THE CANADIAN THRESHERMAN AND FARMER

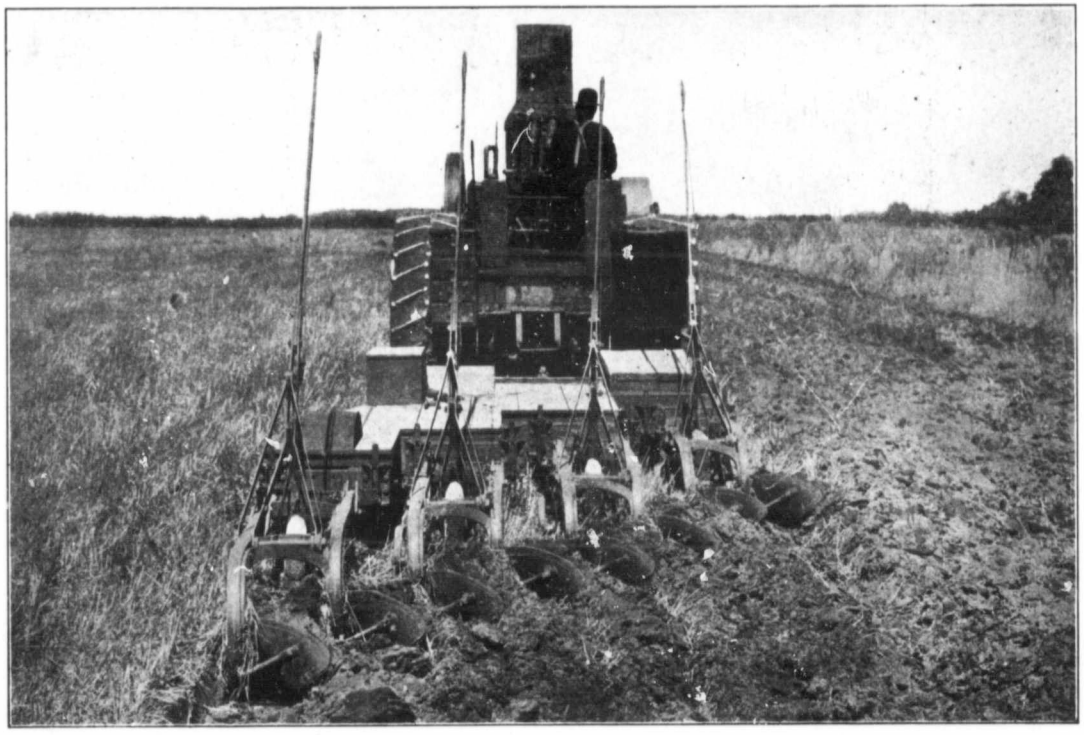
CANADA'S FARM MACHINERY MAGAZINE

WINNIPEG CANADA

MARCH - 1910

JOHN DEERE ENGINE GANGS

4, 6, 8, 10, 12, and 14 Bottoms



BIG PLOWS for a BIG COUNTRY

Why turn a Single Furrow when you can turn from 4 to 14 furrows at the same time

Canada is a country of big farms, big possibilities and big profits—if you are a big farmer.

A general couldn't fight much of a battle with one soldier, and a farmer can't raise much wheat with a one furrow plow.

Get the Right Gang

Bottoms in pairs give great strength and make the plows run steady. The beams can be braced and each plow steadies the other. You notice these features on a two-bottom horse gang—you can't beat that construction.

Don't Clog

Curved frames give great clearance, and the JOHN DEERE Engine Gang will go through straw, trash, weeds and scrub where other gangs clog and cause trouble.

Screw Clevis

In addition to the regular clevis adjustment, each beam is fitted with a screw clevis when attached to the frame. A man can stand on the platform and adjust any one plow with a wrench while the engine and gang are working. This saves time and is a most important feature.

Works with Coulters

Rolling Coulters can be used on the JOHN DEERE Engine Gang just the same as on a sulky plow.

Level Platform

The platform is roomy, free from obstructions and so arranged that the levers are all in reach.

Standard Sizes

4 or 6 Plows on One Frame
6 or 8 Plows on One Frame
10 or 12 Plows on One Frame

Extension can be furnished for the 12 bottom frame allowing two more plows to be used; making 14.

ILLUSTRATED BOOKLET FREE

Write us to-day for Free Booklet showing JOHN DEERE Gangs being used with all kinds of steam, oil and gasoline tractors. Don't fail to get this book and learn all about engine plowing. A post card will bring the book. Mention this paper when you write.

John Deere Plow Company, Limited

Winnipeg Regina Calgary Saskatoon Edmonton

LIGHT DRAFT
JOHN DEERE GANG PLOW

HOW TO SELECT A PLOW---THE RULE OF FOUR

Plow quality does not improve with age.

An inferior plow does poorer work, is harder to pull, and costs more for repairs every year it is in use.

Because certain things about a plow cannot be changed for the better **after** you buy it, care and study **before** buying, is important.

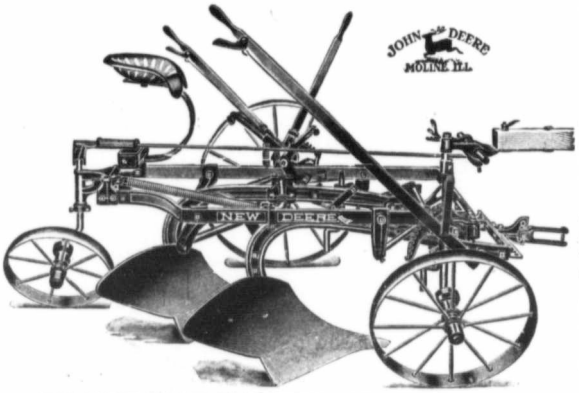
Judging the real worth of a plow is not difficult if four things are kept in mind:

First—Quality of work.

Second—Ease of management.

Third—Lightness of draft.

Fourth—Strength and durability.



THE LIGHT DRAFT NEW DEERE—WHY IT PULLS EASY

Consider five things when judging the draft of a plow:

First—The shape of the bottom. **Second**—Material out of which it is made. **Third**—Equal weight on all the wheels.
Fourth—Proper adjustments. **Fifth**—Staunchness of the plow.

WHY THESE FOUR QUALITIES ARE THE TEST

First—Nothing takes the place of good work. Unless a plow does perfect work you cannot afford to own it, no matter what the price.

Second—Have regard for your own comfort—that pays. Get a plow that is easy to ride, and that can be operated with little effort on your part.

Third—Never work horses harder than necessary. Horseflesh and horse-feed cost money. An extra one-eighth horse power added to the draft will cost you the price of a plow—very soon.

Fourth—Repairs are expensive. A good plow lasts longer than a poor one.

Write for Literature, Prices and Terms.

JOHN DEERE PLOW COMPANY LIMITED

CALGARY REGINA **WINNIPEG** EDMONTON SASKATOON

Deere Model B Disc Harrow

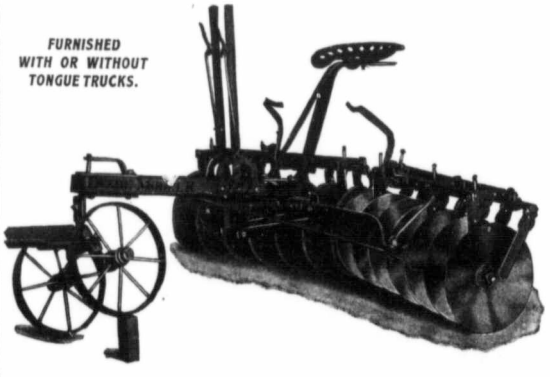
FURNISHED WITH OR WITHOUT TONGUE TRUCKS.

It is the Only Real Flexible Harrow.

PROGRESSIVE Farmers know how much more satisfactory our **Model "B" Disc Harrow** does **its work** of **pulverizing** the soil **evenly**—without skipping rough places in the "middle"—because our **Third Lever** with **Spring Pressure Yoke** and **coutrolled** draw bars, enables you to **govern** your disc, They can't push up in centre, as with ordinary machines. You pull the lever and it locks automatically with discs **working** through dead furrows or over ridges always cultivating **thoroughly.** Special features besides superior malleable iron parts and **extra durable construction,** are: Easy, Double-Spring Seat—High Frame out of dust—Adjustable Disc Scrapers—Lighter Draft, etc.

Write for Catalogue.

Deere Model K Disc Harrow



FURNISHED WITH OR WITHOUT TONGUE TRUCKS.

A STRONG substantial two-lever harrow, slightly lighter than Model "B," but having many of its points of superiority. **The Frame** is made from a single piece of heavy steel. **The** frame bars, crosstrees and braces are all steel, very securely reveted and bolted together.

The Scrapers are of the improved oscillating style, and can be easily removed or replaced. **Hard Maple** oil-soaked **bearings** are used on this harrow. **Disc Blades** are made of the every best quality steel, thoroughly polished and sharpened. Double **Angling Levers** on this barrow ensure a convenient machine for lapping lands and for hillside work.

Write for Catalogue.

Both of the above styles of Disc Harrows are excellent Tools to pull behind a John Deere Engine Gang.

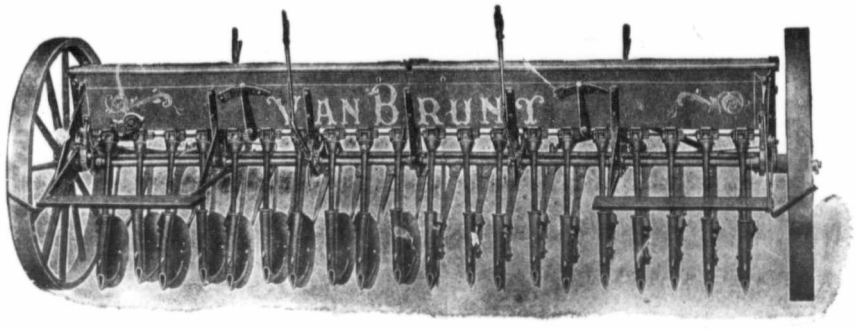
JOHN DEERE PLOW COMPANY LIMITED

CALGARY REGINA **WINNIPEG** EDMONTON SASKATOON

Light Draft Van Brunt Drills

If Horses could Talk their Verdict would be unanimously in Favor of the Van Brunt for Lightness of Draft

Made in sizes 12, 14, 16, 17, 18, 20, 22 and 24



Single, Double Disc and Shoe Interchangeable

Farmers Should Have Mercy on their Teams

Why pull a drill back and forth over your field that weighs from 300 to 400 pounds heavier than the Van Brunt, doing no better work—not even as good? You would not think of loading 400 pounds of rock on your drill in order to make it draw lightly.

The Van Brunt Made its Way by the Way its Made

The parts that go to make up a perfectly equipped and well balanced drill you will find on the Van Brunt.

AXLE. Continuous—(not stub axle which cheapens it.) Runs the entire length of the machine.

WHEELS. With long hubs (chilled.) Set well under the end of frame and are dust proof. Wheels run on a plumb spoke — (no pitch or gather.) Wheels on the Van Brunt need no pitch for the reason that the Van Brunt frame is so constructed that it does not spring or sag in the middle. Gather on wheels for wagons is all right, they run on a thimble skein or tapered axle. You would not think of adjusting the front furrow wheel on your gang plow with a gather. The same rule applies to wheels on drills and any implement with an axle of the same dimension.

FRAME. Is built of heavy angle steel and is thoroughly braced. The corners are solid, reinforced to prevent the slightest springing or rocking.

GEAR DRIVE. (Not chain.) No lost motion. Never wear out or bother. Both wheels are drive wheels.

TILTING LEVERS. The operator can change the angle of discs or shoes when the machine is in motion. **A tilting lever is as great a necessity to a grain drill as a tilting lever is to a mower.** (An exclusive feature of the Van Brunt drill).

FURROW OPENERS. The single disc furrow opener with toe scraper was first brought out by the Van Brunt Manufacturing Co. in 1900. Since then every drill concern in Canada has tried to copy the Van Brunt Furrow Opener. If the Van Brunt is good enough to copy they admit that we have the best drill. Then why buy an imitation when you can get the original and only successful light draft Van Brunt Drill. (Beware of imitations.)

DISCS. Every disc, single or double, is perfectly trued before leaving the factory. There is no wabbling of the discs used on the Light Draft Van Brunt Drill.

DRAG BARS. Are made of special steel manufactured expressly for the Van Brunt Manufacturing Co., having the correct amount carbon to give them strength. You will always find the Van Brunt furrow openers 6-inches apart, (not 5 in. or 7 in. as with other drills.)

BEARINGS. Are all case-hardened, guaranteed not to wear out. Read what we say on page 5 Drill Catalogue—our standing offer: "We replace, free of charge, all bearings that wear out."

DELIVERY. On both single and double disc Van Brunt Drill the grain is deposited further ahead in the furrow than any other drill sold in Canada. Ask the John Deere Agent to show you this feature.

"My Boss has the Light Draft Van Brunt Drill"

The Single Disc Drill became a successful machine when the Van Brunt Patent Disc Furrow Opener and Closed Grain Boot was introduced. Do not be deceived by statements of Competitors that their's is—just as good. An imitation is never as good as the genuine and original success. Be sure and see that the name "VAN BRUNT" is on the Hopper. Write for catalogue.

COLLINGWOOD FARM.
MARSHALL, SASK., 3rd Feby., 1910.

R. B. THOMPSON, ESQ., Lloydminster, Sask.

Dear Sir—I am writing a few words about the 20 hole single disc Van Brunt Drill we purchased of you last Spring. This machine is right up to the guarantee in every respect. We pulled it with four light horses and they seemed to have a cinch. Could seed from 16 to 20 acres a day here on short rounds. The oil in the disc is perfect. We seeded 106 acres with one oiling. As regards the job it does seeding, would say our new land was very rough and soddy but you could not see a seed on the top and was the most even stand of wheat I ever saw. The new land threshed 42½ bushels to the acre of wheat, and 25 on stubble, so can't say any more than that.

The machine is also very strongly braced, box trussed etc., and I don't see how she can possibly sag. The feed is true to a seed, almost, and acreage register accurate. Now, I never wrote in praise of any machine before but I'm just stuck on the Van Brunt, and all I've said and more is coming to the drill for it is certainly a dandy. I am, sir, yours truly

[Signed] E. J. WILLARD.

"My Boss has the other fellers"

JOHN DEERE PLOW CO., LIMITED

WINNIPEG REGINA CALGARY SASKATOON EDMONTON

NEW DEAL WAGON

New-Deal Wagon

Is made of air-seasoned lumber.

Is equipped with double collar skein.

Skeins are dust-proof, therefore will hold grease longer and run easier than others.

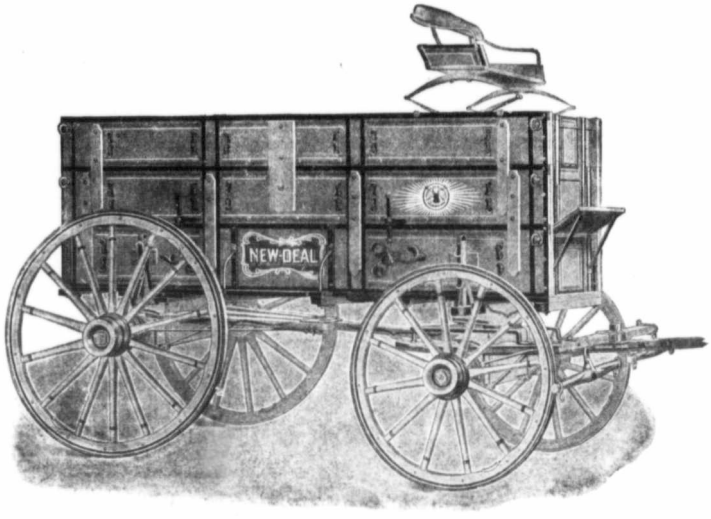
Skeins are heavier; bell is longer and larger, taking more axle.

Has riveted grain cleats (not nailed or screwed).

Bottom of box is reinforced both front and rear.

Has clipped gear, both front and rear.

Box is made flax tight



New-Deal Wagon

Spring seat with 3-leaf springs (not single leaf).

Steel bolster stake plates on side of box.

Neckyoke 48 in. long (not 42 in.)

Has trussed tongue, cannot break or warp.

Has channel [illegible] reach really indestructible.

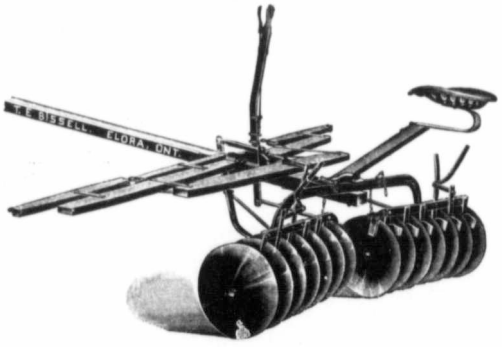
Is extra well painted, striped and finished

Possesses a great many distinctive features of merit.

JOHN DEERE PLOW CO. LTD.

WINNIPEG REGINA CALGARY EDMONTON SASKATOON

Genuine Bissell Disc Harrow



THE Disc that farmers want. **Some good features are**—CORRECT BALANCE—Stays down at its work, does not buckle, bind and hump up in the center.

Shape of Disc—Cuts, turns and stirs the soil, where others only scrape the ground.

Light of Draft—Forty hard Anti-friction Balls used in every "Bissell" Harrow relieve the horses.

Ease on Horses' Necks—The HITCH is well back, the seat projects at the rear of frame; no weight on necks.

The Fosston Grain Cleaner

is the Grain Cleaner that will Clean Your Grain

Here are Fosston Facts

THE only **Patented Feed Device**—which allows grain in Machine only when running—Feeds full width of sieves.

A **Patented Gang** for separating wild or tame oats from wheat. Compose of a series of nine perforated zinc screens.

A **Bottom Screen** thirty-six inches long. Under this screen is arranged a patented cleaning rack to keep bottom rack clean. Special attachment for separating wild or tame oats from barley. Screens for cleaning all kinds of grain. Bagger can be attached in five minutes.

JOHN DEERE PLOW CO. LTD.

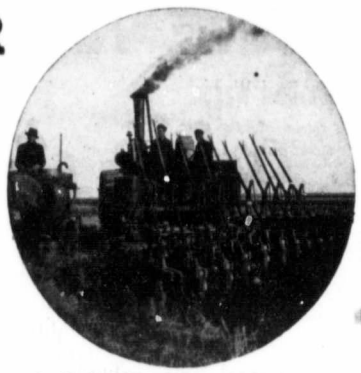
WINNIPEG REGINA CALGARY EDMONTON SASKATOON

HOLD YOUR ORDER

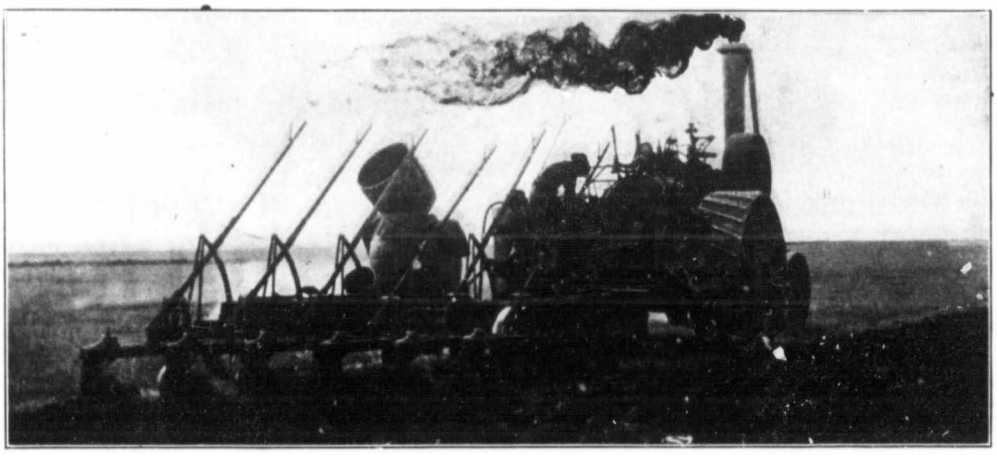
for

S.-M. Engines

S.-M. Outfit of J. McKenzie, Morse, Sask.



S.-M. Outfit of Donald McInnes, MacDonald, Man.



S.-M. Outfit of W. A. Kilgour, Moose Jaw, Sask.

If S.-M. Engines have heretofore been notable for their reputation for strength and durability, as well as convenience, what will now be said of them when they are built in every respect to comply with the requirements of the North West Provinces. It means that the Sawyer-Massey Company will build them to measure up to said requirements and with their usual conservativeness, they will build them even stronger and better than stipulated. All plate will be stamped with the name of the Manufacturers and at the same time with its tensile strength.

Through Stays of soft homogenous steel and Stay Bolts of a special brand refined iron will be supplied. Longitudinal lap joints will be double and triple rivetted in accordance with requirements.

Tubes will be beaded at both ends and copper ferruled at the fire box end.

All openings for pipe over and a half inch and all hand holes over 2½ x 3 will be reinforced by plate.

Dome will be reinforced at both top and bottom.

