would climb quite a good size knoll without changing to low gear. In doing this work it used about 3 gallons of kerosene per acre and about two-thirds of a gallon of lubricating oil per day.

In fall plowing it took about 2½ gallons of kerosene per acre, plowing from four to five inches deep. It has plenty of power to draw harrows behind the plows when plowing at that depth. We can plow an acre an hour with this outfit if the land is not too stony. In stony land there is quite a little time lost putting wood pins in the plows.

Last fall we purchased a rebuilt 28x44 Rumely Ideal separator for $1,200 to thresh our crop. We also threshed for two neighbors in order to get enough teams. We did not do any other custom work. The engine run this separator quite easily when it was fairly good threshing; if it was very tough it was a full load for her. The separator is equipped with a Ruth feeder, which seems to be a very heavy puller, so that if a lighter running feeder was put on the engine would have plenty of power under all conditions.

The crops were very light and badly frosted here this year, very few averaging over 9 bushels per acre, but straw enough for a 15 or 20-bushel crop. With this kind of grain and being short of teams, only having five and a pitcher, we put through an average of 725 bushels of wheat per day. While threshing the engine burnt an average of 28 gallons of oil; this includes a little gasoline for starting, and used 2-3 of a gallon of lubricating oil per day.

The repair bill for the engine last season was 75 cents. There were a few small repairs on the separator and plows, but five dollars would easily cover all the repairs on the whole outfit. The transmission, drive chain and all moving parts on this tractor are encased and run in a oil bath, which is a great advantage when working on the land, as it keeps the dust out and the operator knows that these parts are well oiled. The double opposed motor runs very smoothly, is practically free from vibration and burns kerosene without any trouble.

We are well pleased with the way this engine has worked, and no doubt an experienced man would get more power on less fuel than we did as this is our first experience at tractor operation. I expect to take a course in gas engineering before spring, as we think it will pay well for the time and money expended. This district is not an ideal place for tractor work on account of the rolling nature of the land and the amount of stone there is. A good deal more and better work could be done in the same time on level land free from stone.

The great wheat factory of Wm. Cole & Sons, Simpson, Sask.

Standard Stock Feed For Sale

DURING the war, for the purpose of assisting the farmers, the Department of Agriculture purchased a considerable amount of Standard Stock Feed (Recleaned Elevator Screenings). A large quantity of this valuable feed for hogs, cattle and sheep has been distributed and has given general satisfaction. Owing to the return of peace, and the approach of normal market conditions, the Department has decided to place at the disposal of the farmers its remaining stock, now in storage at Fort William. This is being offered in both the ***ground*** and ***unground*** form, at the following prices:

$25 PER TON
IN BULK
UNGROUND
F.O.B. Fort William

We believe that the feed is excellent value at these prices, and that it will pay stock feeders at different points throughout the Dominion to consider the purchase of a car lot or more.

$32 PER TON
GROUND
Packed in 100-lb. Bags
F.O.B. Fort William

What is Standard Stock Feed?

It is known to farmers as Recleaned screenings, or Grade A Screenings or Buckwheat Screenings. "We found," writes a Carleton County user, "that our live stock took to the screenings quite readily; our experience with it was eminently satisfactory." Many other stockmen have given expression to similar opinions.

The Analysis of this feed is as follows:—

Protein	14%
Fat	5%
Fibre	8%

Note—Standard Stock Feed contains a higher percentage of protein and fat than either wheat or domestic buckwheat.

Standard Stock Feed has been tested in feeding trials at the Brandon, Lacombe, Ottawa, Cap Rouge and Lennoxville Experimental Farms. For finishing pigs, it has been found fully equal to barley. It can be used for all classes of stock with very economical results.

Comments on Feeding Value

Standard Stock Feed is an excellent ration for swine, a high feed for dairy cattle, and for fattening lambs has proven very valuable. It has also given very satisfactory results with fattening steers, fed with or without other meals and grains. For poultry it has been found excellent and may be fed either whole or ground in hoppers.

Prospective purchasers must not be misguided by the appearance of Standard Stock Feed either whole or ground. The unground product is seen to contain a quantity of wild buckwheat. This feed has, however, a feeding value almost equal to cultivated variety. In the ground form the meal is somewhat dark in appearance, due entirely to the presence of the wild buckwheat. However, the feed is quite palatable and is readily relished by all classes of live stock. Experiments have shown Standard Stock Feed to possess a value equal to that of good meal mixtures of much greater cost.

STATE CLEARLY

Purchasers should state clearly in their orders whether "ground" or "unground" screenings are required.

OTHER FEEDS

The Department also has a supply of old sample grade mixed corn and Old Process Linseed Oil Cake Meal at Montreal, to be sold at market prices.

Write for particulars.

TERMS Sight Draft with Bill of Lading attached, payable on arrival of car. Orders should be sent direct to the Feed Division, Live Stock Branch, Ottawa. Feed may be purchased in straight car lots only, in bulk **unground** (25 tons to car); in bags **ground** (25 tons to car). Get your neighbours to co-operate with you and take advantage of this opportunity.

All orders will be filled strictly in the order they are received, and as the demand is likely to be quite heavy, orders should be placed at once to insure quick shipment.

FREIGHT RATES

Freight rates per 100 lbs. ground or unground from Fort William to several representative points are given in order that you may get some idea of the cost delivered at your station.

Brandon 17c.; Calgary 28c.; Edmonton 29c.; Moose Jaw 22c.; Saskatoon 26c.; Toronto 30c.; Montreal 30c.; St. John, N.B. 44½c.; Moncton 44½c.; Halifax 45½c.

Write for Pamphlet No. 18 giving full particulars about Standard Stock Feed, also Samples.

Live Stock Branch (Feed Division)

The Dominion of Canada Department of Agriculture

OTTAWA, CANADA

660

On a farm of 480 acres or more the gas tractor is just what is needed to do the plowing which is the slowest of all farm operations and requires so many horses, some of which are not needed at other times during the year, but still have to be fed and attended to, whereas the tractor does not require any feed or attention when idle.

We would not advise anything less than a four-furrow machine, however, as anything less seems very little faster than a good big outfit of horses. Then, again, in threshing a fair size machine is needed so as to do it as quick as possible when the grain is ready and while the weather is good.

Hoping the above is along the line of information desired, we are,

Yours truly.

Wm. Cole & Sons.

The "Heider" 9-16 pulling two "Rock Island" plows.

A REAL GOOD INVESTMENT

Rosenfeld, Man., Jan. 29, 1919.

REPLYING to your letter of the 15th inst., re experience of gas engines, we beg to inform you as follows:

In the fall of 1917 we purchased a 15-30 Minneapolis gas tractor and a 4-furrow Grand Detour plow. We have used this tractor for most anything: plowing, threshing, discing, chopping, sawing wood and cutting feed, etc. The first fall we used this tractor for plowing only, as we bought it after the threshing season.

The tractor is of the four-wheel type, and is so arranged that the front and the right drive wheel run in the furrow when plowing. This is a very good feature because it eliminates packing of soil, as there is only one drive wheel to run on the land and, secondly, the main drive that runs in the furrow has got a firm footing. For plowing I would prefer a little more power as our land is of a heavy clay, and so when plowing deep (from 5 to 7 inches) we can only use three bottoms.

When plowing we use from 20 to 25 gallons of kerosene in a 10-hour day and about 2 gallons of lubricating oil. When threshing we use gasoline only as it causes less trouble, and use from 15 to 20 gallons in a 10 to 12-hour day, using the same lubricating oil as for plowing.

We use a 26-46 J. I. Case separator for our engine, and I may say that it handles the separator nicely. The J. I. Case, I think, is the ideal separator for one of these smaller engines that are used so much these days; because it runs a considerable lot easier than some of the other makes and still does a fast and a clean job. Thirdly, it's one of the simplest separators on the market.

We have threshed about 14,500 bushels this fall, and averaged about 1,000 bushels a day. The best that we did was 2,000 bushels of oats in one day of about 10 hours.

For discing we use two ordinary disc harrows, 7 feet wide, and weight them with two ground bags on each harrow. This is a light load for the engine going in high gear (3 miles an hour).

Our repair bill has been considerably high this summer on account of buying a new magneto. The cost of this was $125. The type that we use on our engine was a K.W., and we had some trouble with this while threshing, so we had it fixed, but it did not seem to help much because some way or another the spark was not the way it should be. We consulted the mechanic in our district and he advised us that if we wanted to run steady we

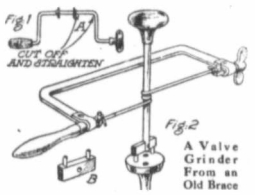
should have a Bush magneto put on (of course, the mechanic was an agent for this make). We followed his advice, because being in the busy season and not wanting to lose much time. But, still, this Bush did not seem to help enough, so I went to work and put in a new set of spark plugs, and after this the engine started and worked as good as ever before. This leads me to the belief that it sure pays to have an experienced man running your engine.