All rivet holes punched small and reamed out to size.

Hand Hole plates of wrought iron and steel.

Fire Box crown sheet has the regulation camber.

Reinforcing plates to be used in connection with Brackets and the same attached with Stud Bolts as directed

In fact all material and general construction inspected in accordance with the Provincial requirements.

Each and every other feature of the Engine will be built to correspond with this our new type of Traction. Big, roomy Fire Box, broad powerful Gears, Brasses, and Steam Gauge and all fittings of the very highest and strongest quality.

Our "Great West" Separator is being built on the most approved lines for the Season of 1910, so that the possessor of a Sawyer-Massey Outfit will have the most convenient, the most effective, and at the same time, the strongest and most durable Outfit on the market.

Hold your orders, therefore, until you have seen our 1910 Goods.

YOURS FOR VALUE

Sawyer-Massey Co. Limited.

ENGINES, THRESHERS & ROAD MAKING MACHINERY

HAMILTON, Ont. **WINNIPEG, Man.**

A MAGAZINE FOR THE FARM AND HOME

THE CANADIAN THRESHERMAN AND FARMER

Vol. XV. WINNIPEG, CANADA, MARCH, 1910. No. 3.

Tractioning the Soil

By E. F. W.

I am told a story and a canny old Scotchman vouches for its truth, which should be sufficient guarantee of its authenticity. The story runs thus:

A certain old Scotch farmer in the press of the season's work, hired a green Irishman to handle a plow and a yoke of oxen. The oxen were well broken in, so far as oxen can be, and the Scotchman started out with the Irish laborer to break a piece of virgin prairie. The Scotchman struck out the land on a 40 acre tract and after going a round or two turned the plowing outfit over to the Irishman to continue the work and left for the house.

There was a slight raise between this 40 acre tract which shut off the view from the house and the Scotchman could not see what his Irish hand was doing. In about the middle of the forenoon he thought it well to go and see how he was getting along. Upon coming to the top of the raise a peculiar sight met his eyes.

About half way down the furrow was the outfit. The oxen, however, instead of being turned away from the plow were turned towards it, having "turned in their yoke" and kneeling between the plow handles was Pat.

The Scotchman came up to the outfit without being observed and when within speaking distance wanted to know what was the matter. Pat looked up with an expression that was anything but happy and said, "Bejabers, I have pounded them and I have swore at them and I have prayed to all the Saints on the Rosery, but, Bejabers, its never an inch that they would budge."

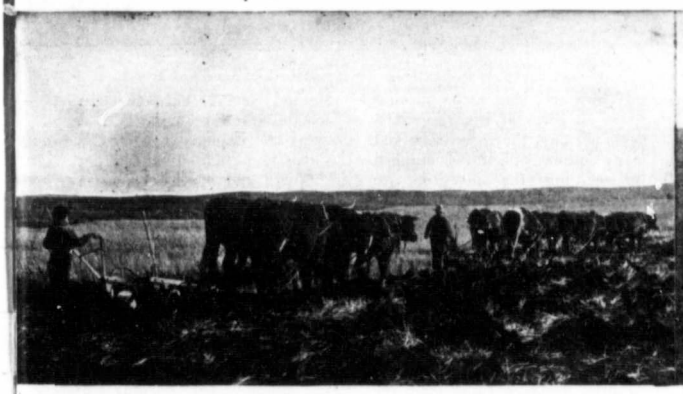
Scenes like the above are many and varied in a new country and they speak of the grief and punishment and toil that was of a necessity passed through by the early poineer.

The oxen was a stubborn brute, so much so, that there was scarcely ever any fear of his over-doing himself. The horse was a most tractable animal and if anything, too willing, with the result that the man who had any respect or sympathy for the dumb animal, saw in the hot gruelling work of breaking raw prairie with the thermometer at 90 in the shade, a task that was contrary to his principles and trying upon his nerves. It seemed like a terrible lot of punishment with small results when measured by a 640 acre tract, with a two mile furrow to every round.

The results were all right in quality. The ox team and the horse team both turned over the land that would produce record crops; but when it came to quantity, there was a great deal to be desired.

It was these things, probably more than anything else ,that has brought about what we now know as Tractioning the Soil. It was these things that spurred the farmer into making an investment of three of four thousand dollars in a traction cultivation outfit; whereas his previous horse or ox equipment in a great many cases did not run over three or four hundred.

He looked away and beyond the virgin prairie and like the prophet of old, he saw much land yet to be possessed, and his blood tingled with a desire to possess it,



The Way it was Formerly Done

The Way it is Still Done to a Considerable Exteat

Yet with the equipment at hand it was like a golden apple that hung several feet beyond his reach.

The word "tractioning" is a new one and I doubt if you will find it in any of the dictionaries published to-day. It is a word that I take some credit for having coined myself, and when I first used it, I was asked the question, if I would deem it proper to say "horsing" the soil. I replied that in this day and generation most anything is proper that sounds well and that I could not find anything that sounded to me better than "tractioning" the soil.

It sounded to me like the dawn of a new era, like the beginning of a new chapter and I believe the time is coming in the no distant future when we will speak of Tractioning the Soil with as much familiarity as we now speak of plowing.

Traction cultivation is by no means a new thing. It would be difficult to say who it was that first conceived the idea of mechanical power in connection with the cultivation of the soil. Suffice it to say, however, that it is recorded as far back as 1618, that David Ramsay and Thomas Wildgosse patented an invention comprehending.

"Newe apte, or compendious formes or kindes of engines or instruments and other profitable invencions, wayes and meanes, for the good of our Commonwealth, as well as to plow grounde without horses or oxen and to enrich and make better and more fertile as well as barren peate, salte and sea-sand, as inland and upland grounde within our Kingdomes of England and Ireland

and our Dominyon of Wales; as also to make boates for carryage of burthens and passengers runn upon the water as swifte in calmes and more saff in stormes than boates full-sayled in great wyndes."

These men, it appears, took out other patents but were unable to persuade their countrymen of the feasibility of their plans and like many other inventors, through want of support, were compelled to abandon their schemes and their inventions died a natural death without leaving behind them, any records of the modes of working them.

Richard L. Edgeworth, an Irishman, about the year 1730 produced an engine carrying an "endless road" with it. The plan of construction being somewhat the same as that patented by Mr. Boydell, whose system is doubtless familiar to a great many of you.

All methods, however, up to 1832 appear to have proved abortive, but during this year Mr. John Heathcote, a lace manufacturer in Devonshire and a member of Parliament, brought out and patented his celebrated plan for draining and cultivating land by an entirely new set of machines.

Mr. Heathcote brought out his engine on the first of April 1824. It appears that he intended to especially cultivate and reclaim bog land. A plow was constructed by a Mr. Parker, who was at that time consulting engineer to the Royal Agricultural Society of England, which on being tried performed admirably, this being the first time known, when a mechanical power was used to plow land.

It was said by many who saw this machinery at work that if these men had adapted their invention to plowing on ordinary land instead of to the reclamation and cultivation of bog land, they would have succeeded. As it was, however, after spending some $60,000 they abandoned their scheme. The machinery consisted of an engine travelling along the headland on one side of the field and an anchor on the other; the method of working being somewhat cumbersome and slow.

When working on bog land an "endless web" for forming a road was used. The cultivating implements were drawn backwards and forwards between the engine and the anchor. There can be no doubt but that all the systems now in use are modifications of Mr. Heathcote's

In 1849 Messrs. Barrett and Exall of Reading, England, constructed what may be considered the first apparatus for working plows and cultivators by the ordinary portable engine, this being the first attempt to plow land with a stationary engine. This was the original "roundabout system" as it is now called, in which ropes 1,600 yards in length were used.

This machinery was actually set to work, but after plowing some 60 acres at the rate of 5 acres per day, the rope broke and many other difficulties cropped up, causing the inventors to abandon their project.

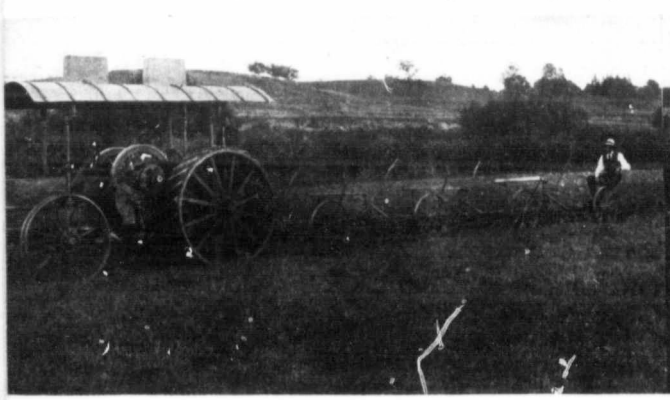
Next to the "roundabout" method came the "double engine" method. A set of this machinery was exhibited at the great English Agricultural Exhibition of 1851 by a certain Lord Willoughby D'Ersby.

It consisted of engines with winding drums working upon opposite headlands, travelling as work proceeded upon a tramway of planks. The plows were drawn from engine to engine by means of a chain which seems to have been the cause of want of success. It was claimed that this machinery was capable of plowing 4 acres per day to a depth of 9 inches.

By this time traction cultivation had taken a practical form and many firms were expending large sums of money experimenting and struggling for supremecy when the question arose. Can steam plow cheaper than horses? And at that time the answer came in the affirmative.

Although there was now a number of different appliances and methods of cultivating land by mechanical power these were more or less carried out upon the five following plans.

1. Engines travelling over the land and drawing the cultivating implements after them.
2. That with locomotive engines working on railways and drawing implements behind them.
3. That with stationary engines whilst at work and drawing the cultivating implements by means of wire ropes.
4. That with engines moving along the headlands and drawing the implements by means of wire ropes.
5. That with engines placed in punts floating in canals and drawing implements by means of wire ropes.



A Gould, Shapely and Muir Gas Tractor doing a plowing stunt in an Ontario Field.

A Rumely 36 h.p. Steam Plowing Engine pulling 28 Emerson Disc Plows and a Drag Harrow.

Method No. 1, viz., that in which the traction engine is used drawing the implement behind is the one now in general use on the North and South American Continents. This method was formely in use in England where traction cultivation may be said to have had its origin, but owing to climatic reasons and small fields, causing a great loss of time in turning, etc. etc., it was abandoned.

Various classes of implements were designed for working behind the traction engine, such as plows drawn by chains of different lengths; Romaine's rotary cultivator and the Darby land digger, etc.

I do not know how many of you have ever seen this Darby land digger, but it was one of the most peculiar freaks in traction cultivation that perhaps has ever been designed. There was a large triangular frame constructed and on this frame were a number of feet. These feet

were not unlike the ordinary disc of a disc harrow with the concave side turned down. These discs were made to revolve at a speed of about 400 revolutions per minute.

I saw one of these machines at work in 1904 at Regina, Canada, and about all that can be said of it is that it tore up the ground and threw it in all directions.

Many schemes were brought out to enable the engines to travel on soft ground, the most note worthy of which is the Boydell scheme.

This consisted of an "endless web" or endless railway" which was attached to the wheels of an engine in such a manner that each section fell under the wheels as the several parts approached the ground. Owing, however, to the large number of joints into which the dust and dirt was constantly getting, the wear and tear became so great that the scheme was abandoned.

A somewhat later modification of this is the Holt Caterpillar engine. This engine however makes a sort of a tread power track and is claimed to be very effective as regards its tractive power in soft ground. A cut of this engine has been shown in this magazine.

Method No. 2, in which it was proposed to use locomotive engines working on railways drawing implements behind them, was what is known as the "Guide-way" method of cultivation and was first invented by an English Navy officer by the name of Halket. This method was never, except upon quite a small scale, tested practically.

Mr. Halket proposed to lay down rails upon the ordinary principles only at a distance of 50 feet from rail to rail. The rails were to be laid upon a foundation of brick work 21 feet in width and 2 feet in depth. At each headland the rails were laid at right angles with the others and low enough to receive the working machine or platform in order to remove it to fresh ground, when it arrived at the headland. These cross rails were to be placed at a distance that would allow of a trolley sufficiently wide to carry the working machine, possibly 15 to 20 feet apart. These rails were to be continued at one headland out of the field to the farmstead to convey the apparatus thither when the field was finished. The rails were also to be continued from field to field in order to facilitate the removal of the machine when required to work on fresh fields.

The rails were of course to be permanent, being fixed to ties inserted in brick work, the two upper courses of which were to be set in cement and the land was to be laid out in square fields.

The working machinery consisted of a platform to which was attached the plow that contained from 6 to 12 bottoms. On each end of the platform was to be stationed a steam engine of 5 or more horse power connected together by a shaft and a set of gearing which engaged with the 16 wheels, 8 on each side. One set of plows was to work in one direction and one in the other.

I simply state this to show you to what extent the inventor went in the early days of traction cultivation.

To show you what was thought of it at the time, one agriculturist expresses himself in writing as follows:

"Mr. Halket has solved this problem to a greater extent than any other person and his method of soil cultivation is as near to perfection as we can ever hope to attain. At any rate he has adapted the only principle that is capable of bringing about the desired results."

Something, however, must have gone wrong not only with the PRINCIPLE but the PRINCIPAL for the method never did get into practice.

Method No. 3, which is known as the "Roundabout" worked as follows: The engine was placed on a headland in one corner of the field and was connected by a shaft to a windlass. This windlass consisted of a frame on 4 wheels upon which were mounted horizontal drums and on these were coiled and uncoiled the ropes. One rope led off direct to the anchor on the headland and from thence to the plow. The other rope ran over a sort of capstain round a snatch block to the anchor on the other one and then to the plow. The anchors moved alternately being fitted with gears by means of which when the plow approached them they wound themselves forward on the ropes. The drums on the windlass were alternately thrown out of gear, thus causing the plow to move to and fro upon the field.

Method No. 4, may be divided into two classes, viz., that in which only one engine is used in connection with a self moving anchor and the other in which 2 engines are employed, drawing the cultivating implement to and fro by means of a steel cable.

The engine was fitted with 2 winding drums and worked along one side of the field whilst at the other was fixed a self-moving anchor. At the corner of the field and on the same headland as the self-moving anchor a snatch block was fixed. The cable from one drum on the engine was carried around this snatch block to the anchor and thence to the plow whilst the other cable ran direct to the implement. The 2 drums were thrown alternately in and out of gear by one lever; thus giving a to and fro movement to the implement.

If a careful record were made of all the plowing outfits at use in the world to-day, I believe it would reveal the fact that the double engine method is the one in most general use. It is now used in England, Scotland, Wales, Ireland, Belgium, Holland France, Germany, Austria, Romania, Russia, Turkey,

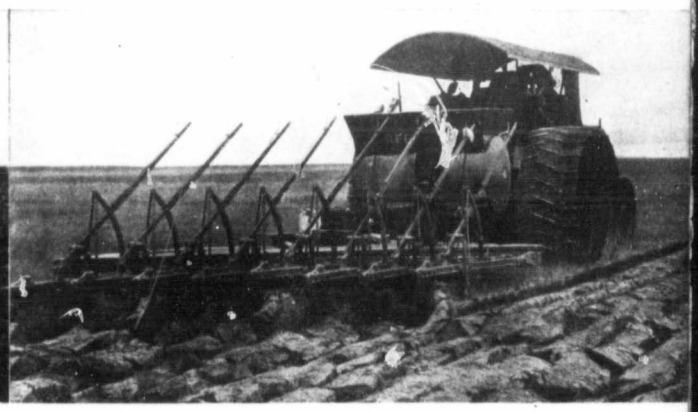
Greece, Italy, Egypt, Algiers, Spain, Portugal, South Africa, West Indies, Australia, New Zealand, India, Java, Hawaiian Islands, Argentine, Demarara, etc. etc.

A number of these outfits have been used in the United States, mostly in California. Two or three outfits have been sold in Canada and I am told a deal was closed by a large beet plantation owner down near Raymond, Alta., for two more outfits to be delivered this spring. The idea of using this method was the fact that the soil around Raymond requires cultivation to a depth of about 12 inches and once this land is plowed, it is almost impossible to run a traction engine over it. It becomes as soft as an ash bed. With the "double engine" method and the cable the engines do not need to travel over the ground.

The method of working with a "double engine" proposition is as follows: Two self-moving plow engines work on opposite headlands, each alternately pulling the plow or other implement towards itself, the engine not at work paying out its rope while moving forward into position for the return journey.

This method has made a hard fight for popularity, but despite any statements to the contrary, even the English manufacturers who built practically all of these engines, are rapidly turning over towards the direct method. One great disadvantage is the cost, as a complete set of engines and

A Saywer and Massey 30 h. p. Combination Plowing Engine Pulling an 8 bottom John Deere Engine Gang.



A Reeves 32 h. p. Cross Compound Plowing Engine pulling an 8 bottom Cockshutt Engine Gang.

tackle cost about 5,000 pounds or $25,000 and few of the farmers of to-day care to take on such an expensive proposition.

Perhaps the most novel method of traction cultivation that has been tried is that which was used for a considerable time on the plantations of Demarara. Much of the land under cultiation in Demarara has been reclaimed form the tides and the surface of the fields is 4 or 5 ft. below the level of ordinary high water mark. A front dam was thrown up against the bush waters.

Navigation and drainage canals were laid out and the fields were divded into tracts. There being practically no roads on the estates, all the products were transported in punts. The fields which were 400 yards long, by about 150 yards wide, were laid out with open drains. This caused an enormous waste of land, but this waste was more than made up by the gain in labor. Land was cheap in Demarara, but labor was expensive, and the open drains were held responsible for this costly method of soil cultivation, which was necessitated from the obstacle offered thereby to implement tillage. A fall of 6 inches of rain in 24 hours was not unknown in Demarara, the average rain fall being about 100 inches per annum.

The following is the method which was employed in soil cultivation. In place of having engines on the headlands, they were fixed in boats which floated in the canal, and the implements were pulled to and fro just as with the land engines.

To move the boats ahead at each round of the implement, a steel cable which was attached to an anchor near the end, was wound into a horizontal drum thereby pulling the boat forward the desired distance at each turn of the implement. The engines of course were stationary, the engine and boiler being on the one boat.

I have never been able to ascertain whether or not this method of cultivation was ever used in any other part of the country and simply give it to show how far mankind has gone, in order to produce a crop.

These methods, with the exception of the direct method and the cable method are now practically ancient history. They were born of necessity and while each and every one of them was somewhat short-lived and of very little practical value, they nevertheless served to keep alive the idea of traction cultivation.

They serve to show that mechanical power could be used as a substitute for the horse and while for many years, there was little or nothing done in the way of promotion as regards mechanical tracts of power on the farm; nevertheless, the fire was smouldering, to be some day fanned into a flame by demand on the part of the farmer in our prairie countries for something that would lessen the cost of crop production and which would the more quickly bring the virgin soil under cultivation.

The use of the direct method of traction cultivation began to come into use in the United States and Canada about the same time, which was about six years ago. Up to that time there had been a number of outfits at work, these outfits consisting of an ordinary threshing engine and such plows as the farmer might have at hand.

He found the outfit very unsatisfactory for two reasons, first, his engine was not designed for tractive efficiency, and had very few lasting qualities along that line. The gears were in the main small and were made of cast iron with the result that they either wore out quickly or he had an enormous repair bill through their breakage

It was necessary that he take a two or three bottom horse plow and with one or two or three more of its kind and a crude concoction of chain and ropes and cables, make up suitable hitches, which caused him a great deal of trouble and annoyance and the work done was not always satisfactory.

The builders of traction engines saw that there was something to this traction cultivation proposition and they began to redesign their engines, putting broader rims on the wheels, strengthening the gears, and at the same time building engines of a larger horse power.

The plow maunfacturers also began to come to the rescue.

A Buffalo Pitts Steam Tractor pulling a 14 bottom John Deere Engine Gang.

An International 15 h.p. Gas Traction Engine pulling a 4 bottom John Deere Engine Gang

They also saw that there was something to this traction cultivation proposition and the 4, 5 and 6 bottom gang was put upon the market.

These gangs served the purpose fairly well, but they were too stiff and rigid. They did not provide for the necessary flexibility that is one of the requisites of the traction plow. They served their purpose very well and like all other good things, have practically had their day.

The Geiser Manufacturing Co. of Wyanesboro, Pa., were really the first people to put out a traction plow. This was of the steam lift type and was not unlike the plows now made by the Avery Manufacturing Co. or by Reeves and Co.

It was about 1904 that a man by the name of Reid who was living at Regina, Sask., conceived the idea of a traction plow, but like a great many other inventors, he had very little capital to push it.

It was a crude affair, was weak in a great many parts, but the Cockshutt Plow Company of Brantford, Ont., saw its advantages and got hold of it, with the result that by 1906 they put upon the market what is now known as the Cockshutt Engine Gang. This gang was constructed so that each plow was practically independent of all of the others and was raised and considerably lowered from the ground by its own lever. This gave it flexibility. This was the first instance in Canada of a plow manufacturer recognizing the importance of the engine gang.

About the same time the Avery Company came out with their steam lift plow and Reeves and Company also put upon the market a steam lift engine plow.

This was the beginning of the engine plow business and to-day we have on the market a number of them. The John Deere Plow Company have been building for the past two or three years a very successful engine gang and 1910 will see on the market engine gangs made by the P. and O. people, the J. I. Case Plow people, The Moline people, and I have heard that the Oliver people of South Bend, Ind., are also at work upon an engine gang.

There have been a number of traction plows put upon the market, some good and some bad, but all in the main serving their purpose fairly well.

This engine gang business in so far as Canada is concerned marks the beginning of an era wherein the manufacturer of tillage implements is making an effort to furnish the farmer with tools that he can attach to his engine just as easily as he could attach the old style of implement to a team of horses.

Drills, disc harrows, drag harrows, soil packers, cultivators, etc. etc., that are designed to be pulled by horses are being used with more or less success in tractioning the soil.

This far there has not arisen among the farmers a demand for an especially designed machine. The old implements are serving the purpose and are serving it fairly well, and until some ingeniuos individual demonstrates that there is something better along this line, it is quite probable that the implements as they are now manufactured will hold the field.

There is, however, one thing that is badly needed in connection with tractioning the soil and that is a suitable hitch for every class of implement. The plow builders have overcome the difficulty by building their plows so that they can be readily hitched to the engine without any makeshift on the part of the farmer. But when it comes to attaching drills and harrows and cultivators, the farmer is up against a serious difficulty. He has to use his own ingenuity and such things as he may have at hand, which in most cases are not very satisfactory.

It seems to me there is a big field here for any manufacturer who will work out and build suitable hitches that will apply to the various implements that are now being pulled behind the traction engine. These hitches might be made adjustable, so that one hitch with a few slight adjustments could be made to accommodate any class of implement.

Every year we see more and more of this combination work and especially so since the advent of the gas tractor. There is no getting away from the fact that the gas tractor has done more to further traction cultivation than anything else and in this connection we must all of necessity take off our hats to Hart-Parr and Kinnard-Haines. Both of these concerns have blazed the trail through the fields of predjuice and skepticism, encountering no end of difficulty, but each and every year saw them gaining many disciples to the idea of tractioning the soil.

Their engines as they first built them, were undoubtedly. crude and the man who purchased them encountered his proportionate share of the difficulties, but both manufacturer and farmer stood by the game with the result that people soon came to see that there was something in it, and a canvass of the manufacturing field to-day will see in the neighborhood of one hundred gas tractors, either completed or on paper.

The International Harvester Company must also be given its due share of credit in this field of work, for they were not behind hand in seeing that there was something more to the gas tractor than a mere fad.

Hundreds of letters come into the office of The Canadian Thresherman and Farmer every year that contain the one question. Do you think the gas tractor more suitable for my purpose than the steam engine? And I have but one answer to give them and that is that I do not know.

Until three years ago the gasoline traction engine was in an experimental stage. It had never demostrated what it could do for any great length of time. It did not have the opportunity to stand up against its steam brother for a period of years, so that there was absolutely no way of making a comparison between the two. Any comparison that could be made was largely a matter of theory and theory and practice in the traction cultivation proposition, do not stand on the same ground.

The indications are, however, at the present time that the gas tractor as a farm power is going to take the place of steam, and when I say farm power, I mean a power that can be used in practically every farm operation. Test after test has proven beyond the question of a doubt that it is economical, that it is handy and easy to manipulate goes without saying and that ample power can be developed for the needs of the average farmer is also a settled fact.

There is one thing that is greatly in its favor when it comes to tractioning the soil and that is its weight. In proporeion to the power developed, the average gas tractor is by no means as heavy as the steam engine of the same size and capacity.

Traction cultivation must be done under all sorts of conditions of weather and soil, and this being true, the great weight of the steam tractor is sometimes a serious handicap.

The ideal engine, it seems to me, in traction cultivation is one that has a maximum capacity with a minimum of weight, but when it comes to actual work, and the engine is put to the severe test of plowing, there must be sufficient iron and steel in the machine so that it will stand up.

A great many of the gas tractors that have been built have fallen down on this particular point. They have worked for a short time but have piled up an enormous repair bill. It is a natural law that to get work out of a machine you must put work into it and this law holds doubly true as regards the traction engine.

As to the comparative cost of tractioning the soil with steam or gasoline, this is a thing that permits of no two-and-two-make-four discussion. A record of costs that would hold true in one locality would be entirely wrong in another.

Given plenty of water and good cheap coal, and steam as regards cost will make a beautiful record.

On the other hand, given a locality where coal must be brought from a long distance, and where water is scarce and the use of steam as a motive power on the farm, in many cases proves a distinct failure. In the province of Alberta, Canada, during the past season, dozens of steam outfits were tied up, not being able to turn a wheel on account of the scarcity of water and during the early part of 1909 many more were seriously tied up on account of the coal strike that occurred in the Crow's Nest Coal Mines.

To the man who has farmed all his life the transition step from horse to mechanical power is taken with some hesitation. He has farmed for years and has made money with his horse equipment consequently it is but natural that he should regard "Horseless Farming" with a skeptical eye. But farming conditions have changed and are conconstantly changing. We are living in a much more "rapid" age than our forefathers and if we are to keep up with the procession and get our full share of the good things of this world we must change our methods in keeping with the rotation of the wheels of "progress." The horse served his purpose well in his time but that is no surety that his is the only source of power that will serve the farmer. Mechanical or "Horseless Farming" is coming just so sure as the world revolves and it behoves every farmer today to investigate the matter thoroughly and fall into line just as soon as his conditions

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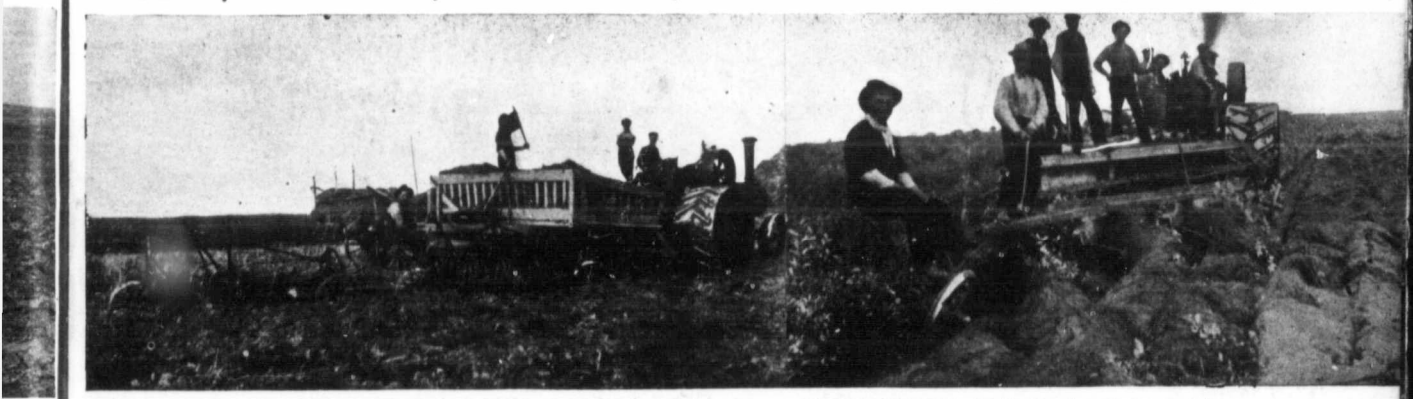


Ganton Bros., Haywood, Man. using a 25 h.p. Case Steam Tractor in old ground. Straw is being used for fuel.

A Case 25 h.p. Steam Tractor breaking three furrows in the same trying ground. Outfit of Ganton Bros. Haywood, Man.

TRACTION PLOWING
AS TOLD BY THE MEN WHO DO IT

A Widely Read Magazine.

As your paper is widely read by many Western farmers and threshermen, not a few of whom are interested in mechanical traction and power, on the farm and in threshing, I presume, in view of the many drawbacks pertaining to steam in this western country, that an account of a short but successful run of a Gasoline outfit may be interesting and useful.

Being situated three miles from Bradwell on the G.T.P. and three and a half miles from Blucher on the C.P.R. and having fully 1000 acres to cultivate, I early realized that to obtain the full benefit of my land and the exceptional railroad facilities, I should have to depend upon something else besides horse flesh.

Having no experience with either gas or steam engines I hesitated which to adopt but being a few seasons in the locality, I could note that the users of steam were having considerable trouble with water, which seemed to be getting scarcer and of worse quality each succeeding season. Hence, I concluded there was no use adding more leaky flues to an already overstocked supply. Accordingly, I ventured to try what, in my judgment, seemed the most suitable engine for the locality; namely, a Hart-Parr oil cooled engine.

I bought it for plowing, although I had a hazy idea that I might also add a separator to the outfit; but had no intention of threshing until I had at least a whole season's experience with it in the field.

However, my threshing experience turned up much sooner than I calculated. The engine was all ready to start plowing immediately the stooks were off the field, but as the threshing outfit I had on the place had struggled on against all kinds of bad luck for seventeen days, during which time the owner threshed about 6,000 bushels of wheat, I could see that there was to be no fall plowing that year unless he were shifted pretty suddenly. So after one of his usual break-downs, I had my man start up the 45 h.p. Hart-Parr. It was the first time that it had been moved since the expert handed it over after running it a few hours.

We pulled out beside his steam engine and then put on a 36x60 Advance separator and it ran so well that in three days we had cleaned up the remainder of wheat 1500 bushels and, 8500 bushels oats and moved 23 miles over to a neighboring farmer and had threshed out a few hundred bushels for him, all within the three days.

The engine was brought home on October 18th and hitched to an 8-furrow John Deere engine gang plow, and, in 14 working days, plowing from the outside corner of the field, up one side and down the other, had turned over between 290 and 300 acres, just pulling out the same night that the ground froze up for the season.

Nine barrels of gasoline and five barrels of cheap oil were used; the former cost 28½c per gallon and the latter 23c. Seven barrels of gasoline were used for threshing, which was a little more per day than was consumed at plowing, but as the engine was handling a good sized separator and making it go, I am satisfied that it was not using any too much. I am sorry I have no records of what it actually did thresh, as I let them use it at a neighbor's for a few days and never learned exactly what was put through the separator.

I am quite satisfied that the same plowing could never have been done in the same time with the same plow, by any other than a gasoline engine, the day's average turning out at about 22 acres per day.

A few minor breaks occurred, none of which we were not able to put right and all of them were promptly replaced by the company, and the engine is all right to start at a moment's notice. The breakages did not amount to more than a couple of dollars.

I had one man on the plow and one on the the engine and the engineer had sole control of both engine and plow. Of course when threshing, one man on the engine was all that was required and he certainly had a "snap" then.

Personally I am more than pleased with my investment and am sure that anyone else who uses a gasoline engine carefully and follows the instructions, will be able to substantiate what I have said.

I may say that my engine seemed to get better on the cheap oil, keersene, and used less and less fuel as it got warmed up to work.

Yours truly

G. A. Mill,

Bradwell, Sask.

Cost of Plowing varies According to Location.

We have been plowing but one season, but we have had previous experience threshing and road grading, which I think is a great help to a person starting into plowing with steam.

We own a J. I. Case 25 h.p. engine, having three foot road wheels and contractor tank, which carries about seven barrels of water and half a ton or more of coal. This is sufficient for three rounds on the half mile, depending, of course on the condition of the ground.

We used John Deere plows of six fourteen-inch bottoms. This plow is not as large as the engine can handle in ordinary soil, but the land in our district is heavy clay, which is very hard to plow. I would advise anybody to buy a larger plow of eight bottoms, if the condition of the land will permit, as every furrow turned counts on a day's profit, but it is not good policy to overload one's engine.

As to the number of men. We had four men on the engine and plows, two at a time who would change shifts at meal time, so as to keep running steady. When water was near we used one team on the tank and one team on the coal wagon. Our coal cost us on an average of $1.00 per acre laid down on the plowing.

Plowing is harder on an engine than threshing, the most wear being on the gearing. This part of the machine needs close attention. It should be well greased and clear of dirt.

The cost of plowing varies according to the location of the work and the condition of the ground.

A Rumely 30 h.p. Steam Plowing Engine pulling a ten furrow Cockshutt Engine Gang and a Soil Packer. Outfit of J. Albert Coe, Pense, Sask.

A Reeves 32 h.p. Cross Compound Steam Tractor pulling a 10 bottom Cockshutt Engine Gang.

The slipping of the road wheels when the ground is very wet, make a great loss in power. Of course the plow will work a good deal better when the ground is very moist. We plowed in August and it did not take any more water or fuel than in the month of June. When doing this plowing we had two men on the plow and engine and made an average of fifteen acres per day and when going full blast an average of twenty acres per day, which I think is very good for six plows.

To make a success of plowing with steam a person must keep the engine running steadily, the plow shares sharp and the engine in good shape.

Yours truly,
Jos. & G. A. Crawford,
Fortune P.O., Sask.

Plowed 200 Acres.

We bought a second hand Reeves 32 h.p. Cross Compound engine and one ten-bottom Cockshutt plow.

We employ five men and one cook. In the first part of the season we used four tons of coal and from eight to ten tanks of water per day. An expert was to come and fix up the engine May first and he didn't come until the middle of July. So you see we lost the best part of the season using up a lot of coal and water. After the engine was fixed, however, we went right along.

We plowed nearly two hundred acres with our engine using six bottoms and plowed 85 acres, the engine pulling ten plows, and two discs and plowed five inches deep. For this latter piece of work we used only six tanks of water and two tons of coal per day.

Yours truly,
W. A. & A. Erickson,
Milk River, Alta

Plowing 3 times as Hard as Threshing.

I have a Sawyer and Massey 26 h.p. Engine and a John Deere engine gang. The plowing season of 1909 was the first experience I had with a steam outfit. When breaking I pulled six plows and eight for stubble land.

I employ six men including a cook. I used 2,750 pounds of coal per day and from five to six tanks of water. It took one tank of water to every four miles and we made twenty-two miles per day. My tank holds 275 Imperial gallons.

I consider plowing one season as hard on an engine as threshing three or four seasons.

I keep a blacksmith outfit along with my rig.

My expenses ran as follows:—

Engineer	$ 5.00
Tankman and team	4.00
Coalman and team	4.00
Steersman	2.00
Plowman	1.75
Cook	1.00
Board	2.50
Oil	1.00
	$27.90

I also wore out 36 new plowshares at $3.75 each which makes $135.00.

Wear and tear on engine, per day $1.00.

Yours truly,
C.J. Carlson,
Stavely, Alta.

Costs $2.08 per acre.

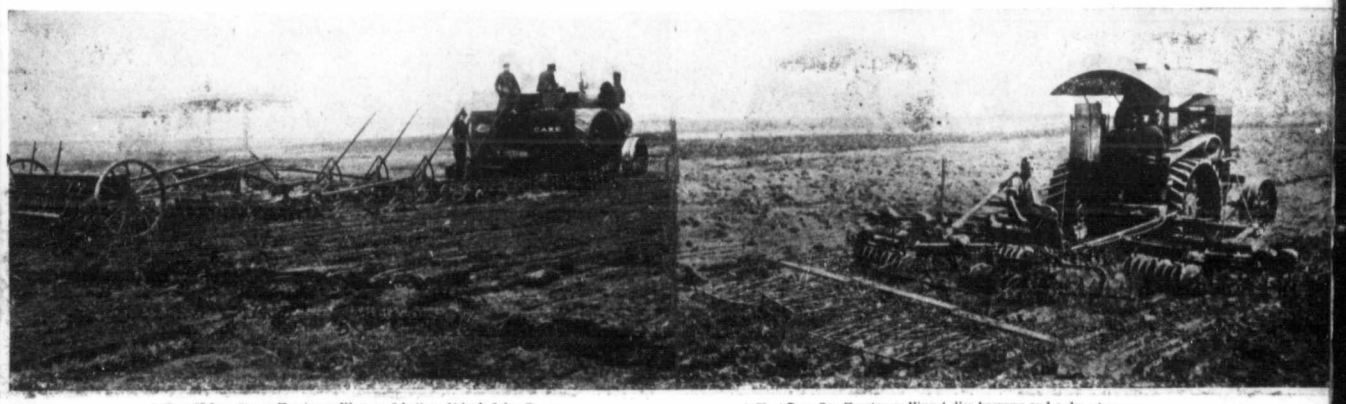
In reply to yours asking for our experience in traction plowing will say that the summer of 1909 was our first experience along that line; so that we had considerable to learn and think we can do more work per day this year than last.

We bought, a 30 h.p. Rumely Engine, and will say that it worked well, pulling ten bottoms and six sections of harrows in backsetting heavy land. I consider it a great advantage to be able to harrow after the plow.

We plowed about nine hundred acres, besides seeding and harvesting our own crop and threshing in the fall about ninety thousand bushels of wheat, oats and flax.

I will give you the cost per acre as nearly correct as I can, for I kept a record during the summer of all expenses, and I find we cannot plow nearly as cheap with steam as some figure it out. We, however, expect to cut down expenses this year considerable.

	per acre
Engineer at $6.00 per day and averaging 20 acres per day	$ .30
Fireman and plowman combined	.15
Coal	.65
Water hauling 70 pounds	.20
Hauling coal	.20
Shears repaired	.05
Oil, etc.	.04
Wear and tear of outfit	.25
Board for four men and four horses	.19
Cook	.05
Total	$2.08



A Case 32 h.p. Steam Tractor pulling an 8 bottom 14-inch John Deere Engine Gang, a Fulverizer and a Monitor Drill in Alberta.

A Hart-Parr Gas Tractor pulling 4 disc harrows and a drag harrow at the Overbrook Wheat Farms, Eyebrow, Sask.

Yours sincerely,
D. H. Evans & Sons,
Rosetown, Sask.

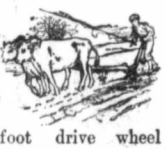
Only Got Stuck Once.

I have a 30 h.p. Flour City outfit and am certainly well pleased with it. The land around here is very rolling, stony and sloughy, but my engine has been equal to it all.

I bought my outfit at the Winnipeg Exhibition and have plowed over 500 acres. I also did about a week's threshing with a 32x50 in. McClosky separator.

I reckon that I have used about 1½ gallons of gasoline per acre, but one must remember that this has been a very dry fall and also take into consideration the hills and stones. The water consumed was about a barrel per twelve hour day.

I only got stuck once when I got into one of those steep banker sloughs, and before I realized it I was in a foot of water, but when a few big stones were put under the seven foot drive wheel it soon took hold and came out. I should have done considerable more plowing, but for a bit of hard luck. The pinions in my gear box started cutting owing to a soft spot but the company have very fairly given me a new pair free. My big gearings are all in perfect order. I always ran on the magneto which never failed me, and also never had any trouble with my carburettor. My chief difficulty at first was having too much oil (lubricating) in my base chambers, which would get onto my spark plugs causing misfiring, but I soon remedied that.



I haven't done any breaking yet, but feel confident that I will be able to make it pay. With all the plowing I have done I only broke the points of two shares, and I can assure you I turned out some rocks. I have over a section to break this coming spring.

I must say here that I pulled eight fourteen-inch Cockshutt bottoms and expect to pull six fourteen-inch bottoms for breaking.

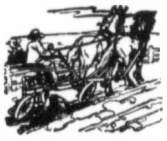
Hoping this may help some people who have their doubts about gasoline tractions as motive power.

Yours truly,
Frank E. Hopkins,
Tewarrick Farm
Maryfield, Sask.

Far Better than Horses.

Last April we purchased a Hart-Parr gasoline engine, 22 horse power nominal and a set of Emerson seven bottom twelve inch moldboard plows.

With this outfit we



plowed during the past season about 400 acres; 300 acres stubble and 100 acres breaking.

We did not keep an exact account of the amount of gasoline used, but from such information as we had at our disposal, we found that it took about two gallons per acre, or perhaps a trifle more.

We used one gallon of lubricating oil for every ten acres. In hot weather we found it required from eight to ten gallons of water per day.

With one man and a boy we can plow from 1¾ to 2 acres per hour easily, and do as good and perhaps a better class of work than would be done with horses and a walking plow or sulky plow.

We had no trouble with our outfit during the past season. We always made it a point to see that everything was in ship-shape before starting up, and we found at the end of the season we had been well paid, as we never had any loss of time due to breakdowns, which are generally caused by some small thing too trivial to spend a moment's time on in the morning, but which before night, may demand a half-day for renewal or repair.

One very important point in traction plowing, we find, is to keep the plow points sharp. This cannot be too strongly emphasized. Besides making the work lighter on the engine, and consequently saving fuel, it also gives a much better and cleaner class of work. It is quite safe to say that with a seven bottom plow, with the points sharp, the load on the engine would be about the same as with six bottoms having the points in poor repair. We did not use our traction engine last season for threshing. We used an International Harvester portable, 15 horse power gasoline engine on a 24 inch separator. We found this to be a nice outfit for a small amount of threshing. Six or seven men can thresh from a thousand to twelve hundred bushels of oats per day, using only ten or twelve gallons of gasoline.

T. Rian,
Principal, Indian Industrial School,

Uses 100 Pounds of Coal per Acre.

I started to plow last May with a 26h.p. Sawyer and Massey tandem compound engine and a Cockshutt engine gang, pulling 7 furrows 3½ inches deep. The engine handled this with ease.