I think it's a real good investment to have a tractor of the size from 12 to 15 h.p. with separator on a 400 to 500-acre farm. Supposing there are about 12 horses to help along in spring work, as it usually is too wet early in the spring for using the engine for seeding purposes, and we know that early seeding is very important, as in the last two or three years the rust has done such a terrible amount of damage to late grain.

Yours truly,
D. J. Klassen.

HANDY VALVE GRINDER

THE sketch shows how a very handy valve-grinding tool can be made from a part of an old worn-out bit brace, with the aid of a hacksaw frame. The section A of the bit brace in Figure 1 is cut off and straightened out. A driving piece fitted with two pins is made, as shown at B, and this is secured into a slot filed in the end of the shaft or rod, Figure 2. A stout piece of cord is used in the hacksaw frame, having a round turn round the grinder rod, as indicated, by a forward and backward movement. The valve is first turned to the right and then to the left, and thus correctly grouped.



A Valve Grinder From an Old Brace

Chas. H. Willey.

William Was Patriotic

"William," demanded Mrs. Whitewash, "whaffor you go an' put on dat noisy vest?"

"Mandy," declared Mr. Whitewash, "'cause Ah'm tryin' t' help Mistah Hoover lick de stuffin' out'n de Kaiser by keepin' a check on mah appetite!"

As a general thing when a pompous man casts his bread upon the waters he is chagrined if it doesn't make a big splash.

This Man Speaks With Authority

Smiley, Sask., Feb. 11, 1919.

SUPPLEMENTING the enclosed questionaire, I should like to say that the reason I have underlined the items in No. 10 (breaking, summerfallow, discing, harrowing, floating, seeding), is that I have no horses, and do all the work with tractor (a Sawyer-Massey 11-22).

If I had horses I should use them to harrow, drill, haul grain to town, and for the binder. As the harrowing and seeding are dusty jobs, they are not the jobs for the bearings and finer mechanism of the engine.

Against No. 16—"Trouble"—I have stated spark plugs, dirt in carburetor. This arises from several causes, such as broken wires, magneto distributor dirty, circuit breaker not opening, or too far open, governor not running nuts and bolts tight, which is 50 per cent of the trouble.

Every operator ought to have a short course in an engine school to do justice to the tractor, as the tractor has no brains and does not know when it is not doing good work. Another word on plowing: Do not plow when shares are dull; sharpen them up and keep them sharp. It pays just in the use of fuel alone; besides, there is extra strain on the motor, increasing the pull.

Use the best oil, too; the cheap stuff ruins your engine.

I forgot to say I had my engine on a crusher, and it ran like a top; have also hauled granaries, etc., around with it; does all these jobs splendidly.

About overloading: Too many people do this and ruin the engine, sopiling its reputation. Another

J. C. Byer, Smiley, Sask., marking out with disc plows. Steering device his own make.

free, more oil, fine oil at that, 3 in 1, or better if you can get it. Keep governor clean from all dirt.

Nos. 17 and 18—Repair Bill—If good care is taken the repair bill will not be very high. Use the tractor as your best friend, like you would a prize horse, and it will be good for a long time. Do not throw the gear liners in with a jerk; slip them gently like a car, then you are not likely to break something and lay up for a week waiting for repairs.

Keep a few extras on hand, such as oil pump, springs, valve springs, valves, hard oilers and bolts. Keep nuts tight; replace bolts as soon as lost one is noticed missing.

No. 27 — Reasons for lack of tractors in community — One great reason is the average tractor man does poor work with his tractor, especially in plowing. This disgusts a good farmer, and he says if that is tractor work, "I'll have none of it." Look up, tractor men, make your object perfect work; give the tractor the credit it deserves and it will do good work if the operator steers it straight and has his machinery hitched properly. Keep all the reason farmers do not think tractor any good: Good judgment is needed.

The plow I use is a John Deere No. 5 Pony engine. This plow has put all the other makes in the shade around here. There are 7 or 8 different makes about here, but none can touch the John Deere for good work and stand up to the job on this heavy land. My plow and plowing gives me my own recommendation. Can get more work than I can do; have two or three jobs on list now; waiting for the snow to go.

I guess I'll ring off now as you may think I am giving you "hot air," but these are facts nevertheless.

Yours respectfully,
John C. Byer.

Comrades

"Some men have no hearts," said the tramp. "I've been a-tellin' that feller I am so dead broke that I have to sleep outdoors."

"Didn't that fetch him?"

"Naw. He tol' me he was a-doin' the same thing, and had to pay the doctor for tellin' him to do it."

One Dollar-and-a-Half spent on the "Canadian Thresherman and Farmer" will give you the best education on power-farming you can buy at any price.

10 Searching Questions About the Maxwell and 10 Frank Answers; Read Them, for They May Decide Your Choice of a Car

Q.—Reduced to one point what is the single greatest thing you can say about the Maxwell?

A.—It is reliable.

Q.—What makes it reliable?

Q. The chassis was designed five years ago to be extremely simple. Then we kept on making and making Maxwells all alike on this chassis year after year until now we have made 300,000 of them. Our policy is to do one thing well and thus obtain perfection.

Q.—Have you changed the original design any?

A.—Not in any single fundamental. We have added an improvement here and there from time to time—but no changes from our original program.

Q.—Have there been any great chassis improvements in the last 5 years?

A—We believe not. There have been multi-cylinder cars and multi-valve cars; but in a car sold in Canada under $1300 we do not believe them to be practical.

Q.—How much of the Maxwell car do you build?

A.—We believe that we manufacture more of the parts that go into our car than any other manufacturer.

Q.—Why do you do this—can you not buy parts from others cheaper than you can build them?

A—In some cases yes; but not so good as we can build them. In other cases no, for besides our 7 great plants in the United States—an investment that runs into many millions of dollars—we operate a big Canadian plant at Windsor, Ont., carry a tremendous inventory, have a rapid "turnover" and a large one. Besides, we make parts for cars other than our own including some that cost in excess of $4000.

Q.—Has the Maxwell every modern equipment?

A.—Yes, even including the carrying of the gas tank in the rear.

Q.—Have you improved the appearance of the Maxwell any?

A.—Yes. We have made a vast improvement in the last few months—so much so that many persons thought we produced a new model. Note the illustration. This is drawn from a photograph without the slightest exaggeration.

Q.—How about parts?

A.—There are many hundreds of thousands of dollars in parts carried by our Maxwell dealers all over Canada.

Q.—Will you reduce the present price if I buy a Maxwell now?

A.—No. The present price is guaranteed until July.

Price $1275 f. o. b. Windsor, Ont.

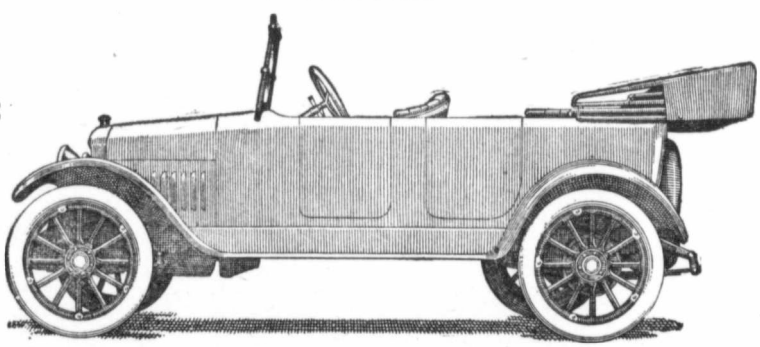
War Tax to be added

MAXWELL MOTOR COMPANY OF CANADA, Limited

WINDSOR, Ont.

Maxwell

More miles per gallon
More miles on tires



OUR WOMEN FOLK

CONDUCTED BY PEARL RICHMOND HAMILTON

KNIGHT'S ERRANT

They came, expectant, at the call
Nor lingered long to count the cost,
Knowing that if their hearts should fail
Their highest goal of life were lost.

Not theirs, it was, alone to keep
The honor of the Flag unstained,
But to defend the higher claim
Of Him, whose cause had been profaned.

Through rack of blood and fire they went,
These champions of a high emprise,
The Way of Sacrifice they trod,
The light of sunrise on their eyes.

And those strong souls who had not known
The Christ, before the call of war,
Saw Him upon the field of death,
With clearness never known before.

And all are one, for creed and caste
Are merged to serve the common good
And by their blood the world shall live
In universal brotherhood.

—P. F. Atkey.