My best days work was 26 acres, but the average would be about 18 acres per day. I did not keep an exact amount of the cost, but think it would be about $2.00 per acre.

I used 100 pounds of hard coal per acre and about 70 barrels of water would run a day. I hauled the water tank along side of the engine; a six by six was fastened to the hitch of the engine and this extended out to the left hand side of the engine about eight feet. The tongue of the tank was coupled to the end of this. This is a splendid thing for an engine having no tender. The only drawback to this was the side draft, the tank being so far out to one side. I crossed the chains from the plow to the engine and found that this made the plow turn much shorter and come in straighter at the ends.

I employed five men as follows: engineer, fireman, cook, tankman, and man to haul coal.

I would never advise anyone to try steam plowing if he has not got a good plowing engine, for I consider that one week's plowing on an engine harder than a season's threshing.

I think that every man who plows ought to get $4.00 per acre, as the work is easily worth $1.00 per acre more than when done with horses, because a large acreage can be put under cultivation in a short space of time and a more even crop assured.

There is no doubt that traction plowing is a success and is the only way to break up this western country, but a man who wants to make a success of the business needs to be a hustler, employ good men, work long hours and have a system all through. Wishing you every success.

Yours truly,
I. W. Stevenson,
Adanac, Sask.

Hard to Get Water.

We have just had our outfit a year and so have not had a great deal of experience. We have a 26 h.p. American Abell engine and a 7 furrow Cockshutt plow.

The land here is very brushy which makes breaking very difficult. If the ground is dry enough to hold the roots so that they will not tear, the plows will go through pretty well. We plowed for one man last summer who had quite a lot of brush on his land, but he pulled the biggest part of it out with a team and we had very little trouble after that.

We usually have four men and one team of horses with the outfit, but if the land is all prairie three men are enough; and engineer, fireman and waterman. The fireman attends the plows. If however, there is much brush, it is necessary to have a man on the plows all the time.

We burn about two tons of slack coal per day. I find that good fresh slack is the best fuel we have here and it is also the cheapest. We can get it at the mine for $1.00 per ton.

This last summer was very wet and we had some trouble in low places. Water is our greatest draw-back as it is hard to get good water. There are plenty of sloughs but there are very few with good water. We use about 40 barrels of water a day. Our engine has 24 inch drive wheels so that we do not find it necessary to have the extension rims on for seven plows.

Our engine is very powerful and the engineer I had last summer was exceedingly well pleased with it. I think that plowing in this part of the country is harder on an engine than threshing.

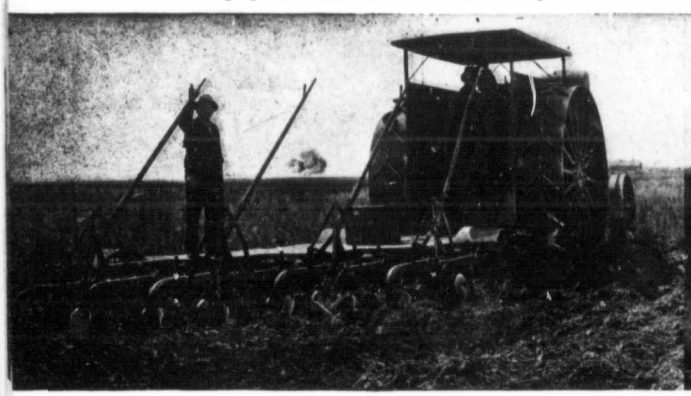
Your truly,
G. R. Gibbons,
Battenburg, Alta.

Steam Plowing a Success.

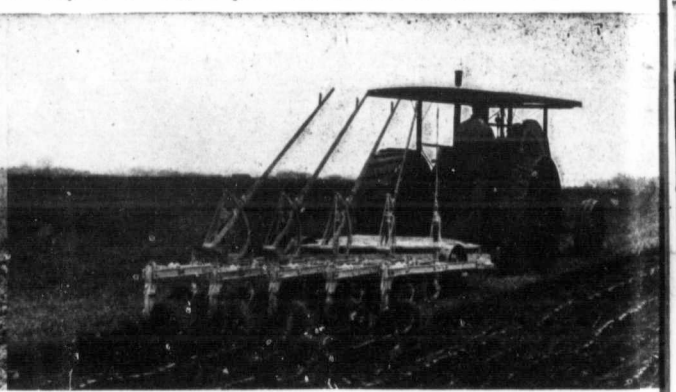
I am farming in the neighborhood of two thousand acres in the Lethbridge district and before the year of 1910 had a great deal of difficulty in getting contract help upon my different pieces at the proper time. This constant annoyance put me in a frame of mind whereby I began to consider buying a traction engine and doing all my own work. I refrained from giving the matter serious consideration until during the plowing season of 1909 after having offered as high as $4.50 an acre for teams to break a certain tract of rolling land which had some stone upon it, and being unable to secure them, I then, in desperation finally concluded to purchase an engine.

I decided to purchase a 30 h.p. Undermounted Avery engine and the order was wired to Winnipeg. The engine arrived in Lethbridge four days after. This I thought was a very good beginning so unloaded the engine and started plowing operations with a first class engineer. This engineer, however, proved in the course of four or five days to be unable to cover the ground. I then selected what one would call a rough and tumble engineer and from that day my difficulties vanished one by one for we plowed entirely through the summer with no break downs and no delays excepting now and then from bad weather.

My engineer did the laying out and the steering. He with the assistance of a plowman and a



A. J. Cameron introducing plowing by Gas Power into the Boissevain Wheat Belt. The outfit consists of a John Deere 8 bottom 14 inch Engine Gang and a Flour City Gas Tractor.



An International 15 h. p. Gas Tractor doing a nice breaking stunt with a 5 bottom 14 inch P. & O Mogul Engine Gang.

fireman completed my crew including one man who drove the water wagon and hauled the coal. The land was only one mile from town and as I piled coal along one side of the section before beginning to plow, my one team easily hauled the water and kept up the coal supply. The engine used about fifteen barrels of water every two miles and burned nearly two tons of coal per day.

I found at the end of the season my total plowing had cost me $1.25 per acre. This was very gratifying, but not so gratifying as to know I had made an A 1 job of it.

I am sure that could your readers see this piece of rolling land they would be surprised that a traction engine had been able to work upon it and it certainly was a great eye-opener to me to see the ease with which it handled the eight bottom Cockshutt plow up the hills, and also to see the condition of the engine at the end of the season as it was not apparently hurt in any shape or manner.

steam coal. I used about 3,000 pounds of this coal to break from 25 to 30 acres.

Plowing is hard work on an engine. The gears must be well looked after. I use two oil pumps to put oil on my gears, which keeps them in good shape. My tanks carry enough water and coal to last me three miles when plowing.

Wishing the Canadian Thresherman and Farmer success, I am

Yours truly,
William Carter,
Carman, Man.

The Best Paper in Canada.

Having a 22 h.p. Waterloo threshing engine we took a notion to try plowing with it last spring and I bought a six furrow Cockshutt engine gang. We do not find it as hard on the engine proper at plowing as threshing, which we believe to be on account of the lower speed used at plowing, but it is the gears that catch it. We broke three

Now we believe with an engine built for plowing not less than 30 h.p. to have tanks that will hold all the water that the wagon tank holds and jet pump of large capacity so as to load the water on to the engine quickly, also coal boxes that will hold 1500 pounds, and the right man to run it—can be made to pay well. It takes five men to run a steam plowing, large or small—Engineer, steersman, plowman, water man, and coal hauler and four horses.

We will also say that we consider the Canadian Thresherman and Farmer the best farm machinery paper in Canada.

Yours truly,
Ross Bros.
Duval, Sask.

Is Anxious to Learn.

I own two plowing outfits, one a 35 h.p. Buffalo-Pitts engine and the other a 32 h.p. J. I. Case engine. I also have two Cockshutt engine gangs, with eight and ten bottoms respectively.

and considerable of it scrub, plowing. I plowed with a six bottom John Deere engine gang, using only four bottoms. I have never used six bottoms because my land is very stony, but I drew a harrow behind the four, and the engine did its work with great ease. The ground was very heavy and dry.

If we were plowing anywhere near water we would not use a team at all. We would just run our engine over and fill it with water, at the same time taking on a fresh supply of gasoline. We would also set a ten gallon can of water on the engine and take it to the field with us and when the water in the tank got too hot we would throw some cold water in.

I have plowed and harrowed with my four bottoms, nine acres in five hours. Two men is all I

Doing a Tough Breaking Stunt.

A Hart-Parr 22 h. p. Gas Tractor pulling a 6 bottom 14 inch Engine Gang Outfit of L. McLean & Sons.

I may also state that after ceasing plowing on the 7th day of September I began threshing with the same engine and had entire satisfaction.

Yours very truly.
W. R. Dobbin.
Lethbridge, Alta.

Uses a 40 h.p. Steam Tractor.

I have had five season's experience in steam plowing and am still learning. I own a 40 h.p. Gaar-Scott double tandem compound engine, which I find is very handy and easy on fuel and water. I also have a ten bottom fourteen-inch Cockshutt plow. I use an Emerson disc plow to backset. I pull 21 discs cutting 16½ feet wide, and leave the land in excellent shape for seeding.

I employ five men and four horses providing I am not too far from the water. I find that the Hocking Valley Coal is very good

pinions in the compensating gear at different times and it took a long hard days work to take the broken ones out and replace them with new ones.

We used three kinds of coal also straw and prairie grass, the last two being both good when right dry, but they take too much time to load into the engine.

It took about one and a half tons of Galt coal a day, from twenty-two to twenty-five hundred pounds of Western steam coal, and eighteen hundred to one ton of Pittsburg steam coal, and we used six to seven tanks of water and travelled about three miles an hour.

We had three men most of the time, engineer, fireman and waterman, and we paid a man so much a ton to haul the coal as we wanted it.

We averaged twelve acres a day and it cost about $2.50 per acre including repairs, but not interest on the rig.

I can run either of these engines with flax or straw for fuel, but can do so much more work with coal that I find it pays to burn coal. This costs me $6.50 per ton and it takes about 300 pounds per hour to pull ten bottoms four inches deep.

We use three tanks for the two plows and two men on each plow. We can plow on an average of 40 acres per day with the two.

I find it is much harder on an engine to plow than to thresh. I am anxious to learn all I can about steam plowing and in June I intend to experiment a little.

Yours truly,
J. O. Shaffer,
Milestone, Sask.

Would Not Go Back to Horses Again.

I have had a 20 h.p. International gasoline engine since last July and have plowed about 1000 acres, principally deep breaking,

require on the outfit. We can plow from 20 to 25 acres with 50 gallons of gasoline and sometimes less. In warm weather I find it takes considerable more water as it steams away much quicker than late in the season.

I don't think that anyone using traction power on a farm would like to go back to horses again. As a farmer speaking to farmers, I would advise them to be careful when going into the business, as it takes a lot of capital to run it, and one needs to keep some horses on hand in case of a wet year, when the engine would not be much good.

I do my own threshing with my engine and have a new Gaar-Scott 28x40 separator and I find that it is much easier for the engine to thresh than

MORE PROOF SIR!

About the Superiority of the

Cockshutt Engine Gang

THE more you investigate into the details of the Cockshutt Engine Gang, the more you will become convinced that it is the only **practical** plow made to-day.

You can't be too careful in buying an Engine Gang plow, because there are many now being offered for sale in this country which are totally unfit to stand the conditions prevailing in Western Canada.

We were the first to manufacture Engine Gangs with independent plows—each plow working independently of the others, either in its automatic adjustment to the conditions of the land or when controlled by its own lever.

We have the testimony of hundreds of farmers in Western Canada who have bought and operated the Cockshutt Engine Gang under all conditions that the "one plow—one lever" system is the only practical and dependable method for securing the best work.

Here are a few of the many great advantages of independent bottoms:

If one bottom is thrown out by a stone the rest of the plows remain undisturbed. The bottom which was thrown out immediately drops back automatically to its work without damage.

Suppose you wish to clear an obstruction (see picture) instead of raising **all** or a **pair** of plows (which you **must** do with different other makes) you simply pull **one** lever and raise **one** plow.

The number of plows used can be changed at a moment's notice. When plowing is extra hard instead of dropping down from eight plows to six, for instance (which you must with two-furrow-to-the-lift engine gangs) you can use seven, thus utilising all the power without losing time.

When the land is wet, the drive wheels of the Traction Engine often sink several inches deep and the side of the engine tracks coming in the middle of a gang of two bottoms results in one bottom plowing deep while the other is simply scratching the surface. With our independent plows, each bottom adjusts itself automatically to the desired depth whether in depression or not.

Another great fault of gang bottoms is that the weight of the gang, although sufficient to keep **one** Bottom in hard ground is not heavy enough to keep the two bottoms from jumping out of the ground in hard and tough sod. Our bottoms and shares are very much heavier than other makes.

These are only a few of the reasons why you should buy the Cockshutt Engine Gang in preference to any other make. Another very important one is the adjustments. The top of each standard is fitted with a set screw for adjusting the "suck" of the share and levelling up the bottoms. The bolt holes in the standard are slotted and by loosening the bolts and using the set screw each bottom can be adjusted to as fine a point as desired.

The gauge wheels can be raised or lowered to suit the different heights of the breaker and stubble bottoms..

The gauge wheels can be put backward close to the shares for breaking, thus protecting them from stones, or can be transferred forward to make room for swivel rolling colters in stubble plowing.

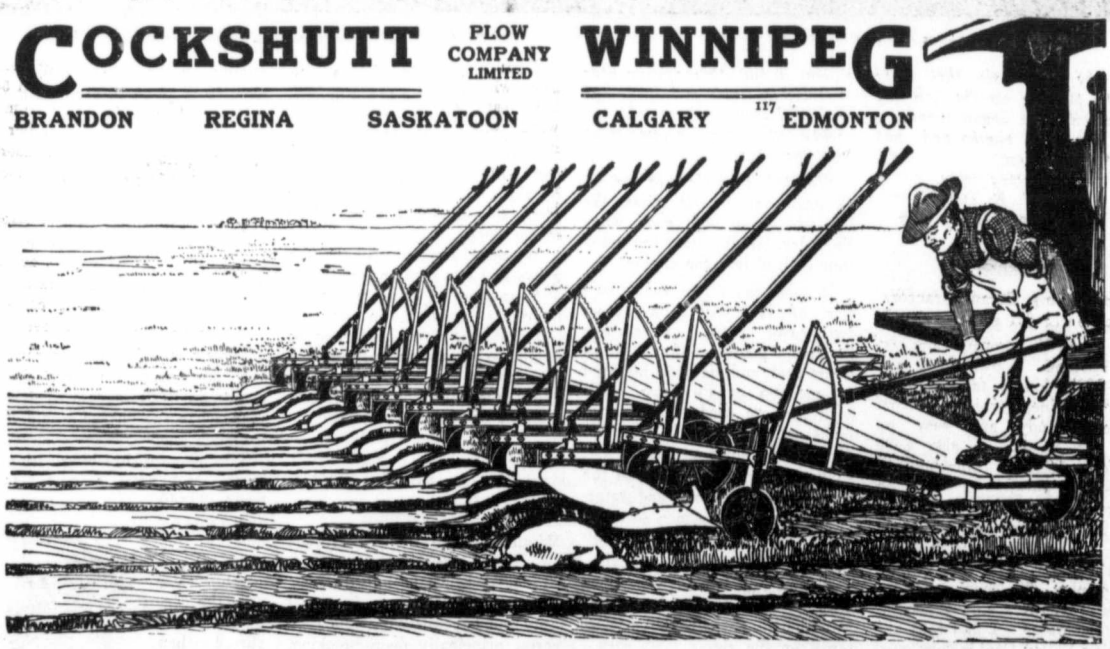
We could take up several pages in this paper telling about the superiority of the Cockshutt Engine Gang but everything is thoroughly explained in a handsome booklet which we have just issued.

Don't miss it whatever you do. It shows a large number of splendid illustrations reproduced from actual photographs of Cockshutt Engine Gangs at work all over Western Canada, and hundreds of convincing testimonials which cannot fail to impress you as to which Engine Gang is the best.

We will gladly send you a copy free on receipt of your name and address. Write us to-day—nearest address—or see a Cockshutt dealer.

COCKSHUTT PLOW COMPANY LIMITED **WINNIPEG**

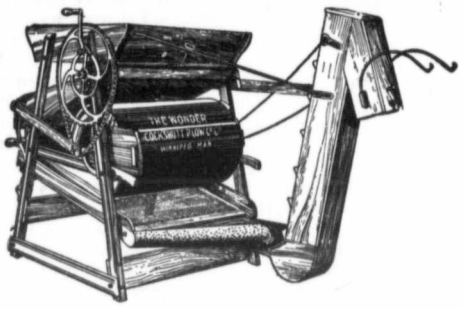
BRANDON REGINA SASKATOON CALGARY EDMONTON



COCKSHUTT

Money Making Implements

SOW CLEANER SEED



WONDER GRAIN CLEANER

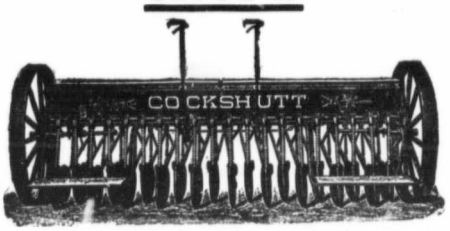
THE farmer who sows good clean seed has the satisfaction of reaping fine, big crops. Here is the only machine that has proved itself a positive success in separating Wild Oats from Wheat and Barley. It is the only mill on the market having Lower and Upper Screens made of Zinc. There are 15 Sieves in all. The gang of five Zinc Screens used in the upper shoe for Wheat (the top sieve being covered with oil cloth) makes it absolutely impossible for oats to pass through with the Wheat. The sieves are specially constructed to keep the wild oats FLAT, and thus prevent them from going through the round sieve holes with the Wheat. The upper shoe sieves range shorter and shorter, so that any Oats that happen to go through with the Wheat fall on blank iron and start off in a *flat* position, making it practically impossible for them to go through the lower screens before they are out on the tail-board. As their passage over the screens is shorter each time, they are eventually screened off.

We have seen wheat loaded over one-third wild oats cleaned with the Wonder Mill and come out with not one left in.

Unlike other makes the "Wonder" includes a gang of four upper shoe zinc Barley screens in its regular equipment *without extra charge*. These barley sieves can be used for very large Wheat. The Wonder Mill turns easier, is stronger, lasts longer and has a much larger capacity than any other mill, considering the high quality of the work done. Made in two sizes, No. 2, screens 32 inches wide; No. 1, screens 24 inches wide. The lower screens of both sizes are 36 inches long. We recommend the larger size, as its capacity is much larger, and it is quite easy to handle. We can furnish a strong, practicable bagger of large capacity for either size. This is without doubt the best mill put up to the Western Farmer. Write to our nearest office for descriptive circular, or see the Cockshutt dealer.

See The Cockshutt Dealer

SEED FOR BIGGER CROPS



COCKSHUTT DRILL

THIS is the Drill you hear farmers talking so much about in Western Canada. Some call it the "Big-Crop" Drill, and that's really what it is, because there is nothing to equal it for accurate sowing. It plants the seed so that the grain will grow up firm and absorb the moisture and nourishment of the soil better. That means bigger crops—better grain—greater profits. In material and workmanship there is absolutely nothing to touch it in America. The frame is built of high carbon steel—very tough and strong—the corners re-inforced by heavy malleable castings and steel corner braces. The pressure bar castings, and self-aligning axle bearings are *rivetted*—not bolted—to the strong I-beam which runs the whole width of the machine. The I-beam will never permit machine to sag in the centre. Axles are made of cold rolled steel shafting—always uniform in size and set at the correct angle to give the wheels proper pitch and gather, which ensures light draft. Our self-oiling device keeps the bearings in good condition. The grain flows down the closed boot right into the bottom of the furrow, and is always sown at uniform depth. The space between grain boots and discs gradually widens from bottom to top—preventing mud and trash stopping the discs from revolving. No matter how wet or sticky the soil, these discs will always revolve and cut. Scrapers are provided so as to clean each side of the discs. The feed on this Cockshutt Disc Drill is a positive force feed of great accuracy, and is driven by a short steel chain from the axle. The seed box is made of choice seasoned lumber, fitting perfectly at all points. Box covers are made in two parts and lock automatically. We use metal bridges between feed cups to prevent grain from clogging, so that the last seed is sown out of the grain box at the same rate per acre as when the box is full. **Made with Single Disc, Double Disc or Drag Shoes (interchangeable).** You can't realize all the advantages and improvements of this Drill until you read explanations in our booklet. Write for a copy to-day, or see the Cockshutt dealer.

COCKSHUTT PLOW COMPANY LIMITED WINNIPEG

BRANDON REGINA SASKATOON CALGARY EDMONTON

to plow for when plowing every part of the engine has to work. Yours truly,
E. Williams, Oakville, Man.

Plowed 25 Acres per day on an Average.

In the spring of 1906 we bought a 32 h.p. cross compound Reeves engine and two P. and O. gangs of four plows each.

During the first year we broke 1650 acres of gumbo land. Our coal cost us from 75c. to 90c. per acre. We used four men and two teams, one team for water and one for coal. Our outfit also consists of a caboose and stable. The caboose is built on trucks and the stable on skids.