THE PRAYER

By Lillian Malfield Roberts

Dear God, I am a woman—womanlike,
No weaker and no stronger than the rest.
And that is why I ask this prayer to-night
For help and guidance in the little things.
If I could feel your hand upon my lips
On days when I am sick or merely tired
Of all the little trivial worrying things,
Perhaps the stabbing word would not dart out
To wound my child, and turning, cut my heart.
I do not want to nag. I only want
Guidance to understand that each of us
Has his small troubles, and that mine are not
Harder in truth than other women bear.
And when the little troubles vex me so
I am too prone to turn and cry them out
In maudlin tears upon my husband's breast.
Keep me from this!—he has enough to bear.
And one more prayer that I would make to-night;
If I could only see the difference
Between the really big and little things!
I do not ask for better—or for more—
I only ask for this. God keep my soul
From growing petty. It will be enough
Help me in this, and I am satisfied.

A HOME SONG

I read within a poet's book
A word that starred the page:
"Stone walls do not a prison make,
Nor iron bars a cage!"

Yes, that is true, and something more:
You'll find, where'er you roam,
That marble floors and gilded walls
Can never make a home.

But every house where Love abides,
And Friendship is a guest,
Is surely home, and home-sweet-home:
For there the heart can rest.

—Henry Van Dyke.

"BETTER LATE THAN NEVER"

The following address was delivered at the 1918 H.E.S. Convention by Mrs. W. J. Rowe of Manitou. A request came from the delegates at the closing session to have the address printed and placed in the hands of each society. Although more than a year has elapsed since this talk was given it was found at the recent convention that members from all over the province were still asking for this same address.

WHAT CANADA DEMANDS OF HER WOMEN

By Clarissa Rowe

THE subject, "What Canada Demands of her Women," was prompted by the very earnest desire which I believe is in the heart of each woman to help bear her share of the added burden which the war has laid upon th shoulders of the stay-at-homes. In Canada the only women who come under the head of the military are the nurses. There are many problems confronting the women of Canada today—in fact, they are coming so thick and fast, they are fairly tumbling over each other—but the paramount one, we believe, is how best we may serve our country in the hour of dire need?

Pilgrim Parents

Let me take you back to the beginning. When our forefathers, for some reason or other became dissatisfied with conditions in the Old Lands, and decided to strike out, and make a home in the New World beyond the seas, packing up their few treasures, and tying them in a red handkerchief, they set sail for the land of promise. The trip in old sailing vessels, tossed hither and thither on the waves, lasted anywhere from six weeks to six months. Finally reaching a port in Canada, they disembarked, counted their treasures, which in many cases had increased on the voyage—the stork following the vessel and aiding immigration. These old sailing vessels made only annual or semi-annual trips, and not even the prospect of an increase in family, deterred these hardy old pioneers from braving the dangers of an ocean voyage in quest of making a better home for themselves and their families.

These Men and Women Were Not Afraid

Then began the long trip up country. Mother and children tucked away in an ox cart, while the father walked by the side, coaxing and prodding on the lazy oxen, when finally they landed some where, picked out the best looking bush lot they could find, and started to subdue the wilderness. And we have never grown weary of hearing our mothers and grandmothers tell of the privations and hardships which they underwent in the rearing of their families; the loneliness, the anxiety, when the man of the house went to the nearest grist mill, sometimes 75 miles distant; the fear that wild beasts might devour them, and the yearning and homesickness for the friends and loved ones left beyond the seas. But gradually other settlers came in, and over in the distance above maples, curled up the smoke from another log shanty, and the first woman who came did not feel nearly so lonely, for across the clearance was another woman, with her man and little family going through just the same experiences which she had endured a few months previous. And the most natural happening was that these two women became friends. They knew each others' joys and sorrows, if a child was ill in either home, it mattered not which, both women were there to tend the sick, when their children were born, one woman waited on the other. It was the most natural and humane thing they could do, for they were far from doctors; and so sprang up the community spirit, which seemingly we have lost or is dead, and which the University Extension Service is endeavoring to resurrect, by sending out college professors to talk to the people of town and country on this subject. And with all due respect to the college professors, one old grandmother in Eastern Canada has forgotten more of the true spirit of community life than all the present-day professors know. The new community interests are for economical and commercial purposes, while the old, sprung from the spontaneous desire to help the other fellow. This is the type of woman who has bred the men, who at the first call for help from the Motherland, cast aside every weight and hindrance, and went forth to do or die. These old pioneer women were not afraid; neither is their progeny.

"Lawks, this war do open one's eyes, don't it? Fancy your son writing from Jerooslem—I always thought Jerooslem was in Heaven!"

The Log House Days

It may be a long stretch of imagination from the days when the early settlers in Canada raised log barns and log houses, had husking bees and quilting bees and killed pigs together, to August the 4th, 1914, when the cry came across the water, from the dear old Homeland, "Come over and help us." We all remember the early days of the war, when the recruiting officers could not handle our men who clamored for the privilege of helping the Mother Country, in defence of little Belgium. The world wondered why Canadian men were so anxious to go overseas, and I believe we surprised Great Britain herself in our zeal to help. Germany thought Canada too far away to take a hand in the fight, but to use a term which is more expressive than elegant, "she had another think coming." To do otherwise than go help redress the wrongs of Belgium would be unworthy of those fearless ancestors of ours, who braved all the rigors and hardships of life in a new country, to give into our keeping the land which we now possess and which we mean to hold—our own Canada. There have been people mean enough to say, that the younger men went for adventure, the older men to get rid of their debts, and if married, to get away from their wives.

One thing we do know is that they have all made good. Many will never return. These men were not afraid of anything; they were not even afraid to die.

The Voting Women

The part the women played in the memorable election of December 17th, 1917, was as effective as it was unselfish. The women had no axe to grind except to send speedy help to their loved ones in the trenches. One of the most pleasing features of the women's campaign was the unselfish work done by women who were unable to vote—through no fault of their own, but owing to the accident of having no male relative who could serve. True there were some women who refused to help, and to seem to have a grouch because they had no vote. They remind me of the women who have no children, and who for that reason cannot take any interest or pleasure from the children of other women. If women are going to measure up to the high standard set by the men who have laid down their lives, we must be big enough and broad enough to sacrifice even the casting of a vote, when the honor of our country is at stake. There is no room in Canada today for the selfish or jealous woman. If we have in the past failed to live up to the standard of these hardy pioneer women, who made their homes and reared their families under trying circumstances, then it is high time that we start putting our house in order, for as surely as night follows day, there are dark days ahead for the women of Canada.

The War

As more and more of our young men are being called to the colors, we find great gaps in the industrial and commercial life of our country which must be filled, and if there are not enough men left behind to do the work, then it is plain duty of the women to take the places of the men. Here and there all over Canada, particularly in this western country, are women taking the place of men, on the farm and in the office and doing the work successfully. No longer does the general public think that a woman has not the ability to manage a farm, or business all by her-

self, for it is being demonstrated right along since the war started. And wonderful though it may seem, the work of the home is being carried along as well as the business. Women are not giving up their home for this outside work, for they find more than ever the need of their own fireside when the toil of the day is over. Rest assured that the foundations of the home are not tottering because women are finding work outside the big world. It is my firm belief that the home is on a surer and safer and saner basis to-day than ever before.

Here is a recipe I got from a woman, who has been managing her own farm since her husband enlisted three years ago. Pocket your pride, get into a pair of overalls and go to work. This woman and her daughter do all the work, plowing, harrowing, seeding, cutting, stooking, getting their wood out of the bush in the winter. They have paid their debts every fall and kept a family of five children well clothed, well fed and attending school. That is one case right at home; there are many more throughout Canada. The women of France and their sisters of the British Isles are doing practically all of the farming, and in England at the present time there is more land under cultivation than ever before. General Haig says: "There is no better soldier in France than the Canadian." King George, when decorating a Vancouver lad for bravery a few weeks ago, said, "I would be proud to be a Canadian soldier," and I believe the women of Canada are as brave as her men.

We women are measured not by our ability to talk and pass resolutions, but by the use we are in our own homes and in the community. I am presuming that each woman has a home—consequently her larger interests are there, but she cannot escape the demands made upon her, to help the community in which she lives. Women there are who have so many outside interests that they have no time for the home, and, on the other hand, there are women so engrossed in their own homes they have no time for public affairs. One state is about as bad as the other. Whether you live in the country or in the town, hundreds and sometimes thousands of dollars are spent in the upkeep, and women are chief spenders of this money. Where are we spending all these dollars? Are we spending in our own community where it is going to do the most good? Or are we spending it hundred of miles away, to help build up the large centres? The war has revealed certain defects in our dealings one with another, and this is one of them. We have been hearing so much the last few years about a square deal, and giving the other fellow a chance, that we know that we are not living up to the light that is in us, if we pass up the man or the woman in our own community who is trying to make an honest living.

THE FOOD BOARD
"Are you the Butter Committee?"
"No, we are the Dried Fruits."