The second year it was very late before we commenced to plow, and during seeding we drew a drill and sowed 450 acres of flax. In 1908 we broke in all, about 1640 acres and threshed 42½ days. Our coal cost us about 90c. per acre.

In 1909 we plowed about 1650 acres, with the same number of men and horses and threshed some 22 days. Our coal bills were about the same but our gear on the engine commenced to wear and was easily broke. Our repair bill at this time cost us 35c. per acre. We also had a great deal to contend with on account of the coal strike, and when that was over we had a lot of wet weather.

I think threshing is mere play for a 32 h.p. engine and one would last for years and years if it was not used for anything but to thresh, but I believe plowing is three times as hard on an engine as threshing. When plowing there is a steady heavy drag on the engine, similar to that of loading a horse down to all he can pull and keeping him at it. In this way you will soon wear it out.

On an average we have plowed twenty acres per day, but have plowed as much as 144 acres in one week and 28 acres in one day. We never try to see how much we can do, but try to do a reasonable day's work and be ready to repeat it the following day.

Wishing the Canadian Thresherman and Farmer success.

Yours truly,
J. N. Yount,
Drinkwater, Sask

Plowing Harder than Threshing.

About May 1st, 1909 we began plowing 25 miles east of Calgary, Alta., with a 22 h.p, Hart-Parr oil cooled gasoline or kerosene engine, pulling an eight bottom Cockshutt plow, but we only had six plows on, for it was all sod. We also had a double disc back of the plows which was very satisfactory.

After breaking 200 acres we hooked two double disc and a seeder back of the engine and then back of this a 13 foot drag harrow, and in one operation were able to seed about 33 acres a day.

One man was all that was necessary in actual work to steer the engine and look after it, but we changed off with him, as it would be rather monotonous for one to steer all the time. After oat seeding we broke 400 acres for winter wheat, which is double disced twice and then seeded it about August first.

We could seed about 50 acres per day with two seeders. We have two horses, but did not use them at all on the farm except to get gasoline and water for the engine. The work done with the engine cannot be duplicated with horse flesh.

We used about 2½ to 2¾ gallons of gasoline and about 2 gallons of water per acre, or 45 gallons of gasoline for 12 hours pulling 6 breaking plows.

We have not threshed any yet with our engine but intend to buy a separator next season. I certainly think plowing very much more severe on an engine than threshing. I don't think we were held up thirty minutes at any one time on account of the engine. We had an exceptionally practical gas engine man which contributed largely to our success. I am a very warm friend of the gasoline engine.

Yours truly,
A. E. Studbacker,
Calgary, Alta.

Breaks for 50 cents Per Acre.

In the spring of 1906 I came to Saskatchewan from Minnesota and bought a 32 h.p. cross compound Reeves Engine and a ten furrow engine gang. I broke about 150 acres that spring and by that time my plows had all gone to pieces on account of the stony ground.

The next spring I purchased a ten furrow Cockshutt plow, which I found to be all right. But my troubles just began. The breaking season was quite wet and we would get in the mud every little while. I found out right away that it was a lot easier to get into the mud than it was to get out. We broke along all summer and broke just about 900 acres. In 1908 we broke just about the same.

In the spring of 1909 I got the stubble bottoms for my plows and plowed about 160 acres and put it in crop on my own farm. After my own work was done I went breaking. I averaged about 23 acres a day all through the season. I get from $3.00 to $3.85 for breaking and from $2.00 to $2.50 for summer fallowing.

My crew consists of engineer, fireman, tankman and team and coalman and team. I pay my fireman $3.00 per day and tankman $2.50 per day, and I tend to the plows myself while one of my sons runs the engine and the other hauls the coal.

I burn about three tons of lignite coal per day which costs me $2.25 laid down at Hirsch. Sometimes I haul the coal direct from the mine, as I live only five miles from the mines at Bienfait.

I figure that I can break for about 50c. per acre. That is what I have to pay out in cash. I board my own crew and have a cook's shack and caboose right along all the time. I sharpen my own shares and use ½ gallon of cylinder oil per day and about six, twelve-barrel tanks of water per day.

I have a set of Gould Balance valves on my engine and must say that they are O.K. They give me more power and use less coal and water and are a lot easier on the valve gear.

In the fall I run a 44" x 66" separator which is no work at all and not nearly as hard on the engine as plowing. I have used my engine for four years and haven't had a break down but what I could fix myself with the exception of one when the connecting rod broke. My flues don't leak any more than when I got the engine.

I have run traction and portable engines of all kinds, and may be the oldest thresherman around having threshed 38 years.

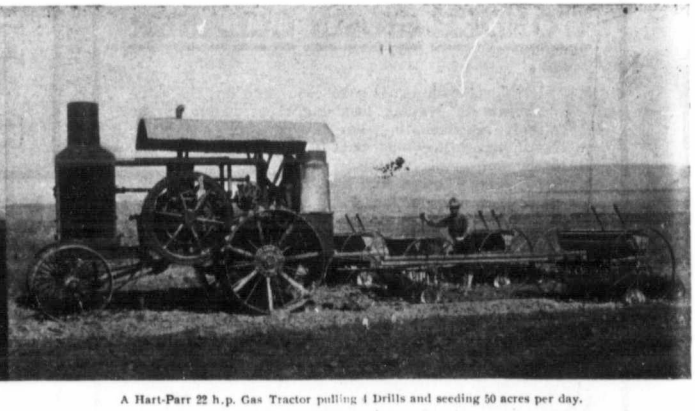
Yours truly,
Jacob Giem,
Hirsch, Sask.

Plowing Numbers Appreciated

We are very pleased to be afforded an opportunity of relating our experience in traction plowing to others, or rather to those who are anticipating traction power.

We, who a year ago were groping for enlightment regarding this subject, found many helpful suggestions,

A Hart-Parr 22 h.p. Gas Tractor doing a Discing and Harrowing stunt.



A Hart-Parr 22 h.p. Gas Tractor pulling 4 Drills and seeding 50 acres per day.

The Gas Traction Company, Limited

Factory, Elmwood — Winnipeg . Manitoba — Offices, 41 Rorie St., Grain Exchange

Manufacturers of

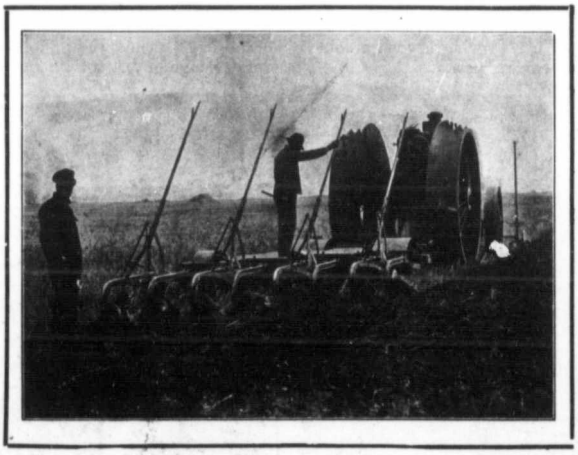
Four Cylinder Gasoline Traction Engines for all purpose general farm use

The Farmer wants an engine that will be an all purpose farm tractor, that will not only do his plowing and threshing and lie idle the remainder of the year, but one that will do all work to be done on the farm, do it well and do it economically without having to spend a fortune for repairs or for wages to an expert to keep it going.

What — can be done by a self-steering **Gas Traction Engine** is told in our catalogue **"The Passing of the Horse"** by a large number of well-satisfied customers whose testimonials, after practical experience in the field, offer the best evidence of the value we give to those who buy our machines, and of the satisfaction of those who use our engines for—

Summer Fallowing	**Road Grading**	**Shredding Corn**
Breaking	**Harvesting**	**Grinding Feed**
Plowing	**Threshing**	**Baling Hay**
Seeding	**Sawing Wood**	**Hauling Wood**

and then some.



We have — the best all-round gasoline engine on the market. Of light construction yet strongly built with best of material and first class workmanship, it does not pack the soil as some of the heavier engines will; it will pass over wet ground and go through sloughs when other engines could not venture to do so, and it does not consume its fuel and power in moving its own weight.

It is in construction the most simple and the most easily operated engine on the market. The purchaser is able to secure parts and have repairs made with promptness and despatch, and the location of the factory in Winnipeg offers many advantages easily understood by anyone who has suffered from the delays and difficulties of securing parts or assistance for engines imported from other countries.

And Guarantee We guarantee the horse-power—the material and workmanship—the amount of fuel it will use per acre—the number of breaking plows it will pull—the size of separators it will steadily and continously drive and the general construction.

If you are interested in the question of a general purpose farm traction engine we would be glad to have you pay a visit to our factory at Elmwood, Winnipeg, and we are sure it will repay you many times over.

If you cannot call on us send for one of our catalogues **"The Passing of the Horse"** which will tell you all about our engine.

We are also manufacturing the **Hannsman Binder Hitch,** one of the greatest inventions of the age, and an indispensible part of the outfit which should accompany all power engines for farm use.

Factory: Elmwood, Winnipeg, Manitoba

Office: 41 Rorie St., Grain Exchange, Winnipeg

The Gas Traction Company, Ltd.

in fact information that proved of great value to us and felt the management of The Canadian Thersherman and Farmer was to be congratulated on their fore-thought in bringing about this medium whereby we tillers of the soil may exchange our views and experiences, for we are eagerly looking forward to the arrival of the plowing number to know how others are getting along.

It is your request that we express ourselves just as if we were talking to a neighbor and that privilege permits us to air our views freely.

We have operated steam a little and have been in touch with it all our lives. Yet we feel that the combustion engine so far excels the steam as a convenient power that it is proving beyond a doubt the coming power.

it, it has developed several horse power more than the rating. We have not done any seeding with it as yet as we had horses enough to handle the drills, but intend to use it this year.

During the season of 1909 we backset 100 acres and broke 900 acres, disced 500 acres and threshed 90,000 bushels of grain, and conditions in general were very unfavorable, owing to our having no experience with either the engine plowing or threshing. There were a great many delays caused by our inexperience, which we can profit by next year.

Our land being very rolling and in places quite stony, 15 to 18 acres was a good day's breaking, while the last job we did of 138 acres averaged 28 acres per day. Our oil consumption on this last averaged two and a third gallons per acre and cost 22c. per gallon.

We are certainly well pleased with our outfit. Our engine will cling to a sidling place, creep down a rough decline, pad its way across a slough or soft bottom and

to good advantage, as it is very important to keep the engine going as steadily as possible, for if one just saves 30 minutes every day, that will pay and board the third man. We never worked any double shifts, but owing to ourselves operating we worked very long days, and arranged our work in the following manner. Two of us would get up at 3.30 a.m. and start the engine, while the other would sleep until 5.00 a.m. He would then prepare breakfast, have his own and come over to the engine. Then the second man would go and eat while the other two were oiling up and doing the necessary repairs. By the time the second man was back the outfit was ready to start again and the third man went to his breakfast. Then if there were no repairs or oil required he had two or three hours sleep and was ready to relieve the cook ere it was time to prepare dinner. The same routine was repeated at noon and the third man if not required to run any errands, had his nap and in this

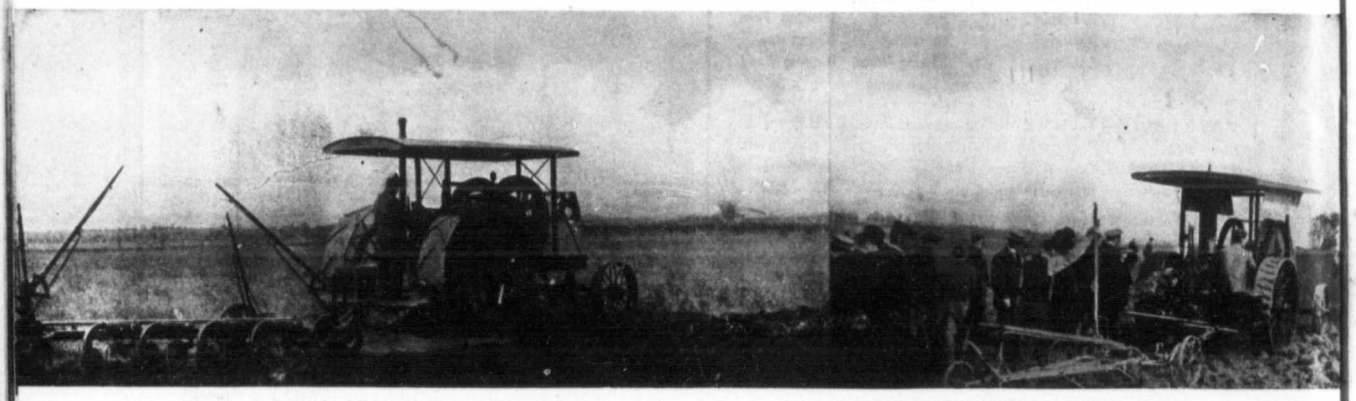
who are anticipating this line of power and would consider our experience of any avail and wish any further information, we would be only too pleased to answer all enquiries to the best of our knowledge.

Yours respectively,
Conboy Bros.
Asquith, Sask.

Traction Power the Only thing.

I have a 30 h.p, Rumely engine and a ten bottom Cockshutt plow, which last year gave very good satisfaction.

Not getting into Alberta until late in the season I only got 450 acres broken. I used two horses on the water wagon and four on the coal wagon, having to haul my coal eighteen miles. I used about 4500 pounds of coal per day of fourteen hours and about 6 or 7



An International 15 h.p. Gas Tractor pulling a 4 bottom 14 inch Emerson Gang.

An International Gas Tractor at Work in the Motor Contest at Amiens, France, where it won the Gold Medal.

Two years ago we became very much interested in gas as a power quite contrary to the sentiment of our neighbors, who with few exceptions opposed very strongly our venture. We had however, experienced unsatisfactory results with public threshers and came to the conculsion that we might just as well lose money trying to better our condition as to sit idly by grumbling at conditions without trying to remove them.

The outcome was that we purchased a 20 h. p. International Harvester portable gas engine and a 28—40 separator, which gave good satisfaction, and in the spring of 1909 we purchased a 22 h.p. Hart-Parr kerosene engine.

We found our Hart-Parr engine to exceed our expectations in every respect as in every case where we have hitched anything to

snort up the opposite bank, dragging its heavy train of plows with very little effort.

We own a six bottom Cockshutt engine gang, and right here I would like to say that one of our neighbors who was visiting us while we were in operation and when going over one of the many stone ridges, expressed himself as follows, "I just blinked my eyes, set my teeth and was ready to dodge, expecting to see pieces of plows flying in all directions." But the plows jumped and spit fire and tore over the smoking stones and a minute later were calmly and evenly turning over their six black ribbons of virgin soil.

We pulled six plows and a roller in the earlier part of the season, and toward the latter part we removed the roller and put on another plow. Our best day's breaking was 32 acres on a ¾ mile stretch.

We find that three men work

way we kept going from four in the morning till nine at night.

We have prepared as much as 60 acres in a day ready for the drill. We operated four discs, a six horse drag and two floats.

When threshing we drove a 36 x 56 Waterloo separator with all attachments.

Our repair bill was not very heavy. The only serious break we had was the crank shaft, which the company replaced without any request on our part. At the time it broke we were discing on some very steep grades.

I would advise any prospective engine buyer to get a kerosene engine. Kerosene is getting cheaper and gasoline dearer. Our gasoline to-day costs us one third over the cost of kerosene. Then in field operation it is not nearly so wasteful and one has a better and stronger power on a heavy load.

In closing I would say that any

tanks of water.

I only used two men on the plow at first but soon found that not sufficient and put on the third man and could plow two or three acres a day more.

This spring I am going to arrange things differently. I am going to put three men on the plow and one on the water wagon, the same as before, and expect to have all my coal hauled before hand. I am also going to have a blacksmith on the outfit to sharpen the shears and other necessary work and he can also change the shears at night when the engine is not running. I can hire a blacksmith for $3.00 a day and board and that alone is what I pay for to get my shares sharpened. Plowing is far harder on an engine than threshing. But I con-

sider tractive power the only thing to break the soil with here.

Yours truly,
J. W. Smiley,
Taber, Alta.

His first Experience.

I have a 30 h.p. Flour City engine, which I bought last June. I have a Cockshutt engine gang and when plowing in sod used 4 bottoms, cutting four inches deep. When summer fallowing I pulled from 5 to 7 bottoms. I am sure however, that I can do better than this even this season as I understand my engine better.

I plowed from 10 to 18 acres per day. I and my fourteen year old boy ran the outfit, as it only required two to handle it. We used nearly 30 gallons of gasoline per day, at a cost of 30c. per gallon; and from one to two gallons of cylinder oil. One trip to town a week for oil was all we needed a team for. We used nearly two barrels of water per day when plowing, but not nearly so much for threshing. It is easier on an engine to thresh than to plow and besides it doesn't require as much fuel. I have a 30x48 Aultman and Taylor separator. In one half day we threshed 1500 bushels of oats with six teams and three pitchers. In one day we threshed 1200 bushels of wheat.

This was my first experience in traction work and know I can do even better next season.

Yours truly,
L. C. Wood,
Ubley, Sask.

Cut Wheat and Plowed at the Same time.

We first tried traction plowing in 1898 with a John Abel cross compound engine with a home made tender and plow attachment for an ordinary walking gang. We pulled six bottoms in breaking. We managed to break 240 acres in one season. We used wood for fuel and consumed two cords of three foot poplar per day, breaking on an average of 12 acres per day.

In 1904 we bought a Case 25 h.p. simple engine with 36 inch driver. We have used this ever since for plowing and threshing and have done a lot of work. We also have an 8 bottom Cockshutt gang, and broke about 400 acres of pretty scrubby land last season at an average of 18 acres per day, using one team and man to haul water of which we consumed 40 barrels per day. We consumed about 1¼ tons of coal per ten hour's run, this cost us $6.50 per ton.

In clear prairie or stubble land two men ran the outfit, the fireman looking after the plows. But we had to put on an extra man to look after the plows when breaking in scrub, making five men with the outfit.

We also cut wheat and plowed at the same time last fall. We pulled six bottoms and an eight foot Deering binder. We had the binder attached behind the plows and the binder delivered the sheaves on the plowed ground and stooked there. We tried this for an experiment to destroy sow thistle. This plowing was done in the second week of August and it has been well harrowed and cultivated, so that I think this will be almost as good to destroy weeds as summer fallow.

Plowing is certainly harder on an engine than threshing.

Yours truly,
Hebert Bros.
St. Pierre, Man.

Pulls Ten Bottoms.

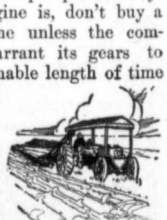
Last year was my first experience with steam plowing. I bought a new Reeves plowing engine 32 h.p. cross compound and a ten bottom Cockshutt Engine gang.

My younger brother had had sufficient experience to secure his papers for running a traction steam engine. He therefore, took charge of the engine, while I took care of the plows. We had one man to steer, one man and team to haul water and one man and team to haul coal. This made up our gang.

We plowed from 20 to 30 acres per day. The amount per day depended a great deal on the land, but in good laying land, we made 30 acres a day. To plow this amount we used two tons of Pittsburg steam coal, about 70 barrels of water and two gallons of oil.

We plowed and seeded 200 acres of fall wheat for myself and the balance of the plowing season was spent plowing out, making a total 1,200 acres, of which over 1,000 acres was new breaking.

My advice to prospective buyers of an engine is, don't buy a plowing engine unless the company will warrant its gears to stand a reasonable length of time with careful useage.



During the threshing season I hired the engine by the day with

my brother to run it, to a neighbor who has an Aultman Taylor separator. They threshed 21 days. When I settled with my neighbor he was well satisfied. He said that during the 21 days they did not have to wait five minutes for the engine, and I had no repairs to get during the threshing season. I am sure that thresaing is much easier on an engine than plowing.

Yours truly,
Earl G. Cook,
Pincher Station, Alta.

A very Reliable Power.

I own a 20 h.p. International Harvester traction engine and have seeded, disced, harrowed, plowed and broke land with it and found it to be a very reliable power indeed, being far superior to horses.

I seeded 250 acres, drawing two twenty shoe seeders and the same width of harrows behind. One man looked after the seeders and had time to run around and poison the gophers. We always had plenty of gopher poison on hand.

I ran the engine myself and a third man drew the gasoline and water to the field with a small team of drivers. We seeded on an average of 50 acres per day of twelve hours and used about 20 gallons of gasoline per day.

In breaking we drew three and sometimes four fourteen-inch John Deere plows and broke from 8 to 10 acres per day, using from 20 to 25 gallons of gasoline. We also used from 1 to 3 barrels of water per day.

We got stuck a few times in the early spring, but never so bad but that my team couldn't help

the engine out. I have not threshed with the engine yet but will say as far as I have used it, it has proven eminently satisfactory. The main thing with a gasoline tractor is to keep every nut and bolt tight. Keep it in good repair, looking to the timing of the valves and sparking gear. If this is not done it is surprising how many ways you lose your power.

Thanking you, I remain
Yours sincerely,
Joseph Hewitson,
Nutana, Sask,

Traction Power a Success for Plowing.