I suppose it would be a direct insult to be told that we are not honest, yet here are some of the things we do. We look for **good, cheap** articles. To get good things is all right, but as a rule they are not good and cheap at the same time, and if they are we are getting something for nothing; we are dishonest. When we are quoted a price we take it for granted it is about right, and it is mighty poor business to ask for a cut rate. We all know that many of our good cheap products are the result of sweated labor. Let our motto be, "Live and let live." Be willing to pay the price. From every small community in this country goes every month thousands of dollars for goods which could be bought at home. Results are beginning to show in deserted towns and abandoned farms. That is why the College Extension Service are sending out professors to talk to us on this very subject. They see that we are cutting our own throats. They are more alive to our own interests than we are ourselves.

The war is changing our social conditions, breaking domestic ties, and upturning old forms of convention. In men as well as women there is being bred a spirit of independence, that is likely to change many of our habits and customs. Women are entering employments heretofore thought only fit for men, and while many will return to domestic life when peace comes many will continue in their new calling.

There is work to be done, and the

public is not finicky about who does it, whether man or woman, so long as it is well done. The farms are demanding more workers, doctors are run off their feet, schools are vacant for want of teachers churches are being closed for the same reason.

We have women teachers, doctors, lawyers, dentists, but not enough to supply the demand, but no woman adult qualified to teach and preach the Gospel of Jesus Christ.

But we already see signs of a change. In England, where the revolution in the status of women has been accelerated by the war, permission has been granted women, under quite strict conditions, to address their own sex in the churches. The objection to this has been so strong, that the bishops who granted this permission have been compelled to withdraw it. But in the future there will be a place for the regularly ordained woman-preacher.

It is like the franchise, it is bound to come. Woman's qualities seem to particularly fit her for the work. This is the last prejudice against women to be overcome. We all look forward to the day when we shall not need two, three, four and sometimes five churches in one small centre. The men who return from the war are not going to perpetuate religious differences. They have learned that faith, hope and bravery are the prerogative of no particular school of theology, and that religious differences are not conducive to human brotherhood.

Changes are coming in our religious as well as in our social life.

Never before in the history of the world have there been such opportunities for women to develop their individual inclinations along lines of work suitable to the several bents.

Carpentering, architecture, shipbuilding, electrical work as yet are almost untouched by Canadian women, and again the work seems fitted to the female worker who is both precise and exact. Men are being taken from these posts and there is no reason why women cannot do the work if only given a chance.

That is all the Canadian woman asks—a chance to help out her country in war time, and I believe she will measure up to the standard of her splendid men.

The Canadian men are not afraid to face the Hun hordes and engage them even when they know it means sure death and the women at home are not afraid to attempt any work, no matter how hard it may be.

Because we are one or two generations removed from those thrifty and self-sacrificing women of old who helped make Canada what it is to-day, is no reason that we are not equally courageous. Canadian women love their country and are ready and willing to do any work or make any sacrifice in order that we and the generations to come may be free people.

The years ahead do not look so easy and care-free as in pre-war days, but for the future we are not afraid.

For out of all this chaos must come construction; from this waste will come thrift; from this black night of doubt will come a stronger faith.

This is God's way of purifying the world; it is the Divine plan, therefore it must be right. This is what sustains women in these trying times.

WOMEN IN THE WORLD'S PROGRESS
THE EDITOR'S WIFE

WHY do I give her first place under the heading of "Women in the World's Progress"? **Because she is the mother of a soldier.** For four long years her heart has been full of anxiety—hope—expectancy for her brave son overseas. Should not these courageous mothers be recognized as the most important women in the progress of the world's history?

The mother of Lieut. Jack Duthie created an atmosphere in the home that developed strong men. Mothers are the sculptors of men. A mother's sphere in the home is so wide that many women are not large enough to fill it.

There are only two kinds of homes—happy homes and unhappy homes. It takes a woman possessing the noblest qualities of womanhood to produce the harmonious tune of life that vibrates throughout the home and out into the world till men overseas are blessed and helped with that fine spirit of comradeship from the soldier son of such a mother.

The making of a happy home is the most important work before us in this reconstruction period. Mothers who raised sons that have "shown us God" these past four years are women civilization crowns as queens of true progress.

We see much of publicity given to women before the public eye—we praise their work—we laud them to the sky—but the women whose influence will bless the next generations—who are they? Mothers of men. Their names may never be in print. I have never read the name of the mother of Lieut. Jack Duthie in print. She gave to the world a noble son and her influence will never die.

Some of our readers gave sons who will not return, but their influence will live on and on in the lives of other men who were touched by them. These mothers, too, will live forever in their influence. Mrs. J. D. Duthie is the mother of a soldier. May God bestow His richest blessings on the mothers of soldiers—everywhere in this great Canadian country. They well deserve first place on the roll of honor in woman's progress, for they moulded the men that made it possible for England to keep her word of Principle.

She kept her pledge to Belgium!
This song
A free earth sings throughout each day and night.
She paid her pledge when it fell due.
The wrong
Of evil could not turn her from the might
Of her true word. This sceptered nation hurled
Her all into Love's scale with naught to gain
Except the freedom of a fearful world
From war and wrong and poverty and pain.
She saw the vision of a glad earth blest
With lasting peace, with heaven's work and rest.
Her pledge was paid in full when it fell due.
The word she gave to Principle was true.

She kept her pledge to Belgium!
Her men
Fought valiantly in Flanders' mud and rain;
Her women sought the tasks of slaves again.
All England paid that no more war or pain
Should strike at earth. The vision of the King
Who reigns o'er all, she saw by night and day—
A world redeemed from fear and suffering.
Her battle cry became the words we pray:
"Thine is the kingdom!" This her bugle call—
"Thy kingdom come!" Thus England fought for all,
And paid in full her pledge when it fell due.
Thank God, her word to Principle was true!

MANITOBA WOMEN'S INSTITUTES ADVISORY BOARD MEETING

THE Advisory Board of the Manitoba Women's Institutes met on Friday, March 28, in the Legislative Chambers. The members present were: Mrs. H. M. Speechly, Winnipeg; Mrs. D. Watt, Birtle; Mrs. G. T. Armstrong, Manitou; Miss A. F. Playfair, Hartney; Mrs. Jas. W. McQuay, Valley River; Miss Helen Macdougall, supervisor Home Economics work; Mr. S. T. Newton, director of extension service.

Mrs. Watt was unanimously elected chairman of the board, and Mrs. Armstrong was appointed secretary-treasurer.

Among the subjects which were discussed the following items are of particular interest:

Various changes in the constitution necessitated by the change in name from Home Economics Societies to Women's Institutes, were discussed, and recommendations regarding same were prepared for the law amendments committee.

It was suggested that we hold a number of district conventions throughout the province, the arrangements to be made by the extension service.

Mr. Stratton, of the Department of Education, addressed the board, suggesting ways in which the Women's Institutes might render assistance to those schools composed largely of non-English pupils.

NEWS NOTES FROM OUR INSTITUTES

THE winter has been most discouraging in some ways on account of the health conditions prevailing, which have prevented the societies meeting as frequently as they wished. Notwithstanding this fact, in looking over the reports which have come in, we find some very interesting items. Some of the outstanding ones are here given:

Austin—Has decided to adopt a French war orphan as their special charge for the next two years. They are also taking steps to have a district nurse established in their community.

Arnaud—Reports having a number of talented members who favor them with items at their regular meetings. They have a large number of girl members, and these girl members often render choruses at the meetings. After their February meeting their president gave a Valentine tea. At their March meeting they had a meat canning demonstration, and the rollcall was responded to with Irish jokes.

Basswood—Remembers all who are sick, whether they are members of the society or not. Their sympathy is expressed by sending flowers.

Balmoral—Is much interested in village improvement and they are taking steps to establish a park this year.

Beulah—Has started having community singing at each meeting and find it most enjoyable. They are making arrangements to instal a McGill travelling library in their community.

Burnside—Is interested in the Children's Aid Society, also a keen interest is taken in public matters.

Crandall—Is keenly interested in Boys' and Girls' Club work and is assisting the local club in every way possible. They have installed a "hot lunch outfit" in the school, and are making an effort to have a gymnasium installed in the basement of the High School.

Dugald—Is interested in the Winnipeg Children's Aid Society. A donation of $50.00 and four quilts is the start for this year's work. Socks to Tuxedo and twelve dozen eggs to the Military Convalescent Home are other generous contributions.

Dauphin—Has opened a new rest room. The rural council gave generous support, granting $1,500.00. The Town Council paid for the furnishing of the room.

Edrans—Is planning to establish a library and is also interested in Boys' and Girls' Club work. They are planning to organize a club this spring.

Emerson—Is so busy that they keep their local paper supplied with interesting news notes. They find their new rest room a very enjoyable social centre for Saturday afternoon teas. They give generous help to Red Cross, Belgian Relief, the Khaki Home in Winnipeg and other worthy causes.

Eden—Is interested in the live topic of conservation of health, particularly with reference to child welfare. They are studying the subject of suitable recreation for their young people.

Flee Island—Is considering securing a bronze tablet as a memorial to their soldier boys.

Gimli—Has given a contribution to Serbian Relief. They are making arrangements to provide accommodation for returned disabled soldiers for the summer months.

Lyleton—Has responses to the rollcall taking the form of a quotation from Longfellow or Tennyson. They are planning to establish a Boys' and Girls' Club and are assisting the local Girls' Basketball Club.

Minnedosa—Has moved its rest room to newer and better quarters. They received increased grants and have demonstrated that the rest room is a most valuable asset to their community.

Manitou—Is interested in improving the sanitary conditions of their town, and also hope to reopen their rest room.

Morris—Receives the interest and support of their local paper, which they acknowledged by sending a letter of appreciation and a cheque after their annual meeting. They have forwarded a box of provisions to the Winnipeg Children's Aid.

Melita—Had the members of their Boys' and Girls' Club entertain them at one of their meetings. The meeting was pronounced a great success.

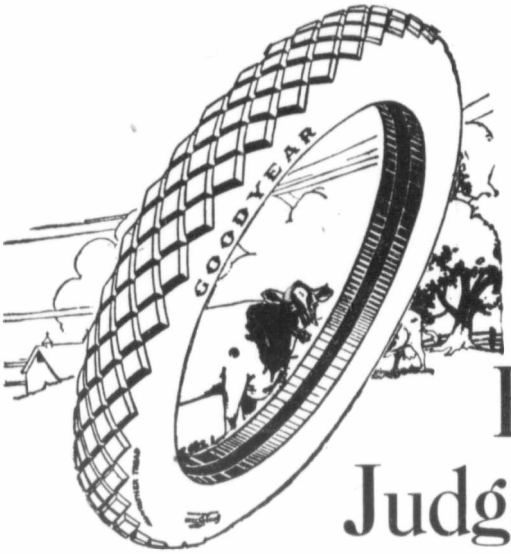
Pilot Mound—Is discussing a community centre. They have been allotted the care of Birch River S.D. as their special charge.

Rosser—Supports two French war orphans and has organized a Boys' and Girls' Club in their locality.

Rivers—Has forwarded a box of clothing to the Salvation Army, Brandon, also clothing for French refugees. They have appointed special committees for special work such as rest room, floral, reception and library committees.

Roland—Has adopted a French war orphan. They have donated $10.00 to their Boys' and Girls' Club as well as $50.00 to the Serbian Relief.

Shellmouth—Had children's sayings in response to the rollcall at one of their meetings. These were most entertaining and called forth great applause. They are interested in a war memorial, and



How Do You Judge a Holstein?

YOU wouldn't buy a milk-cow at so much a pound. No, you want to know how much milk she will give. A cow at $200 might be away cheaper than one at $125—certainly the real producer is the one the prosperous farmer buys.

Now, look on your tires as producers.

Judge them as you judge Holsteins.

You know absolutely that some tires give more miles of service than other tires.

You know that the tires that give the most miles per dollar are the best buy.

Then buy your tires on the cost-per-mile reputation.

Goodyear Tires built their world-wide business because they give that low-cost-per-mile. Don't let the lowest FIRST-COST TIRE warp your good sense of economy and satisfaction. Look up the Goodyear Service Station Dealer and invest in Goodyears.

The Goodyear Tire & Rubber Co.
of Canada, Limited

GOODYEAR
MADE IN CANADA

called a public meeting to discuss the subject.

Treherne—Has adopted two French war orphans. In addition to this work a number of the societies have held successful short courses in dressmaking, millinery and cookery.

Transcona—Had a style show after their short course in dressmaking. The last evening of the course they had a public entertainment; those who attended the classes wore the garments they had made, and a most enjoyable programme was provided. The evening was voted a very great success.

What the New York Call characterizes as "the loneliest job in the world," is the job chosen by three Wyoming women who are sheepherders—not shepherdesses of the days of Watteau—on the ranch of B. J. Reno, Campbell County, Wyoming. Each girl cares for 2,500 sheep.

Five women cow testers have recently been appointed by dairy agents of the United States Department of Agriculture, co-operating with the state agricultural colleges and the state dairymen's associations. One of these has been placed in Iowa and the other four are in Wisconsin, where the first woman cow tester in the country is now starting her second year of work.

The St. Louis Women's Council has opened down-town offices for a carefully worked out Americanization campaign. A special effort is to be made to reach alien women and their families and to enlighten them on the benefits and opportunities of the United States. The work is under the immediate direction of Bagdasar K. Baghdigian, a native of Armenia, now connected with the Missouri School of Social Economy.

The Farm Garden in Spring

Contributed by Donald MacVicar

Portage la Prairie

A GREAT deal of loss and labor can be avoided in handling the farm garden if the necessary operations are wisely planned ahead.

If the garden has been manured and ploughed or dug in the fall, it should be thoroughly well harrowed as soon as the condition of the soil permits, if not ploughed in the fall, all the surface rubbish should be collected and either burned, or made into a compost heap. It should then receive a coating of thoroughly rotted manure, giving a heavy coating to the part where gross feeders such as cabbage, turnip and cauliflower, etc., are to be grown, and a lighter coating with such woodashes and soot as are available to the land intended for carrots, onions, etc, It should then be ploughed at least six inches deep, packed and well harrowed.

Pruning, planting, and selling out of cuttings should be done before the garden is sown and planted. The cuttings should be selected from the best bearing bushes, and should be about 12 inches in length. Remove all the buds but four at the upper end, plant them firmly in a well shaded trench about 6 or 8 inches apart, so that 5 inches are underground and the lowest bud at least two inches above the ground level.

The cutting prepared in this way produces a bush with one stem, and can therefore be kept free from dandelions and other weeds. When planting out put the black currant and gooseberry bushes in the dampest part of the garden as they require more moisture than the red and white currant. If there is a strawberry patch put down the garden line and even up the rows, taking the strongest plants to form a new row or two, placing the plants firmly in a shallow trench with the roots well spread out and the crown just above the ground level.

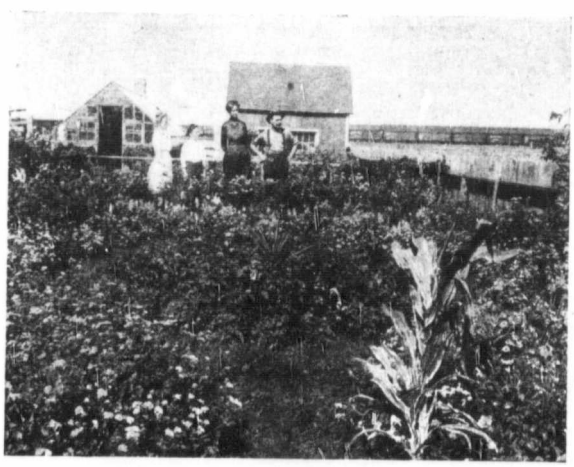
From this new row pluck off all the flowers that show during the first season, and allow three plants to each runner. Weight the runners in the best position to keep the wind from blowing them about. Cut off beyond each newly rooted plant. Plants should be a foot apart and the rows four feet.

In the rasp-break cut out all the deadwood and all the weak canes, leaving three or four of the strongest about three feet apart. Give a good top dressing of well rotted manure. Rake up and burn the old vines after tying up those left to fruit. When the pruning of bushes and hedges is complete, clean up and burn. Look round the base of the fruit bushes and if any dandelions or any other perennial weeds are showing spade them out by the root, and the dutch hoe used once a week will keep the garden in good shape during the growing season. The dutch or push hoe is the most useful garden implement throughout the summer and fall. By using it frequently raking is unnecessary, slugs are killed, moisture retained and plant growth developed.

To keep the onion maggot in check powder round them with a mixture of soot and lime, and hoe frequently about an inch in depth to destroy cutworms. For green fly and caterpillars on bushes water in the evening with hellebore wash. For the cabbage butterfly plant a windsor bean between each plant, and wash during the butterfly season with soapsuds and coal oil, one glass to a gallon, once a week.

After the garden is sown and planted thus, an hour or two weekly with the dutch hoe should keep it in trim after the thinning has been done. Above all things put down an abundant supply of winter vegetables such as potatoes, onions, cabbage, parsley, parsnip, carrots, celery, etc.

It is a most unfortunate thing to have one's horizon limited to a single farm, a single village, or even a single province. Whatever happens to our boys in khaki in later life, they will never lose the world outlook acquired by their experiences abroad.



A Back-yard Eden—by the Railway Track, Winnipeg

WOMEN'S INSTITUTES

This department is an open forum for all women's associations working together for the common good. The women's institutes of all our western provinces are urged to send us any items of interest concerning their work.

EDWIN

Annual Report

IT is with great pleasure and satisfaction that I present to you the third annual report of our society. The first one in its history that we have not been in the midst and turmoil of war. Surely it is ours to rejoice, not only in the end of the war, but in victory. The enemy has been frustrated in his designs and we should be able to "carry on" with lighter hearts than we have known for many a day. Owing to the "flu" epidemic in our district we were unable to hold several of our monthly meetings. Seven meetings were held during the year with a good attendance of members and fifteen visitors. Demonstrators were present at two of our meetings.