I have a 26 h.p. American-Abell engine and a 7 bottom Cockshutt engine gang. I might just say that the engine had easy work.

I employ four men and two teams of horses to draw water and wood. It requires about 1½ cords of wood per day and 30 barrels of water.

I plowed 20 acres a day in stubble and in breaking 18 acres. I think plowing with tractive power is the best way that it can be done, as it can all be done at the right time.

Yours truly,
Robert Smith
Richer, Man

Must be Properly Equipped.

The outfit which we operated with last year consisted of a 35 horse-power Minneapolis Direct flue engine with double countershaft and a 10 bottom Cockshutt plow. In addition to the plows we pulled a twelve foot packer and two seven-foot discs, and in this connection we might state that at no time did we find it necessary to carry over 110 pounds of steam.

We employed five men for each shift. But by that we mean that we ran from 3 a.m. till 10.30 p. m. not stopping at all, and averaged about 40 acres per day, using 2½ tons of British Columbia coal each day. It required nearly 14 tanks of water per day. One team did our water hauling for each crew.

From a financial standpoint, I must say that we have no reason to complain and feel that we met with a very successful season; but the man who figures on going into that business in Western Canada must be properly equipped, with plenty of power, and may rest assured that it is much harder on an engine to plow than it is to thresh.

Trusting we have given you the desired information and if the contents of this disconnected reply will be of any benefit to those who may have in mind the plowing business by steam we shall feel rewarded for our feeble efforts.

Yours sincerely,
F. F. Hammer & Son,
Lethbridge, Alta.

Breaks for $2.25 per acre.

I have an American Abell 26 h.p. traction engine and an eight furrow Cockshutt engine gang.

A Flour City Gas Tractor pulling a 7 bottom 14 inch Cockshutt Engine Gang on the farm of G.M. Neely, Govan, Sask.

A. Rumely, 56 h.p. Steam Plowing Engine pulling plows disc harrow and drill in Saskatchewan

When breaking I only pull six or seven bottoms, but in stubble I can handle eight bottoms all right.

I have an engineer, one tank team and man and I myself steer the engine. I also have one man to handle the plows. I had my coal hauled in the winter and did not need a team for that.

I figure that it cost me to break per day, allowing for all expenses, wear and tear on machine, about $35.00, and I generally plow fifteen acres per day. I have not done much breaking but my own and figure that it costs me about $2.25 per acre.

Yours truly,
Paul E. Doege,
Strassburg Sask

Getting out of Bog Holes.

I have been in this part of Alberta for over a year now. My outfit is a Gaar-Scott 40 h.p. and it pulls my ten plows along without any trouble whatever.

My son and myself run the engine and plows in the breaking season. I hire a man to haul water, of which we use nine or ten tanks per day. We also use two tons of coal per day.

We use six horses with the outfit, four on the tank and two to haul the coal to the engine.

On an average we break 22 acres per day. Of course sometimes we don't get that much done as the engine gets into bog holes and that takes considerable time to get it out again. I find the best way to get the engine out is to have a good strong chain and also a few stout timber or logs. Then put the chain around one end of the log and fasten the other end of the chain on a spoke of the big drive wheel. The steam is then put on the engine and it will walk right up on the log or timber.

It costs for oil about $2.50 to $3.00 per day. I find that breaking is much harder on the engine than threshing.

Yours truly,
Chris. Braunberger,
Carbon, Alta

Uses Hocking Valley Coal.

We have only been in the plowing business the past season. We have a 25 h.p. Rumely twin cylinder plowing engine which pulls with ease our 8 bottom Cockshutt engine gang, using little fuel and water.

We plowed about 400 acres with our outfit. It took three men to run the outfit an engineer and a plowman who did the firing and a tankman and team who drew the coal also.

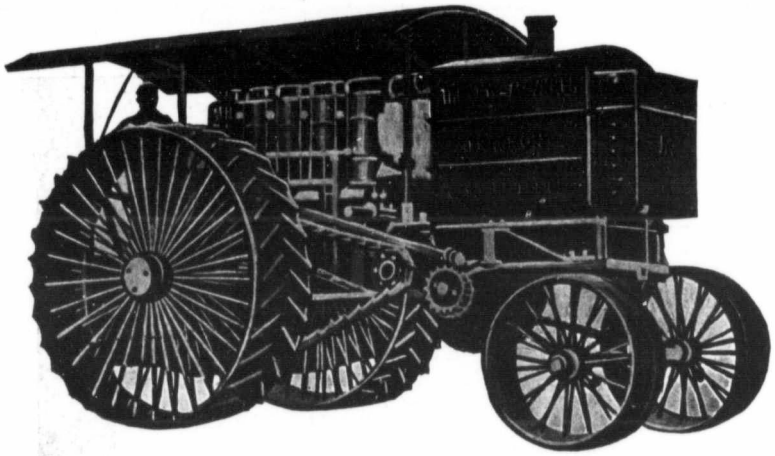
We used Hocking Valley coal, burning about 100 pounds per acre, at a cost of $7.75

FIFTY HORSES AND TWELVE MEN

are necessary to do as much work as two men can do with a

Joy-McVicker Gasoline Traction Engine

Do not waste your time or that of your hired man with a small gas tractor, but get a machine that will do the work of the largest steam engine and requires no more men to operate it than the smallest gas tractor



The Joy-McVicker Gas Traction Engine is a 50 h. p. traction, (140 h p. brake) machine of the 4 cylinder, vertical type. It has a **double chain drive,** one on either side. It is the only chain driven gasoline engine on the market and owing to the fact that it is chain driven, a flexible mounting is obtained, taking the strain of the continued explosions in the engine off the frame work.

Plowing is a severe trial on any traction engine and it is an actual fact that any engine mounted on trucks will either shear off the bolts entirely, or work them loose, and with a great many of the gasoline traction engines on the market to-day, when in actual field practice, it is necessary for the operator, each morning, to take up the parts that have worked loose during the day.

The Joy-McVicker is the only engine on the market which has railway car construction in its frame work, using 2 by 4 steel beams rather than channel iron or I beams. All cross pieces are dove tailed into the channels so that the strain is taken off the nuts and bolts. **It is an actual fact that our engines have been in operation for two seasons without taking up a single nut.**

Furthermore, the chain drive does away with the **annoyance, trouble and expense of breakage in gears** which can easily mount up to $300.00 in a single season, to say nothing of time lost waiting for repairs.

The chain moves at a speed of but six revolutions per minute, so that wear and tear on this part of the engine is reduced to a minimum.

The Joy-McVicker engine is very economical on fuel and water consumption. The consumption of a 50 h. p. **Joy-McVicker** worked on a full load can safely be placed at less than 1 $\frac{5}{10}$ gallons of gasoline per acre and the water consumption at two to three barrels per day.

The Joy-McVicker is the result of the best machine shop practice, and is as well made as any steam engine on the market to-day. It is **built to last** and it is **built to pull,** working up to its full rated capacity every hour in the day.

This engine is also manufactured in 40 and 70 h.p. brake

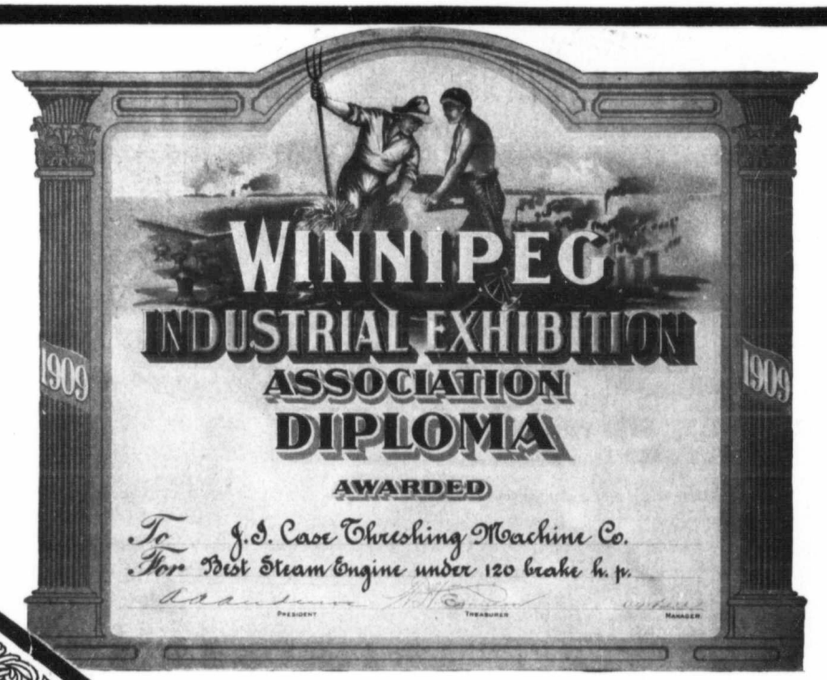
For Catalogue and other information write

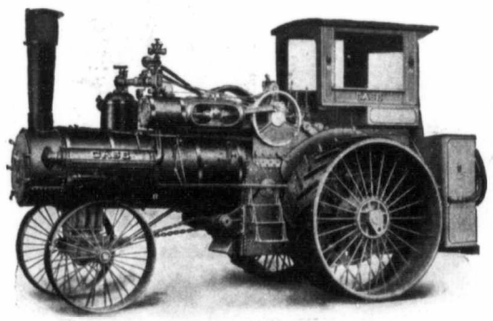
THE Canadian Port Huron Co.
For Manitoba and Saskatchewan
Winnipeg

THE Alberta Port Huron Co.
For Alberta
Calgary

We still have some territory for a few live representatives

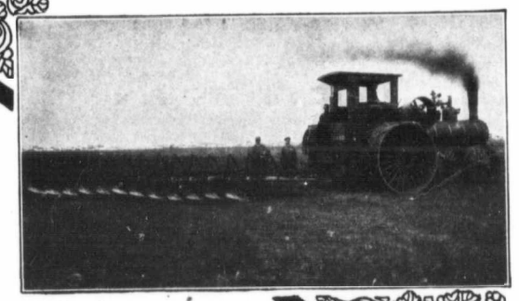
After All - It Is The Pull.





"CASE" PLOWING ENGINE IS ECONOMICAL AND IS BUILT TO PULL—

The "CASE" policy is and always has been to design and construct the machine that will most efficiently accomplish the "Object For Which It Is Built." And after all, a plowing engine is built to convert the energy of coal into draw-bar pull. The plowing engine that does it most efficiently is the most successful and economical. The "CASE" "Has Stood" the test. Are you interested in extensive plowing? If so get a "CASE" engine. Catalog will be sent upon request. Agencies every-where.



During the Motor contest at Winnipeg in July 1909 some interesting facts were brought to light and some valuable figures obtained. The "CASE" entry was the "Gold Medal Winner" BECAUSE - it proved itself to be a Plowing Engine - Just what its makers designed it for. The following are the Actual Results from the Winnipeg Plowing Contest and may be verified by referring to the August issue of the Canadian Thresherman.

	NUMBER OF ACRES PLOWED	COAL USED POUND	COAL PER ACRE POUNDS	POWER OF DRAW-BAR PULL POUNDS	DRAW-BAR PULL PER PLOW POUNDS	NUMBER OF FURROWS PLOWED	WORK DELIVERED AT DRAW-BAR FOOT-POUNDS	FOOT-POUNDS OF WORK DELIVERED PER POUND OF COAL
CASE	3.6	442	123	9300 FOR 11 PLOWS	845	68	113,906,800	257,700
COMPETITOR No 9	4.29	580	135	9860 - 14 -	704	84	117,089,280	202,000
COMPETITOR No 14	3.18	454	143	7400 - 10 -	740	60	87,912,000	193,600
COMPETITOR No 20	4.0	510	127	7900 - 10 -	790	76	118,879,000	233,000

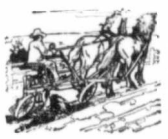
Now, it is evident that the "CASE" Plowing Engine delivered More pounds of Pull for every pound of coal and used Less coal per acre, than any other engine in the contest.

J.I.CASE THRESHING MACHINE CO. INCORPORATED

·RACINE· WIS·U·S·A·

Chicago Engr. Co.

TORONTO WINNIPEG REGINA CALGARY



per ton and a ten barrel tank of water would supply the engine while plowing four acres. As we had our own help we could not say how much expenses came to.

We broke about 10 to 15 acres of sod per day and from 15 to 20 acres of stubble. All the land we plowed this season was heavy, rolling land and it made a big difference in the consumption of coal and water.

As to whether plowing is harder on an engine than threshing, we would say that it is harder on the gears, but it does not require any more fuel for plowing.

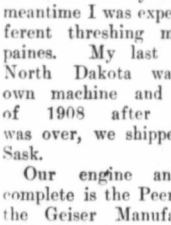
Yours truly,
G. H. Ireland,
Killarney, Man.

A Good Experience.

As a thresher, my experience is practically unlimited and I am quite certain that I could tell some things that would interest all the threshermen, puzzle a lot of them and cause some of them to note down my experience and adapt methods they never thought of before.

I have threshed in North Dakota for 15 years and in the meantime I was experting for different threshing machine compaines. My last threshing in North Dakota was with my own machine and in the fall of 1908 after our season was over, we shipped to Wolfe, Sask.

Our engine and separator complete is the Peerless made by the Geiser Manufacturing Co. Wainsboro, Pa., and handled by Burridge Cooper Co,. Winnipeg. The engine is the U. U. Class, 22 h. p. single gear.



We have a Cockshutt seven furrow steambreaker gang. The matter of investing $750.00 to $1000.00 in a traction plow is a serious consideration, situated as we are in this country. The land is stony, I would not advise breaking land that is full of big rocks with a gasoline or steam power, but I will give my experience and state how I managed to over-come obstacles.

In the first place, I found that the plows could never lock onto or break shears or standards on rocks that were out of sight, or below the surface, for when the plow point strikes a rock that is below, it generally hits it on the top slant and will slide over without doing any damage to shear or plow. The breaks we had were our own fault, or the cause of misunderstanding between the engineer and the plowman. It will happen once in a while that the point of the plow shear will lock in under the edge of a rock that sticks out of the ground before the guide wheels strikes the rock or throws it out of the ground and in that case if the rock is large enough, or sets in the ground hard enough something has got to go, for an engine is not as sensitive to the touch of a stone as a team of oxen. Consequently if there is rocks to contend with, the farmer should put two or three men in the field to dig them out and mark the ones which they may not have had time to dig out. My partner and I had very stony land to plow last summer, but we had them all dug out and hauled off the year before, and when we plowed we went right along with seven plows and a disc behind without any trouble or delay whatever.

The neighbors we broke for had men in the field digging with bars and picks and we generally had one man walk in front of the engine and mark the rocks, that were not taken out, with a sod taken from the first furrow and laid opposite the rock or on top of it if a big one. The man steering the engine could then always notice the stone or its whereabouts and call the number of plow most liable to hit it; and plow tender could then lift plow or plows over and avoid taking chances of breaking or damaging them.

There are also other points to be considered in doing a good job always and in all conditions of soil. The plowman should make engine plowing a study and take an interest in his work. You will find for example in changing and replacing shears, that the plow will take a deeper furrow until the roughness is worn down to a smooth scouring surface. So you have to see that the plow is set accordingly and changed when it starts to run shallower. After the shear is once clear and smooth, you can set the plow and it will run alright in that position for a day or so until the shears start to get dull and you will find that the duller or blunter the point and shear gets, the deeper you have to set the plow.

Now you will sometimes have a blacksmith put new points on the shears and you should always get him to put the points on straight with the landside. I have had shears come from the blacksmith with the point turned out an inch or two inches from the landside and this will always cause the plow to take a wider furrow than it should.

By following up this advice and attending strictly to business, you can always have each plow take the same width and depth of furrow.

We broke about 775 acres in 43 days or an average of 18 acres per day. We bought 40 tons of Edmonton coal to start in with. It cost us $7.50 per ton including freight. We used a little more than two tons of this coal per day and when this was used up we used the Galt coal which cost $10.50 per ton. It took less per day of the Galt so that it amounted to about the same as the Edmonton.

The crew consisted of four of us. My partner and myself ran the plow and engine.

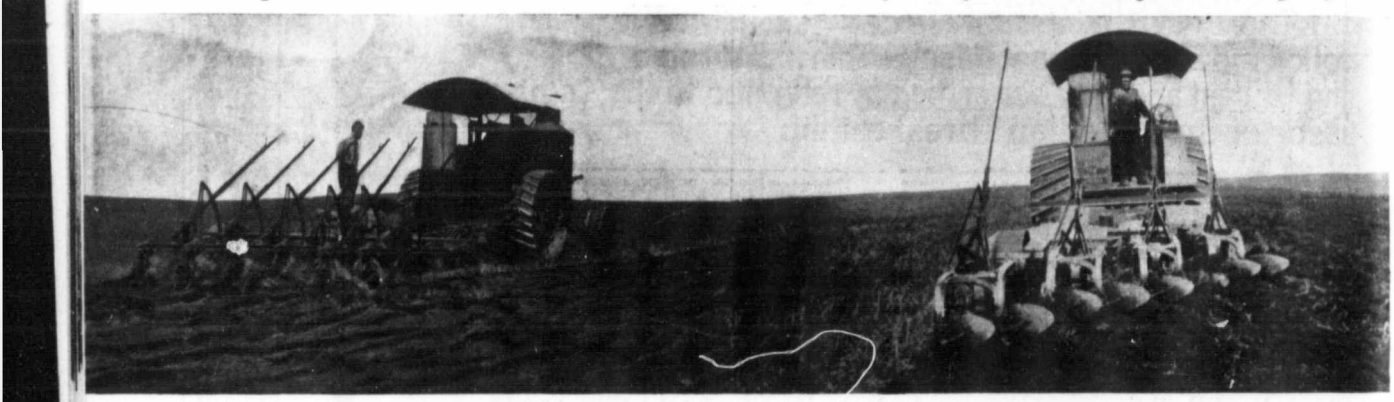
Expenses were as follows:

	per day
One tankman and team	$4.00
Fireman	2.50
Plowman	4.00
Engineer	4.00
Board for men and team.	3.50
Oil	.75
Blacksmith work and repairs	1.75
Runabout	2.00
	$23.00

We used from 5 to 6 barrel tanks of water per day. That is a tank more than what we generally use for threshing.

I do not consider traction plowing any harder on an engine than threshing; in fact, we could not see that the gear was worn at all after the plowing season was over. But the gear was oiled regularly and not allowed to start cutting. I think our engine is built to stand abuse and hard work.

Yours truly,
C. S. Jellsett,
Wolfe, Sask.



Hart Parr 22 H P. Gas Tractor pulling a 6 bottom 14" Cockshutt Engine Gang. Outfit of W. Gordon Smith, Eyebow, Sask.

A Hart Parr 22 H.P. Gas Tractor pulling an 8 bottom 14" John Deere Engine Gang Outfit of E. F. Lewis, Morris, Man.

Will Break 1000 acres in 1910.

I have a 30 h.p. Sawyer and Massey engine, which I find very easy to keep steamed and travels along beautifully pulling a ten bottom Cockshutt plow.

One team of horses supplies the water and coal and has plenty of time to spare. I used 1900 pounds of Pittsburg steam coal, unscreened; in one day's plowing, or 25 acres, on a half mile field. Although we do not lose much time in turning I rather think a mile the best for a large outfit. I draw four tanks of water per day

and always have a good start of water in the morning left from previous day, so that three tanks will practically run us all day. My tank holds about 10 barrels In 15 days I have plowed 262 acres, at a cost of 80c. per acre. We were not trying to make any records as the business was new to us.

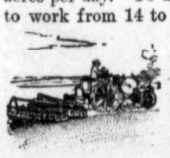
Next year I am laying plans for breaking and backsetting about 1000 acres, besides putting in and harvesting the crop on a 375 acre piece of land.

Yours truly,
D. McInnis,
Macdonald, Man.

A Good Engineer Necessary.

We have run a steam plowing outfit one season and find it considerably better than plowing with horses. Our engine is a 25 h.p. double simple Reeves engine and a 7 furrow Cockshutt steam plow. We find them both very satisfactory.

We broke 1300 acres of prairie sod in 68 days of plowing, leaving us an average of about 19 acres per day. To do this we had to work from 14 to 16 hours per day. We used seven men and a cook and three teams of horses, the expenses being as follows, per day:—



Coal per ton from $1.50 to $1.75	$7.50
Engineer	4.00
6 men at $1.50 per day	9.00
3 teams	6.00
Board and cook	4.00
Oil	1.00
Blacksmith work, etc.	1.50
Total—	$33.00

I plowed for $3.00 per acre.

We used from 4 to 5 tons of coal and had from 6 to 12 miles to haul it, taking it right from the mines, and from 60 to 70 barrels of water per day. We travelled at a rate of about two miles per hour.

In our experience we have found steam plowing harder on the engine than threshing and that the main thing is to keep good water, even if we have to haul it a long distance. Each man who owns a threshing and plowing rig should be a practical engineer himself. If one happens to get hold of a poor engineer, he is liable to do a lot of damage. An engine is an expensive thing to get repair for and a man should thoroughly understand the business before he buys an outfit.