Receipts for the year were $90.10, of which $73.50 was donated to the Red Cross and soldiers' comforts. Besides the above, 100 pairs of socks were knit by our members, also sewing done for the Red Cross. There has been 54 boxes sent overseas valued at $3 each, making a total of $162.

In December of 1917, money was collected through this organization to buy a victory bond to help the Y.M.C.A. fund for Portage la Prairie. There was also $7 donated to the Children's Aid Society, Winnipeg.—Gertrude E. Patterson, secretary.

NAME ?

On Saturday afternoon, March 1, the Women's Institute met with the new president, Mrs. Gee, in the chair.

After repeating the Lord's Prayer in unison, Mrs. Harvey Kerr gave an account of the work done at a special meeting as to the securing of an agricultural representative.

Then we had a splendid report from Mrs. Scales as to the work accomplished at the Institute convention held in Winnipeg the week of Feb. 16. Our institutes might do well to consider such things as: (1) Intelligent voting. (2) Child welfare. (3) Current events. (4) How best to help the foreign element. (5) Peace reconstruction. (6) Lending a helping hand to war brides.

We were very glad to hear that Mrs. Dayton was to give her address here in the near future, as it was one of the many fine addresses given at the convention. Miss Playfair, of Hartney, has also consented to give her address.

Miss Alice Simpson favored with a song and a trio was given by Mrs. C. Cook, Miss E. Palmer and Miss Coutts, all of which was much appreciated.—Sophia M. Kerr.

HARTNEY

The regular monthly meeting of the Hartney H.E.S. was held in the council chamber of the Town Hall on February 6, with the president in the chair.

It was decided that some of the money donated for patriotic work should be spent for thread for making the garments for the French Relief.

After a short discussion about rest room there was a committee formed to see if plans could be made for a rest room. The rest room question had been laid over till the close of the war, and it was thought that now something might be accomplished.

Mrs. W. H. B. Hill made a motion to contribute five dollars from our treasury to be sent to Lady Aikins towards the wedding gift for Princess Patricia. Mrs. McDowell seconded this motion and it was passed.

With reference to the temperance question, Mrs. Lane moved that the following resolution be sent to the government; Mrs. Hill seconded the motion and it was carried unanimously:

Resolved by the women of Hartney and district, members of the H.E.S., that the Dominion Government be urged to make no change in the Temperance Act. We are convinced that the women of Canada will heartily support in preserving the same.

Two delegates, Mrs. Chas. Forbes and Mrs. W. Scharff, were appointed to represent us at the convention to be held in Winnipeg. A resolution was drawn up to send to the government requesting them not to resort to the daylight saving scheme. This resolution was moved by Mrs. W. Forbes and seconded by Mrs. H. Cowan. The meeting was unanimous for this resolution.

A resolution moved by Mrs. W. Scharff and seconded by Mrs. Hill was carried unanimously. The resolution read:

Resolved, that the society place itself on record as being in sympathy with the proposed movement regarding the boy problem of our town and district and is willing to express its approval by an active co-operation.

Several of our meetings having been withdrawn on account of the prevalence of influenza in town and district, the election of the directors for 1919 took place with the following directors elected by ballot: Mrs. E. J. Hodgson, Mrs. Geo. Jasper, Mrs. J. Callander, Mrs. W. H. B. Hill, Mrs. W. J. Jasper, Mrs. W. Forbes, Mrs. Lane, Mrs. Perrin, Mrs. Robson, Mrs. W. Scharff, Mrs. J. Scharff.

VIRDEN

The Virden Home Economics Society held its annual meeting on Saturday, the 24th inst., this being the first meeting since the "flu" ban was lifted. The hall was filled with members from all parts of the district. The reports showed the work undertaken during the year to be both varied and interesting. The reports of every committee showed a balance on the right side.

The activities of this organization touch the welfare of the people of the

NOT WHAT HIS HEART SPOKE

Jock: "Could ye no gie me a photograph o' yersel', Sister?"
Sister: "What would you do with it?"
Jock: "I'd put it in a nice collection o' curios I've been mackin' oot here."

whole district at many points, and it is no exaggeration to say that outside the church it is one of the most beneficial organizations we have. During the year the patriotic effort consisted of donations to St. Dunstan's Institute for the Blind, Canadian field comforts for the men in the trenches, to the local Patriotic Society for Red Cross needs, to Tuxedo and our own local hospitals, grants to the Boys' and Girls' Club work and to the Agricultural Society prize list. In addition, over $300 was spent paying the caretaker of the cemetery, which has, through the efforts of this organization, been converted from a wilderness of weeds to one of the most beautiful spots in the province.

Our rest room, which was burned recently, is now in new quarters and is handed over to a separate committee. It was organized and supported for years by the Home Economics Society and is acknowledged by our merchants to be a benefit to the town as well as a great comfort to the women from the country. We have given an organ to the primary department of the public school and established the nucleus of a permanent library consisting of 700 carefully selected books which are greatly appreciated. Through the efforts of our school committee, Mrs. H. H. Goulter, president of the Local Council of Women, was recently appointed to the school board by acclamation.

A request from Mr. D. McDonald, Virden Agricultural Society's manager, asking that the Home Economics Society appoint the lady directors to the fair board, was appreciated and an assurance of most hearty co-operation given.

A study of the Dower Law and laws affecting women and children have been under consideration. One of the great benefits of the organization is the friendliness promoted between town and country women. We are one in all work helpful to the people of this community. We feel we have a year of great opportunity ahead, a large part of which will be concentrated on all that pertains to the welfare of our children and young people, soldiers' widows and orphans, but also the brides of our boys returning to this district will be assured of a welcome and any assistance in learning to make new homes here.

The officers elected for the coming year were as follows: Honorary president, Miss Shields; president, Mrs. Gee; first vice-president, Mrs. T. Clark; second vice-president, Mrs. H. Kerr; secretary, Mrs. Scales; treasurer, Mrs. Beveridge; press reporter, Mrs. Willoughby; and an able board of twelve directors.

VALLEY RIVER

January

The monthly meeting of the Valley River Home Economics Society was held at the home of our newly elected president, Mrs. J. W. McQuay.

A letter was read from Lady Aikins requesting contributions for a wedding gift for H.R.H. Princess Patricia. It was decided not to forward any contribution from the society as a whole.

The president reported that the new rest room in Dauphin would be ready for use on Saturday, Feb. 15.

Mrs. Thos. Playford read a splendid paper on "Life's Burdens and How to Bear Them," emphasizing the importance of always trying to look on the bright side, resignation to God's will, and a remembrance that many others have burdens as means of lightening our own.

Mrs. Brown kindly offered her home for the March meeting.

February

A well-attended meeting of the society was held at the home of Mrs. McDonald on Feb. 6.

The coming convention and the desirability of sending delegates was discussed. Miss McKillop and Mrs. Kelly were appointed as our representatives.

A resolution was passed to the effect that in view of present war conditions we request the managers of the fair to arrange for the exhibition of war cookery, sewing and knitting instead of the usual display of fancy cookery and needlework.

Papers dealing with "Woman's Part in the War and Her Responsibility After it is Over," were read by Mrs. McQuay, Mrs. Playford and Miss A. McQuay.

These were followed by a discussion as to means of making things pleasant for the boys of our district who are in the district. It was decided to send boxes under the auspices of the H.E.S. A committee of four was appointed to arrange for the sending of the boxes. A vote of thanks was tendered to Mrs. B. Boughen for entertaining us at the last meeting. Mrs. Parker kindly offered her home for the next meeting.

March

The March meeting of the Valley River Home Economics Society was held at the home of Mrs. W. Brown.

The meeting was opened by singing a hymn and by responsive rollcall.

Communications from the Extension Service Department were read and discussed. The Valley River Society expressed themselves as being agreeable to changing name of Man. H. E. Societies to Man. Women's Institutes.

A resolution was passed to the effect that we send a resolution from our society to our member in the House of Commons urging the continuance of

Dominion-wide total prohibition legislation.

The secretary was instructed to buy a hymn book and hymnals for use in the society.

The meeting then adjourned, and Mrs. Brown, assisted by Misses Susie Brown and Edith Spencer, served a dainty lunch.—Adela M. McQuay, secretary-treasurer.

Mother's Corner

(The following beautiful poem was sent in for our corner by the mother of the lovely child whose picture appeared in the February issue of this department.)

A MOTHER'S PRAYER

MY little son goes faring down the street,
His first trip "over town,"
Donned in his cap and overalls, he says,
"I can go alone."

I almost catch my breath, and softly pray
That danger may not strike—
A whirring engine, or a runaway,
Or fall from giddy height.