We used our engine last spring for our spring work, double discing, seeding and dragging about 25 acres per day. It is not any cheaper than horses, but it is a much faster way to get the crop in.

Yours truly,
Johnson Bros.
Castor, Alta.

Steam Plowing a time and Money Saver.

I have only had one year's experience in steam plowing. I have had an Aultman-Taylor 25 h.p. simple engine for about four years. It is equipped with heavy gear and plowing attachments. I hesitated getting a plow, however, until last summer when I got away behind with my plowing. Then I thought it was about time to purchase a plow. I therefore, bought a John Deere ten bottom plow.

For deep summer fallowing I pulled eight plows and for deep backsetting, that is bringing up about four inches of subsoil in very heavy land, I pulled six. All through the stubble plowing I had on the ten and handled them with ease.

I averaged about 25 acres per day in the stubble, using about 1½ tons of soft coal with about four tanks of water, consisting of fifteen barrels each.

One man can draw the water one mile with one team and do it easy. The steerman attends the plows and the engineers does the turning at the ends. The waterman generally brought out the coal in the morning.

With what little experience I have had, I think steam plowing is a time and money saver.

Yours respectfully
Wm. R. Lewis,
Fannystelle, Man.

Total Expense $1.65 per acre

Having been asked to contribute to the Canadian Thresherman and Farmer, an article on traction cultivation, we will gladly lay before you the facts of our experience during the season of 1909.

After due consideration we purchased a Hart-Parr 22 nominal h.p. gasoline and kerosene oil tractor and an Emerson six bottom sixteen-inch engine gang.

We then built and equipped a cook car on trucks, made it very comfortable for bad weather in the plowing and threshing season, at an expense of about $225.00. Here we made a mistake as we should have built it 10 x 22 feet with a truck 5 feet in width instead of 9x18 with a 4 foot 8 inches in width truck.

Next we equipped a blacksmith shop, which

we put on skids. We then pur- necessities chased other such as one light team of horses, two wagons, one heavy buggy and a small water tank. Later we purchased a 36-56 inch Aultman Taylor separator for fall threshing which we drove with an 8 in. four ply rubber belt.

We commenced plowing stubble land April ninth and even then we encountered considerable frost in the ground, especially where there was any considerable amount of rock. Right here, we found that we could do nice work in frosty, stony land where horse plows could not run at all. We did our stubble plowing at an average depth of six inches in land that had never been plowed more than four or five inches deep. On this kind of land we also pulled a packer and double harrow behind the 6 sixteen-inch plows.

harrow to work the sod after it was broken. We learned that by plowing and packing, then to double disc up to the plow, the moisture was retained in the ground and that the sod rots quicker than when it is left longer; thus holding the soil in good condition for fall seeding which takes place here between July 20th and August 15th. We have not tried pulling drills with our engine, as we think they can be handled somewhat cheaper with horses.

We threshed 77,241 bushels of wheat and oats in a run of 25¼ days. On account of no danger from fire from the engine, we used a 100 foot drive belt, which put us 50 feet closer to our work than is customary with steam on account of the flying sparks. As everyone knows, the closer to the load the easier it is to pull, and it works out about the same on a belt, thus resulting in economy on fuel.

Right here I wish to say that if any of the users of steam engines wish to go into details with

very profitable to do custom grinding. Don't be misled in hiring a cheap blacksmith for your plow rig as the best you can get is poor enough in case of a breakdown.

An exact statement of our season's work is as follows:

957½ acres breaking in 47 days at $3.00 per acre	$2872.50
Packer pulled on 536 acres of above breaking at 50c. per acre.	268.00
409 acres stubble plowing in 17 days at $2.50 per acre	1022.50
541 acres double discing and harrowing at $1.25 per acre	676.25
77,241 bushels of grain threshed in 25¼ days	4223.40
2 buildings moved at $5.00 each	10.00
Total—	9072.65
Greatest number of acres broken in one day	34½
Greatest number of acres broken in one week	147

We employ an engineer, a fireman, and a waterman and as our engine is a very easy steamer, our fireman has ample time to look after the plows.

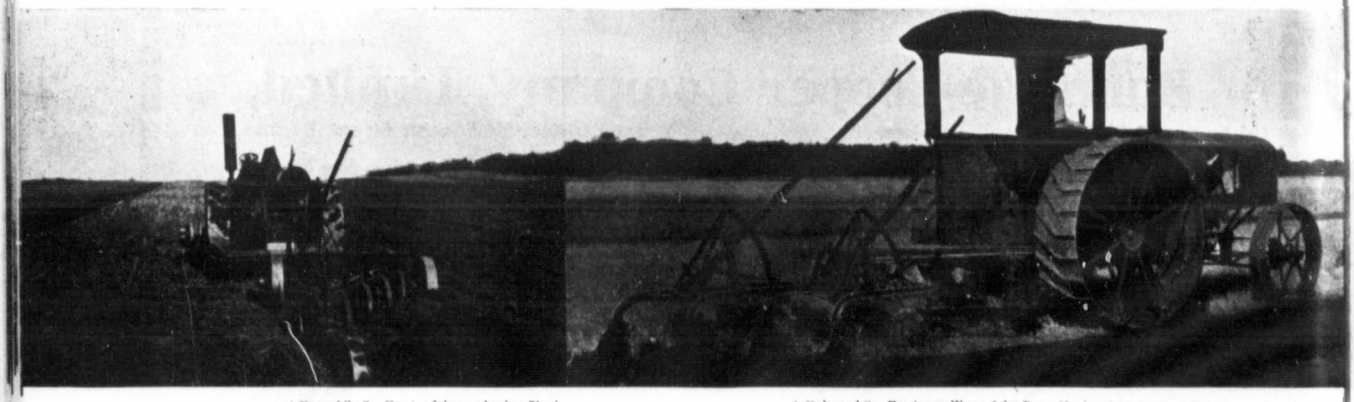
We find that steam coal is best suited for our engine and can do the best of work with 200 pounds to an acre and 4 barrels of water to an acre. Twenty miles a day is enough for one crew.

We know for a fact that plowing is harder on an engine than threshing, although our engine works equally as hard on a crowded machine as when pulling eight bottoms, but the uneven strain shows the wear quicker and we think there is very little money in custom plowing.

A farmer with a section of land can make money by purchasing an engine and using it to break and summer fallow and hook it on to a machine in the fall.

Wishing your valuable paper every success.

Yours truly,
Brubacher Bros.
Herbert, Sask



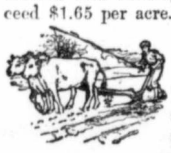
A Farmobile Gas Tractor doing a plowing Stunt

A Universal Gas Tractor pulling a John Deere Engine Gang in North Dakota

We got $3.00 per acre for this kind of work. We plowed 409 acres at a total expense of about $1.60 per acre.

Next, we started sod breaking We had a very tough sod in stony, clay land. We plowed at an average depth of four inches. We did 957½ acres of this breaking at $3.00 per acre. We pulled a packer behind our six plows on 536 acres of this at 50c. per acre. We could see very little difference in the draft on the engine with the packer hitched behind the plows. We used about 2¾ gallons low grade kerosene per acre, which cost us about 24c. per gallon.

Our total expense including all repairs; in fact everything in connection with running did not exceed $1.65 per acre.



We arranged a hitch for five four-horse discs and a five section drag

us we can prove that we give steadier belt motion than it is possible to do with steam.

We found it a good plan to keep three spike pitchers at the machine, as they will easily pay for the extra wages by keeping the shattered grain cleaned up about the machine, thus making moves to the next setting more rapid.

We found also that the manager of an outfit should be a man who readily takes to machinery, who is capable of taking the place of any one man that he has in his employ, whether it be the engineer, separator tender, or the man in the field with the fork, and we find that a crew is much easier to control when they know that the overseer can take anybody's place.

After threshing we put up a building 50-56 feet; thus we have storage for all our machinery, besides room for several thousand bushels of grain, and room for a roller grinder and a storage room for ground feed. We find it

Greatest number of miles travelled in one day in field 38
Greatest number of bushels of oats threshed in one day 5118

The plowing was done with a six bottom sixteen-inch Emerson gang, and the threshing with a 36 x 56 inch Aultman-Taylor separator.

Sincerely yours,
Bowser and Patterson,
Nanton, Alta

Load the Engine Light.

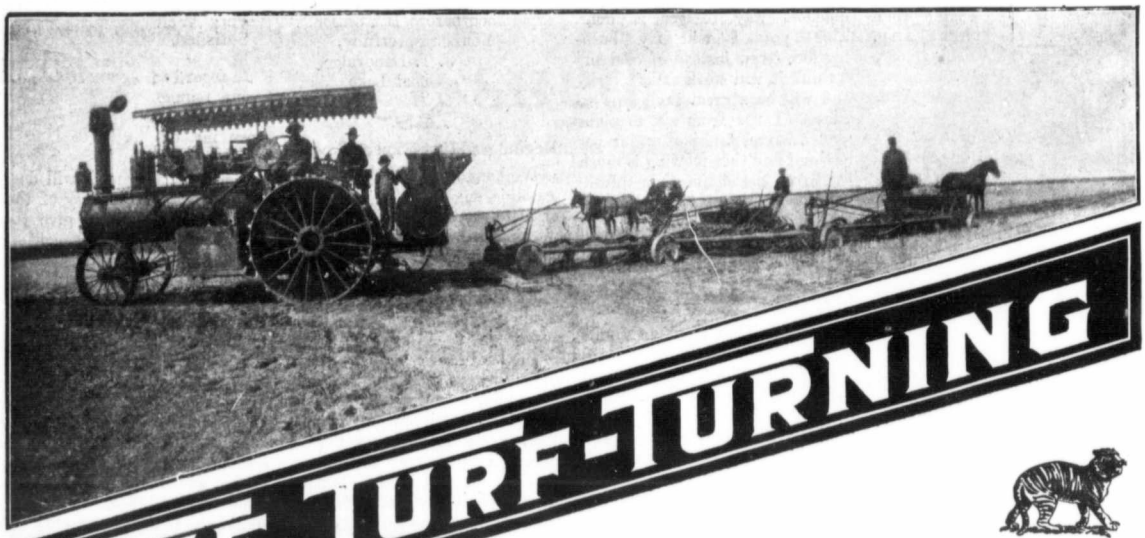
We own a Sawyer and Massey 30 h.p. tandem compound combination engine, and plowed with it for one year. We pulled an eight bottom Cockshutt engine plow on skids and learned enough about it to mount the frame on wheels and raise one bottom, for our soil is a heavy clay loam. We find that the lighter an engine is loaded the better satisfaction is obtained.

Breaks 20 acres per Day.

My outfit consists of a 30 h.p. Rumely engine and a 10 bottom John Deere engine gang.

I broke on an average of 20 acres per day and used for this two tons of coal, and eight tanks of water, or 80 barrels. There are six men working on my outfit, including myself.

This was my first experience in traction cultivation in Canada, although I have had 16 years' experience in threshing and steam plowing. Last year I broke about 11,000 acres, and I intend to break a great deal more this year. I certainly consider traction plowing harder on an



THE TURF-TURNING

Write to-day (not to-morrow) for our

Special Plowing-Engine Circular

and our fine big

75th Anniversary Catalog

GAAR, SCOTT & CO.

WINNIPEG Man. CALGARY Alta. REGINA Sask.

Home Office and Factory, Richmond, Ind.

"TIGER" TRACTORS

engine than threshing. Yours truly, W. Bohning, Trochu, Alta.

Expenses $43.90 per Day.

The weather was very unfavorable here for steam plowing and I only plowed 450 acres. We had so much rain that we had to shut down.

I have a Sawyer and Massey 30 h.p. engine and an eight bottom Cockshutt engine gang and I am very well pleased indeed with my outfit. I only pulled seven plows, for I don't think it is wise to overload an engine. It is better to use a plow less and keep right on moving than to have an extra plow and experience break downs.

I employ an engineer and a man to steer the engine. The engineer does the firing. I also have one tank team and one coal team. I figure expenses as follows:

	per day
Engineer	$4.00
Tankman	4.00
Coalman	4.00
Man to steer	2.00
2 tons of steam coal $6.25	12.50
Oil	1.00
Sharpening shares	2.00
Wear on outfit and repairs	10.00
Board for 4 men at 60c. per day.	2.40
Board for teams	2.00
	$43.90

We plowed on an average of 25 acres per day, so that I figure it cost about $2.85 to break heavy sod. To my mind, anyone buying a steam outfit with the intention of making big money breaking for others at $3.50 to $4.00 per acre is making a mistake, but for anyone having considerable land of his own to break up, it is certainly the best and quickest way to get it done. This year I will try burning flax straw instead of coal and I think it will work satisfactorily and will be a great saving in expense. I use from six to eight twelve barrel tanks of water per day and find that plowing is much harder on the engine than threshing.

Yours truly,
Ed. Evenson,
Moose Jaw, Sask

Can Break That Horses Cannot Touch.

I have a 20 h.p. International Gasoline tractor and a six bottom fourteen-inch John Deere engine gang. I have plowed about 420 acres this season; out of that 125 acres breaking. This summer was very dry and the breaking was very hard as a consequence. I used three fourteen-inch bottoms when the ground was very dry and four fourteen-inch when it was more moist.

When I first started in the spring I had only four fourteen-inch bottoms but found that I could haul more plows, so put on a sixteen-inch sulky. The second day I broke the sulky all to pieces on a stone. The same thing happened to a walking plow. So I purchased another gang and have not broken one share yet and I have pulled out stones that I could not roll over. I can break land that horses cannot touch.

I also have a 27 x 40 New Century separator and threshed on an average of 2,500 bushels of oats per day.

Taking it all around, I am delighted with the whole outfit. Plowing is harder on an engine than threshing. I figure that breaking cost me $1.50 per acre and stubble plowing $1.00.

Last fall my boy and I plowed 102½ acres in 9½ days, pulling a packer behind the plows. For this piece of work I used four barrels of gasoline costing $40.00.

I believe, however, that I can do better this year as I had no experience before last season.

Yours respectfully,
J. T. Dandridge,
Shoal Lake, Man

Beginners Must Expect Trouble.

We bought a Hart-Parr 45 h.p. gasoline engine about the eighth of October as we had a lot of plowing to do. We never had any experience before with either steam or gasoline, but we got along very well. We used an eight furrow Cockshutt gang plow.

The land here is a heavy loam and it was baked hard last fall. We could, however, handle the eight furrows without any trouble plowing six inches deep. We plowed a little over 400 acres. Part of this was in the Oakland district where the land is lighter. Here we used ten furrows, having a gang plow behind.

We used for the most part coal oil which cost us 15½c. per gallon. The engine was started up with gasoline. We consumed from 20 to 30 gallons of water per day and from 2 to 3 gallons of oil per acre. Much depends on the kind of soil and the depth that one plows.

Of course beginners have some troubles, but we had pretty good success. When we started we were advised that the best plan was to plow around the field, so started round 70 acres that had been plowed and cultivated. If anyone has ever drawn an engine gang through a loose plowed field they will understand what we think about plowing around. Our engine had to develop all the power it had. The plow filled to the beams and dragged all the way, leaving something like a snow plow track. We also plowed on straight lands half mile, which we think is best.

We have not had a chance to do any other work but plowing, but we intend threshing our own crop next year. Yours truly,

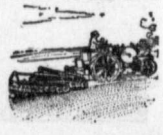
Alex Dow,
Macdonald, Man.

Very Well Satisfied.

In regard to your request to have me give my experience with my gasoline engine I will do so, believeing it is the duty of those who have engines to give their experiece for the benefit of those who are thinking of buying this coming spring.

When I bought my engine last spring I was convinced in my own mind that I needed something that would do a lot of plowing in a short time, and do it cheap. I often wished that I had something that would plow as fast as I could sow with a four horse seeder or cut with an eight foot binder and I think I have now come to that stage. Generally speaking, a man's capacity for farming was limited to the amount of plowing he could do gine that limit has been practicewith one or two four horse outfits in summertime. Now with an engine that limit has practically done away with, providing the weather and land is suitable, for a gasoline engine will not work in wet ground any more than a steam engine will. Therefore, I say the land must be in good shape before you can make a success of engine plowing.

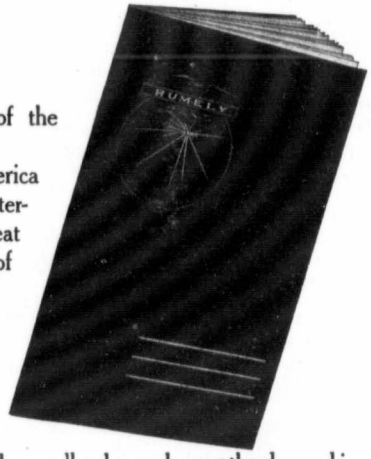
My outfit consists of a Hart-Parr 22 Traction or 45 Brake, with a two section Emerson Disc Plow, each section having six discs. When doing spring plowing or summer fallowing I plowed and harrowed at the rate of two acres per hour. That does not include the time taken for filling tanks, oil cups, etc., which takes considerable time. I used two men, one on the engine and one on the plow. One man can do a lot of plowing providing you go around the field and do not need to lift the plows out of the ground. I also have a six bottom breaking plow



A J. I. Case 8-bottom, 14-inch Engine Gang being pulled by a Morris Gas Tractor.

A Holt Caterpillar Gas Tractor negotiating some tough ground.

Just Issued

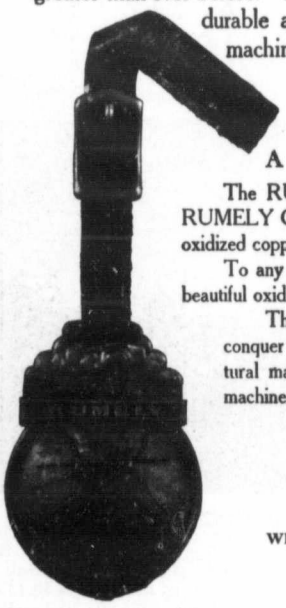


We wish to announce that the fifty-eighth annual catalogue of the M. RUMELY COMPANY is now ready for distribution.

The announcing of this catalogue to the threshermen of America affords us great pleasure and means a great deal to us and everyone interested in threshing machinery. In this catalogue will be found a great many improvements and additions to the already extensive line of RUMELY machinery.

For fifty-eight years it has been the policy of the M. RUMELY Company to design and manufacture only such machinery as would bring about a saving of time, labor and money, and at all times tend toward bettering the general conditions under which farming is carried on.

There must be a *reason* why RUMELY goods have always sold so well; why each year the demand is greater than ever before. It pays to have them. They are strong, well made, simple and effective in design, durable and reliable under all conditions. Our customers, the buyers of RUMELY machinery, become our friends and buy of us again. *That is the secret of our success.*



The Rumely Watch Fob

A Fob that Will Protect Your Watch—You Should Wear One

The RUMELY watch fob, a beautiful metal cast, reproducing the now well-known trademark of the RUMELY Company, we now announce for the first time. This fob, shown herewith in actual size, is of oxidized copper and will make for any thresherman a very serviceable and attractive fob or charm.

To any one sending us six cents to cover incidental expense, we will send, free of charge, one of these beautiful oxidized watch fobs.

There is a message in the Rumely trademark; it means the reaching out of American industry to conquer the markets of the world. It means that we Americans, after developing the most perfect agricultural machinery in the world, are going out to Russia, to the Argentine and China, introducing our machinery, so that it may lighten their labor as it has that of the American people.

M. RUMELY CO.

REGINA, SASKATCHEWAN

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Home Office and Works, 1019 Main St., LA PORTE, IND., U. S. A.

COUPON FOR CATALOGUE

M. Rumely Co., La Porte, Ind.
Please send me your 58th annual Catalogue.

*Name*_____

*County*_____

*Town*_____ *State*_____

I am a thresherman and own a ____ X ____ separator ____ years old and a ____ engine ____ years old.

The following parties are interested in threshing. Would suggest that you also send them a catalogue:

*Name*_____

*County*_____

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He is a thresherman and owns a ____ X ____ separator ____ years old and a ____ engine ____ years old.

*Name*_____

*County*_____

*Town*_____ *State*_____

He is a thresherman and owns a ____ X ____ separator ____ years old and a ____ engine ____ years old. C.T.

COUPON FOR WATCH FOB

M. Rumely Co., La Porte, Ind.
I enclose herewith 6c in stamps or coin to cover cost of mailing and packing watch fob, which kindly send me.

*Name*_____

*County*_____

*Town*_____ *State*_____

I am a thresherman and own a ____ X ____ separator ____ years old and a ____ engine ____ years old.

The following parties are interested in threshing. Would suggest that you send your catalogue to

*Name*_____

*County*_____

*Town*_____ *State*_____

He is a thresherman and owns a ____ X ____ separator ____ years old and a ____ engine ____ years old.

*Name*_____

*County*_____

*Town*_____ *State*_____

He is a thresherman and owns a ____ X ____ separator ____ years old and a ____ engine ____ years old. C.T.

not do a great deal of breaking on account of very wet weather just after I got my plows but what plowing I did was satisfactory. We pulled five furrows in heavy breaking.