So soon the years will flit when from my side
He'll gaily saunter forth
Into the flare and glare of life's highway—
An eager, fearless youth.

Oh! then a pain will grip my heart, and prayer
On wing of love will rise
Each hour, "God keep him safe, God keep him clean,
Let honor be his prize."

Sin lurks and lures at every turn,
(Can he the lure withstand?)
"Clothe him, O Lord, and cleanse him every day,
And make of him a man."

—Eva Fraser.

A DISTANT RELATIVE

During the course of a trial in Chicago a witness by the name of Francis Dooley was asked concerning the defendant:

"Are you related to Thomas Dooley?"

"Very distantly," said Francis. "I was me mother's first child—Thomas was the tinth."

CONTEST FOR BABIES

We are delighted with the splendid response of the mothers in this contest. We want the mothers of children under four years of age to send us the pictures of those little ones. A prize of twenty-five dollars is offered to the mother who sends in the best description of the care she gave her child, with a picture of the child. A second prize of ten dollars, and a third of five will be given also.

We hope to have the pictures of a hundred babies for this department. Do you not want to see your baby's face in our department? You will help other mothers by sending us your experience on the care of children. One mother writes: "I am glad one farm paper is interested in better babies as well as calves and colts." We feel that this contest will help many mothers and will be a factor in the conservation of childhood. Very great effort is needed at the present time in the conservation of childhood. We must not neglect our children but double our efforts in their behalf. We are anxious to make this contest a most important feature of our department and urge all our mothers to help us for your particular letter may save the life of a little one. Is that not worth while? Then send us the photo of your little one with a description of your care of the child. Give weight, height, chest measurement, and general condition. Every photo will have a place in our department. We all want to see the picture of your little one on our page.

You never saw an animal fill his mouth with food and then take a drink to wash it down.

Ethereal solution of menthol, 10 to 50 per cent, applied by camel's hair brush, averts boils, carbuncles and inflammatory gatherings, and cures itching eruptions.

I asked my little one the other day: "What does love mean?"
She replied: "Kisses from Daddy."
True—if love is the most beautiful thing in the world—then kisses from Daddy is love—little girl. (P.R.H.)

I took a piece of plastic clay,
And idly fashioned it one day,
And as my fingers pressed it still,
It moved and yielded to my will.
I came again when days were past,
The bit of clay was hard at last,
The form I gave it, still it bore,
But I could change that form no more.

I took a piece of living clay,
And gently formed it day by day,
And moulded with my power and art,
A young child's soft and yielding heart.
I came again when years were gone;
It was a man I looked upon.
He still that early impress wore,
And I could change him nevermore.

Given good food, a brave heart, and any reasonable amount of diversion, most young people outgrow their sins—and even their mistakes—almost as soon as they outgrow their clothes. But to outgrow a punishment is quite a different matter! People who deal out punishments ought to think about that!

If the child really has worms, a good remedy to expel them is the following: Oil of anise, 3 drops; fluid extract spigelia and senna, 1 ounce; santonin, 8 grains; take one teaspoonful at bedtime in water. (From Healthy Home Publication.)

FOR BURNS

Best of all treatment for burns and scalds is carbolic acid, 1 part to 25 parts sweet oil, apply with camel's hair brush every two to four hours, or as often as the pain reappears, until new skin is formed. This treatment may be preceded by an application of cold water, as an immediate application until the first shock and pain is alleviated.

For a man, sawing wood every day until he gets sweaty will do as much for chronic sore throat as anything. The reason is that elimination is helped by the violent activity of the stomach, back and shoulders in this greatest of all physical exercises. Building up the general vital resistance is a remedy of greatest importance. The inhalation of hot steam is a most valuable measure. Gargling the throat with hot water is also valuable.

Is it harmful to take a small dose of Epsom salts daily for constipation?

Yes. If this medicine is kept up for a time, it will produce irritation of the mucous membrane of the stomach and bowels. It also irritates the tissues of the liver and kidneys and produces definite changes in these organs. Epsom salts, sodium phosphate, mineral waters, and other like medicines should be used only under the direction of a physician, and then for only a limited period.

SOMETHING NEEDED BESIDES MILK

At what age should a child be given food other than milk? Milk contains from seven to fourteen times less iron than the other articles of food. Although the other mineral constituents of the milk are present in the same proportion in which they are contained in the tissues of the child at birth, iron is present in mere traces only.

The infant enters the world with a supply of iron in the liver and to a smaller extent elsewhere, which has been stored during intra-uterine life. The child gradually draws upon such store for the manufacture of the blood-coloring matter, which lasts until its digestive organs are prepared to digest food other than milk.

The small amount of iron in milk is sufficient for the growth of the child, hence the high percentage of iron in the organism at birth. Late weaning, or the too prolonged use of milk as the exclusive food of a child artificially fed, causes anaemia. This is the first pathological condition which we mark as arising from failure to modify the diet of a child at the proper time. The chemistry of milk,

the physiological chemistry of the child, and the physiology of the digestive organs denote that such change should be made at a fairly definite time.

This addition to the milk diet should be made from the seventh to the tenth month. Dr. Winters thinks that as oatmeal is among the richest in iron of the vegetable foods, it is excellent to add to the milk.

Pneumonia is an awful disease. Its germs are everywhere, sometimes numerous and strong, sometimes weak and inactive. We are all liable to their attack. Why do most of us escape? Because we are well enough and strong enough to resist these germs. They make no more impression on a healthy system than rain drops on a sound roof. But if you are tired and run down; or if you get chilled; or if you get short of sleep, the germs get in like the rain on a leaky roof and you are in for a hard sickness and maybe a fatal one.

In cold and changeable weather, especially where there are quick alternations of temperature, it takes more than ordinary carefulness to keep from getting chilled.

Some time ago I saw in a medical column a prescription for atomizer oils to be used for spraying nose and throat. It said where oils were used, germs could not work. Will you please send me the prescription by mail? Think it was said to be a good preventive for colds.

Dobell's solution is probably what you would like. It is extensively employed in the treatment of nasal catarrh, as a mouth wash, and where a mild antiseptic is called for. Here is its formula: Borax, sodium bicard, of each, one dram; carbolic acid, 30 grains; glycerin, 1 ounce; distilled water, enough to make a pint; mix.

For tired feet put a handful of common salt into four quarts of hot water. Place the feet in the water while it is as hot as it can be borne. Then rub the feet dry with a rough towel.

Rev. Hugh Dobson gave some startling figures in his lecture before the H.E.S.

"Canada lays under the sod each year approximately 13,000 children under five years of age who died from preventable causes, due to the criminal indifference of the people as a whole to the problem of good health."

London, England, the world's largest city, had reduced its infant death rate to 87 per 1,000 births, said Rev. Mr. Dobson. New York had brought its death rate down to 91 infants per 1,000 infants under one year. Ottawa, a small city and supposedly with less slum conditions than these largest world centres, had an infant death rate of 188 per 1,000 births. Winnipeg, in 1913, had, the speaker declared, a death rate of 199 infants under one year out of every 1,000 born. This had been cut in half or a little better through education of mothers, taking care of the food supply of the public and shutting off insanitary places. There were spots in Winnipeg, the speaker said, which were as bad as any in Chicago or London. The same was true of other Canadian cities.

Nor were the slum conditions confined to the cities, Mr. Dobson said. They were just as true of rural communities where entire families lived in one room. Also true of small towns and even villages.

The Canadian people had before them a permanent housing problem if they wished to eliminate slum conditions. They must get together on the problems of health, including mental defectives, better schools, district medical supervision, tuberculosis and venereal diseases if they wish to ensure the foundation of a strong and virile nation.

BLISSFUL IGNORANCE

A man went to a judge, and asked whether he could bring suit for slander against a man who had called him a rhinoceros.

"Why, certainly," said the judge. "When did he call you that?"

"About three years ago."

"Three years ago! And you only start suit to-day!"

"But, your honor, yesterday I saw a rhinoceros for the first time."

Don't Fail to Renew your subscription if it has run out. There are Great Thing Coming!

Our Young Folks

GIRL'S PRIZE LETTER

Trossachs, Sask., Can.

Dear Cousin Doris:—I am so interested in the letters of this page that I read them with great interest every month. I see you are giving $2.00 every month for the prize letter. How I would like to be able to write the best letter during the month of October, but I do not suppose there is much chance, as I am only nine years old and most of the boys and girls who write seem to be older than that.

However, I am going to try. I am going to write about my ambition, as I cannot write very much about how I would help win the war, although I also try my best to help in small ways that I can, such as not wasting food, etc., and writing letters to my uncles who are soldiers, to encourage them. It is my greatest desire to grow up to be a young lady, kind and lovable.

I want to always be kind to young and old people, poor and rich, and I also want to be very kind to the dumb creatures. If you have ever read the book, "Beautiful Joe," of which Marshall Saunders is author, you will remember one character of the story who plays a very important part.

This is Laura Morris. I just long to be kind like her. Everybody loved her and she always was so cheerful. Our teacher just read that book to us at school. She reads fifteen minutes every day after the noon hour.

The story was very interesting and Laura was the one who interested me most. I am trying every day to be kind to dumb animals, for, as it says in the book, not only because I lose nothing by it, but because I ought to; for they were placed on the earth by the same Kind Hand that made all living creatures.

I also want to be a teacher—and, oh! won't it be fun for the children who go to my school when I intend to be so kind? Well, that's my ambition, and if I do not fail to fill the place, I will do a part in this world towards cheering up the old, and poor, and I certainly do intend to be kind to dumb animals.

I must tell you of a pet gopher we had at school last summer. During the spring this gopher used to come into the entry, and if the door was open it would come right into the school room. It was very nervous at first and, if anyone moved, it would run out.

At recess and during the noon hour we would stand on the step and throw pieces of bread towards it. It would come right up to the step and pick the pieces of bread up. At last one of the girls sat down on the step and held a crust of bread out towards it.

The gopher came right up and nibbled off the crust of bread. Many days passed by and this gopher was fed every day in this way. Finally he got so tame he'd sit right beside us and eat out of our hand. We could pick him up and carry him around, and if we'd set him up on the shelf he'd sit there until we took him down.

All summer long we petted him and loved him dearly, but in the fall one of the big boys came back to school. He told us he was going to kill him because it was terribly foolish to tame anything like a little destructive gopher. We begged him not to kill the gopher, but one day at noon he came in carrying poor, dead Dick.

He had just killed him and, oh, how heart-broken we girls were. Such a terrible fate poor Dick met with because we had tamed him and he was so brave. Since then we have never made an attempt at taming another. Well, I must close, wishing this page every success.—Thelma J. Swedburg, age 9.

Dunfermline, Sask.,
February 3rd, 1919.

Dear Cousin Doris:—I have just been reading the interesting letters of your young folks' page in The Canadian Thresherman and Farmer.

I thought I would write a letter and try and win the prize.

I live on a farm about eight miles from a town named Dunfermline. I came to Saskatchewan when I was three weeks old and I have been here ever since. I go to school and I am in Grade III. I am eight years old. I live half a mile from the school, twelve miles from Asquith and twenty-five miles from Saskatoon.

I cannot play the organ by note, but I can play tunes by ear when I hear them sung a few times. I have two sisters and one brother. My eldest sister is going to high school.

Well, I must close for this time, with best wishes to all.—Ethel Mary Hall, age 8.

Birtle, Man.,
Feb. 5th, 1919.

Dear Cousin Doris:—I have been reading with great interest the letters of your page for some time. I noticed that you gave a prize of $2 to the person who wrote the best letter. How I should love to get it for this month. I am no hand at letter writing, but anyway I will try my luck.

I am a farmer's daughter, fourteen years old, five feet, six inches tall, and weigh about a hundred and eight pounds.

I go to school every day. We live about two miles from the school. I have two sisters, one a year older than myself, and my other sister is just eight years old. There are no boys in our family, just "we three" girls.

Our school was closed for two months last fall for Spanish influenza. It opened again after the New Year, but the "Flu" started again and school has been closed for two weeks now. I hope that it will soon open again as I want to write my examination in June. I am in Grade X and like the work very well, although I am not fond of going to school.

I am very fond of music and have taken violin lessons for about a year and a half. I hope some day I will be able to play well and give people pleasure. My greatest ambition in life is to be able to play the violin. I have played at quite a few concerts. My oldest sister accompanies me on the piano. I think music is one of the nicest things of all, and is the only thing that can make you forget your troubles for a while. As soon as I have my second class certificate I want to go away and study music, and when I have finished my course I hope to give lots of people pleasure.

I am very fond of crocheting and have done a lot. At present I am crocheting a bag. I gave nearly all my crocheting away for Christmas presents.

Well, I must draw this letter to a close, or else there will be no more room left for anyone else. Wishing the club success.—Muriel B. Dudley, age 14 years.

DUE FOR A RISE

A downtown merchant, while engaged in the office the other morning, discovered that he had left his pocketknife at home and, as he needed one urgently, he asked the different clerks, but none of them happened to have one. Finally the errand boy hustled in and the merchant called him, asking if he was able to produce the desired article. Jimmy handed over his pigsticker."

"How is it, Jimmy, that you alone out of my entire staff seem to have a pocketknife with you?" smiled the proprietor, eyeing Jimmy with undisguised admiration.

"Dunno, sir," replied the youth, "unless it's because my wages are so low that I can't afford more'n one pair of pants."

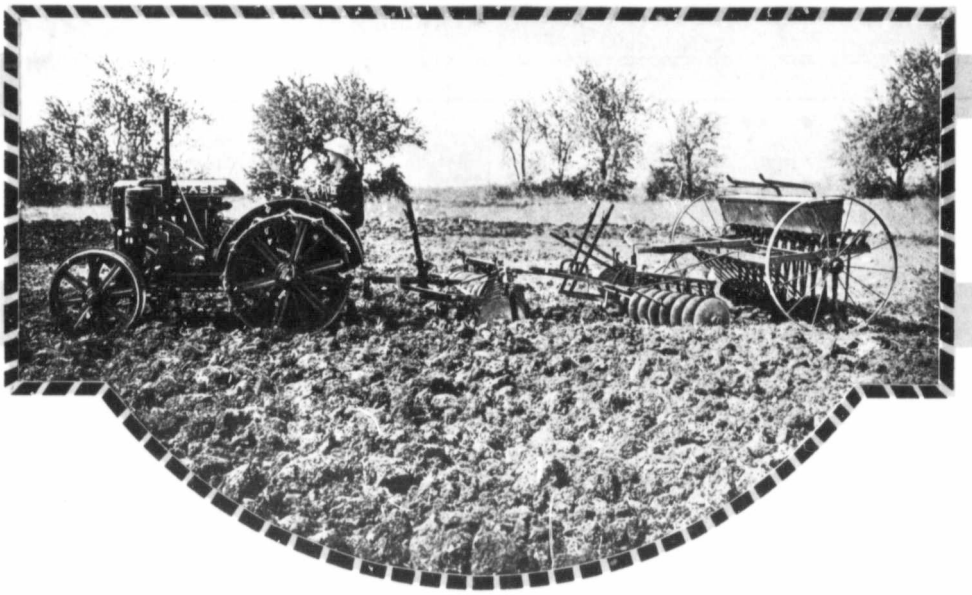
COULDN'T FOOL HIM

"I want to get a pair of corsets for my wife."

"Yes, sir. Jim, hand me down a pair of thirty-five-inch ones."

"Why, how did you know her size?"

"Any woman who allows her husband to buy her corsets always has a thirty-five-inch waist."



Easier to Drive Than a Team of Horses

As the Young Lady Pictured Above Agrees

ONE of the chief advantages of the Case 10-18 Kerosene Tractor is its easy handling. It is simple and compact. It weighs little more than a team of horses. Its length is 108 inches, width 52 inches and height 58 inches. It turns in a 22-foot circle.

This Case 10-18 is ever ready for all kinds of farm work, such as plowing, discing, pulverizing, harrowing, haying, harvesting, road-work, threshing, hauling, cutting feed, filling silo, baling hay, grubbing, sawing wood, etc. Because of its flexibility, it produces more hours of work per year and thereby increases its earning capacity.

IN this Case 10-18 we offer our latest and best small tractor. It is the climax of our 77 years of experience in building power-farming machinery. It easily pulls two 14-inch plows. It will drive a 20 by 28 Case Thresher with feeder and windstacker. For every occasion requiring its rated power for drawbar or belt work this tractor sets the pace.

It has plenty of reserve power.

While rated at 10 horsepower on the drawbar it can deliver about 25 per cent more. While rated at 18 horsepower on the belt it can deliver about 25 per cent more. This means that it is built to handle an over-load.

In this Case 10-18 are found dozens of advanced ideas. For instance, it has a one-piece main frame with a four-cylinder engine mounted crosswise.

THIS construction affords a dust-proof housing for the rear axle, bull pinion shaft, transmission and the bearings for these parts.

This construction brings rigidity and assures perfect alignment of all shafts, gears and bearings. All gears are cut steel, fully enclosed and run in oil.

Another feature is its economic consumption of kerosene. It has a Case Sylphon Thermostat which controls the cooling system and insures complete combustion of kerosene.

An improved air-washer delivers clean air to the carburetor. No grit nor dust can get into the cylinders to minimize their efficiency and shorten their life.

Our illustrated booklet describes all the betterments in the new Case 10-18 and our larger sizes. Write for a copy at once. We will send it gladly.

J. I. Case Threshing Machine Company, Inc. (*Founded 1842*) 1336 **Erie St., Racine, Wis., U. S. A.**

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