We used a barrel of coal oil, some gasoline, and a barrel of water per day. We had no trouble in operating our engine while plowing. When threshing we had a little trouble in starting in the morning when it was cold. It does not take as much oil to thresh as to plow, although we ran a 40 x 62 separator with all attachments.

Yours truly,
Thos. Elliott,
Regina, Sask.

Repairs for Season Only $3.00.

Last spring we purchased a traction plowing outfit, consisting of a 22-45 horse power Hart-Parr engine and an 8 bottom 14 inch John Deere engine gang plow.

We started to plow about June first and plowed 160 acres of stubble land and then sowed it to oats. We didn't keep a close account of the oil required to do this.

We then went to breaking sod and broke about 200 acres. The first half of this took a little less than 2½ gallons of oil per acre, but as the land got dryer and the sod tougher it took a little more. The backsetting also required a little more.

We then plowed between two and three hundred acres for summer fallow. We plowed this about 6 inches deep and used 2½ gallons of oil per acre. I might say we used mostly kerosene oil which cost us 17c. per gallon. We had to use a little gasoline to start with. We paid 22c. per gallon for gasoline.

We also plowed part of this summer fallow the second time. The plow drew some easier in this, but the footing was not quite so good for the engine.

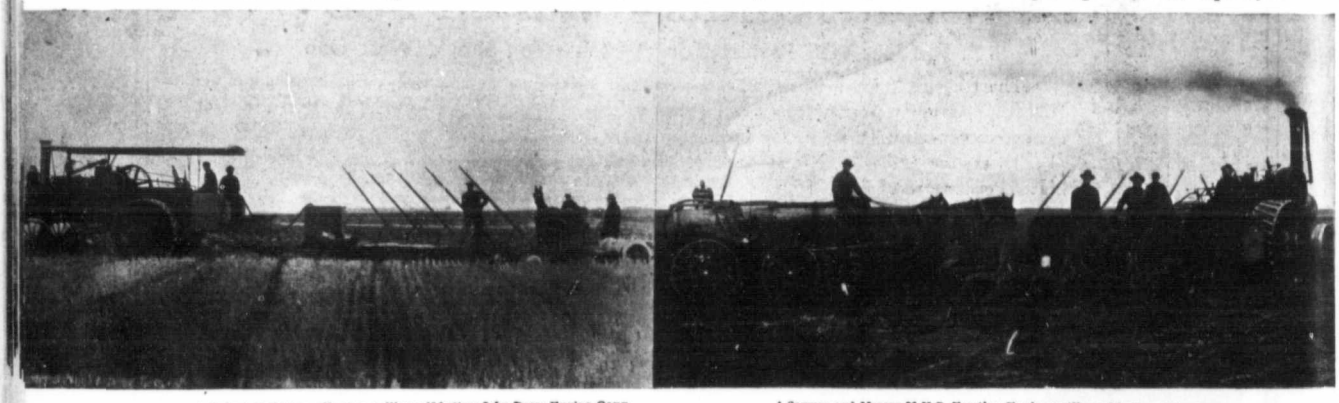
We had two men with the outfit all the time. This was all the help we needed with the exception of a man and team about once a week to go to the station and get oil.

We plowed in all between eleven and twelve hundred acres during the season and never had a break-down the whole time. We only paid some $3.00 out for small repairs.

We also threshed about 20 days with the engine driving a 36-60 separator and had plenty of power. We considered this easier on the engine than plowing.

I certainly think where one has a lot of work to do the gasoline, kerosene tractor is the thing for this country.

Yours truly,
E. F. Lewis,
Morris, Man.



A Robert Bell Steam Tractor pulling a 10-bottom John Deere Engine Gang Outfit of Ed. Burke, Gainsboro, Sask.

A Sawyer and Massey 26 H.P. Traction Engine pulling a 6-bottom John Deere Engine Gang, Outfit of C. J. Carlson, Stavely, Alta.

Fuel costs 58c. per Acre

I have a 20 h.p. International Harvester gasoline traction plowing engine and an Emerson five bottom twelve inch engine gang.

It was late in the fall when we got the outfit, so we had little experience with it. The ground was very dry this fall and the expense of plowing was a little higher.

The cost of fuel per acre was about 58c. We used two barrels of water per day. One man can plow fifteen acres per day.

I consider the gasoline tractor an A 1 outfilt for farm work. We intend breaking with our engine in the spring and do all kinds of farm work in the summer.

We can make a better job of plowing than we could do with the horse gang, for the outfit is heavier and will hold to the ground better. We can handle our plows fine besides two sections of harrows behind the plow.

Yours truly,
L. T. Lownsbrough,
Elmore, Sask.

Expense is 68 ¾c. Per Acre.

I own a 25 h.p. J. I. Case engine and a 15 bottom Emerson disc steam plow. During the spring and fall of 1909 I plowed 1000 acres.

The fuel I used was loose flax straw, using about one load of straw to every two mile round, and about 7 barrels of water for the same distance. A good day's work was 30 acres stubble plowing.

The expense was 68¾c. per acre for spring plowing and $1.35 for fall, as wages were much higher in the fall.

I had an engineer who fired, a wheelsman whose duty was to steer the engine, (he also assisted to load the straw at the loading end), a man on the plows and a tank man who drew water and straw. The water and straw were very handy, never more than one half mile from plowing. With our engine drawing fifteen plows, which seems like a big load, we pulled along at the rate of 2½ to 3 miles per hour in the spring without any trouble whatever.

I believe that this is the only method to farm extensively.

Yours truly,
Maitland Cook,
Milestone, Sask.

Averages 22 Miles per Day.

I have a 26 h.p. Sawyer and Massey engine and a six bottom John Deere Plow of the newest kind. With this outfit I averaged 22 miles a day.

My crew consisted of five men and a cook, besides two teams as follows:—Engineer, a man to steer, coal and tank man, and plowman. The coal hauler also sharpened the plow shares. I had a blacksmith's outfit with my rig in the field and changed the shares every night. In 51 days I broke 793 acres, making an average of over 15½ acres a day.

Now, some might say that 22 miles a day make more than 15½ acres a day, and so it does, but I was breaking inside fences and had to spend half a day to plow the headland on every job.

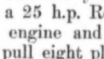
I used 2750 pounds of coal and about sixty barrels of water per day. The coal cost $4.50 a ton. I plowed from four to five inches deep and made a first class job. I have only 24 inch drivers, and found that it is too hard on the engine. I think the drivers ought to be 36 inches.

My expenses ran as follows:—

Engineer	$5.00
Tankman and team	4.00
Coalman and team	4.00
Steersman	2.00
Plowman	1.75
Cook	1.00
Board	2.50
Steam coal	6.15
Oil	1.00
	$27.40

There is nothing for repairs on engine figured in this expense, or for plow shares. I wore out 36 new plowshares to break 793 acres and the cost was $3.75 each, making $135.00. I charged $3.25 an acre and, it cost me $1.77 an acre to break prairie.

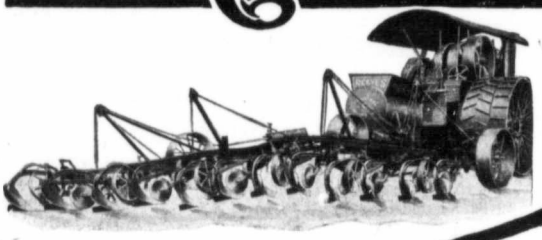
Your truly,
C. J. Carlson.
Stavely, Alta

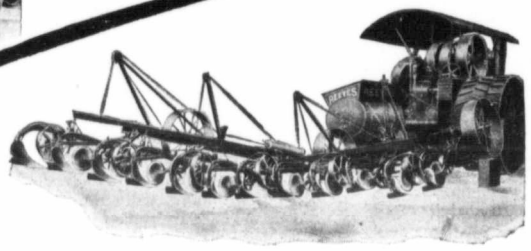


Has a 25 H.P. Engine.

I have had two years' experience with a 25 h.p. Reeves cross compound engine and Cockshutt plows. I pull eight plows in sod and ten in stubble and harrows to cover. The number of men I employ varies with the convenience of water and coal. This year, however, I expect the water man will keep both water and coal on hand, as I will have

It's Reeves Flexibility





that makes Steam Plowing Practicable!

As long as there are Ridges and Depressions

hard soils and soft soils, stones, tough sod, ruts and corners to fields—just so long will the REEVES FLEXIBLE FRAME STEAM LIFT ENGINE GANG PLOW reign supreme in steam plowing

One or more of the above field conditions are encountered in every plowing job and any one of them is sufficient to demonstrate the utter impracticability of many so-called steam plowing outfits.

It is the REEVES FLEXIBLE FRAME that makes steam plowing practicable It was not until this principle was evolved by REEVES mechanics that it became possible to plow over rough and uneven surfaces, control the direction of the plow, turn corners without removing the plow from the ground, regulate the depth of the cut regardless of the unevenness of the ground, regulate the load by removing one or more plows from the ground as tough or easy conditions are encountered, or strike a rock or other obstructions without damaging the plow.

These are tests that every Steam Plow should be made to perform satisfactorily. Any plow that cannot is not a good investment

The REEVES DOUBLE CYLINDER CROSS COMPOUND ENGINE is the best power on earth for plowing. No other plowing engine produces so much usable power on such small fuel consumption and such small up-keep expense.

We are ready to prove the superiority of the REEVES steam plowing outfits at any time you are ready to buy. You don't buy a steam plow every day and you cannot afford to make a mistake when you do. Let the experience of those who are actually making big money with REEVES outfits be your guide in buying. Write to-day for what they have to say.

REEVES & COMPANY

COLUMBUS · IND · U·S·A·

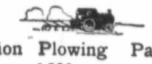
Chicago ENGR. CO.

CANADIAN BRANCH: REGINA, SASKATCHEWAN·

both on the ground, and four men will be able to handle my outfit. I use about 3,500 pounds of Crow's Nest steam coal per day and about 60 barrels of water. If the engine is taken proper care of I can't see as it would be any harder on the engine than threshing. Besides plowing with my engine, I use it for seeding, pulling six Frost and Wood discs and 2 McCormick eleven foot drills besides harrows and float to cover and I make about forty-five to fifty acres per day.

Wishing the Canadian Thresherman and Farmer every success,

Yours truly,
George J Brown.
Granum, Alta.



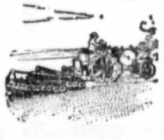
Traction Plowing Pays on Farms of 200 acres or more

My outfit consists of a 22 h.p. Advance Engine and an Emerson plow with 6 sixteen-inch bottoms which I consider makes a first class outfit.

I employed three men as follows:—Engineer, fireman, and tankman along with one team. I used ¾ of a ton of Pennsylvania soft coal for plowing 20 acres per day and 40 barrels of water.

I consider plowing a little harder on a traction engine than threshing although my engine is still in pretty good shape after plowing 350 acres.

Traction plowing, to my mind, pays on farms of 200 acres or more. I found it very hard to plow in the fall, it being so dry, but we made an A 1 job.



Yours truly,
Robert Alexander, La Salle, Man.

Thinks Steam Better than Gasoline.

I have taken your valuable paper for two years and like it very much. I will give you my experience in steam plowing as I have found it profitable.

I have a 32 h.p. Case engine and use a 12 bottom John Deere plow 14 inches for breaking and backsetting. The engine pulls it with ease in the first notch. I travel at the rate of two miles an hour and average 27½ acres per day. We take water and oil up at the same time.

An engineer and fireman are all that is necessary to run the rig. The fireman lifts the plows out of the ground at the ends. I employ one to two water haulers according to the distance the water is to be drawn. We used 96 barrels a day.

We burned one and a half tons of Pittsburgh coal a day for plowing. We usually order the cars of coal during the winter and haul it out before the snow melts otherwise we would need to employ an extra team to haul the coal from town which is eight miles from my farm and only one trip could be made a day and by having the coal on the place we can take it out with us mornings and noons.

I think a steam engine is better for plowing than a gasoline. I think plowing is the most severe work that an engine can be put to. My engine is steam steering which makes it very easy to handle.

We have run the rig three summers. It has always been kept in the best of order and is now almost as good as new.

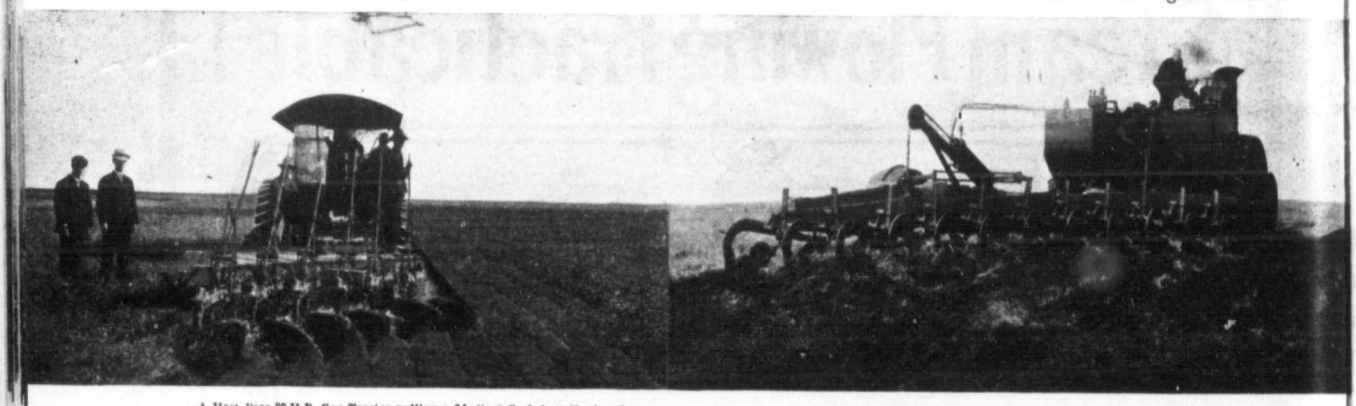
Elmer L. Pense,
Watson, Sask.

Engine Has run over 1500 Miles.

I might say that I have done some plowing and breaking for the last five years but not to a very great extent last fall being my largest amount of plowing for which I will give you my exact figures.

The total number of stubble plowed was 200 acres six inches deep, sod twenty acres six inches deep, and old pasture about thirty acres tramped very hard by stock, which makes a total of 250 acres.

My engine is a 20 h.p. Simple Case and Cockshutt plows 7 furrow on wheels. I run the same with three men when within two miles of water with myself as engineeer which I figure at $4.00 per day; man to steer and lift plows $1.50 per day; man to haul water and coal $1.50 per day; one team for same work having plenty of time $2.50 per day; as on a ten hour run I only use four 12 barrel tanks, or in all 48 barrels of water at 31½ gallons a barrel. On an average we used 1500 pounds of coal at $7.00 per ton. For a ten hour run I used one quart of cylinder oil, one quart machine oil and two pounds axle grease, which came at about a cost of 75c. so that I figure a day cost me about $15.80 and plowed on an average about 16 acres.



A Hart Parr 22 H.P. Gas Tractor pulling a 6-bottom Cockshutt Engine Gang Outfit of Conboy Brothers, Asquith, Sask.

A Geiser Steam Plowing Engine pulling a Geiser Steam Lift Plow.

Considering the length of time I have had my engine I have travelled over 1500 miles and have only repaired it at a cost of $22.00 for breakage etc.,

I think it is a little harder on the engine to plow than to thresh as the gear is exposed to more dirt and harder strain.

I have not any photos of my outfit at present.

Yours truly,
Jos. H. Row,
Dominion City, Man.

Uses 1½ Tons of Coal per Day.

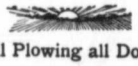
I have threshed for seventeen falls, owned four threshing rigs and two saw mills. With this experience I thought myself capable of running a plowing outfit and purchased a J. I. Case rig with a 36 x 58 separator and a 25 h.p. simple engine John Deere 6 fourteen inch bottom 1909 Model team gang plow, which I think makes a very good rig. We have 1,600 acres of land and I thought the horse power was not that proper thing. I got my rig late last season so I only broke about 800 acres, but it was mostly hard gumbo land that requires six to eight good twelve hundred pound horse to pull a one bottom plow.

We plowed about 10 acres per day with 4 bottoms in the gumbo or 15 acres in good sod. We used about 1 1-3 tons of coal per day, and 5 12 barrel tanks of water per day. The coal costs me $2.00 per ton. We live only three miles from four coal mines and we only have to haul our water 1½ miles. The fuel supply therefore, is comparatively convenient.

I employed four men as follows, engineer, fireman, tankman and team, coal man and team. The fireman tended the plows. I intend to use eight bottoms for stubble this spring with packer attached.

I find plowing is the hardest work I ever put an engine to. It would be hard to compare the cost of steam plowing with horse power at present, but I think the steam will have the preference, as it never tires or gets sore shoulders.

Yours truly,
H. E. Davis,
Three Hills, Alta.



Fall Plowing all Done.

I have been running a J. I. Case 25 h.p. compound engine with 3 inch wheels. I had lots of trouble the first season because I was green at the steam business and easily rattled when trouble came. Since I have kept cool my troubles have gone. I have a

A PLOWING ENGINE WITH A WARRANTY

WE investigated the problems of traction plowing, designed an engine that would meet the strains, which are very great, designed a crankshaft and put metal into it the equal of the United States Naval Specifications, enabling it to resist the effects of vibration.

After hundreds of our engines had gone into the field, and been used season after season, we found that we were selling practically no gearing or crankshafts to replace breakage.

We then went to the plowing engine users with a straightforward, honest guarantee to replace, free of charge, at the factory for the United States, at *Regina* for Canada, any gearing or shafting, including the crankshaft, that was broken by the usual use. By "usual use" we mean any kind of plowing at which the engine is properly handled. We exclude breakage resulting from collisions, bridge breakdowns, and other catastrophes.

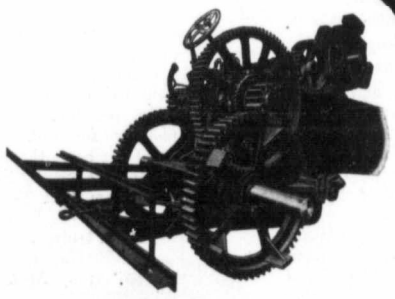
We replace, free of charge, gearing and shafting, including crankshafts, broken while the engine is at work plowing.

Warranty We guarantee against breakage, for a period of one year following date of purchase, all gearing and shafting, including CRANKSHAFT, on our plowing engines.

We guarantee to replace, free of charge, at the factory for the United States, at Regina for Canada, any gearing or shafting, including the CRANKSHAFT, broken during usual use of the engine, on receipt of broken parts during period named.

By Wm. N. Rumely, President *M. Rumely Company*

This warranty has startled others, if one can judge by their uneasy replies; it doesn't mean much to us, for our Plowing Engines are so built that the parts in question stand the severe strains of the plowing work without breakage.



The RUMELY warranty is printed in big red type in the RUMELY order. Look for it before you buy a plowing engine.

M. Rumely Co., La Porte, Ind.

Kindly mail me a copy of your Plowing Engine Catalogue and other data regarding plowing that will be of interest.

Name_____

_____

County_____

Town_____ State_____

I now own_____ acres

Located in_____

Are you a thresherman?_____

Do you do custom plowing?_____

I now own_____ engine_____ years old

I now own_____ separator_____ years old

C.T.

M. RUMELY CO. Regina, Saskatchewan

DISTRIBUTING WAREHOUSES

WINNIPEG, MAN. CALGARY, ALTA. SASKATOON, SASK.

HOME OFFICE AND WORKS, 1019 MAIN STREET, LA PORTE, INDIANA, U. S. A.

seven furrow Cockshutt engine gang, although I have only used five furrows at once as I think it plenty in heavy land. I hitch on a disc behind the plows and it makes a good job.

I employ two men, one to steer and one to draw water and wood. I use about six twelve barrel tanks per day and not more than two cords of seasoned poplar wood.

I consider plowing is harder on an engine than threshing as there is dust or mud at all times, besides the road motion. I got my fall plowing all done, but if I had to depend on horses I could not have had much time.

I am well satisfied with my rig and would not go back to the old way.

Yours truly,
J. W. Brimacombe,
Dunrae, Man.

plowing the dust and sand will get into the gearings, and will soon wear them out, if not oiled.

Yours respectfully,
Knudt E. Dahlen,
Vanscoy, Sask.

Better than the Horse

My experience in traction plowing leads me up against willow bush and stony patches in a very stiff prairie sod. Hence I cannot give you an account of large acreage plowed at a minimum cost.

I have a 20 h.p. Case single engine which pulls a six bottom John Deere engine gang. We however, broke a coupling attachment on one of the plows at the start and plowed away with the four plows.

Although the land is quite stony with a good deal of brush here and there, we are able to do a very good job. The plow proved itself to be all right and the engine all that we could expect. During our operations we

Plowed for Four Years

For the past four seasons my time and energy has been devoted to the business of plowing and threshing with steam power. The land to the south and east of Pasqua, Sask. is a very heavy gumbo soil with a liberal portion of rough, hummocky sloughs.

My outfit consists of a 25 h.p. Case plowing engine with a 7 bottom 14 inch Moline engine gang.

My work is confined to breaking sod. I plow from three to four inches deep and take great care to keep the furrows straight and the work well and neatly done. I get $4.00 per acre for plowing.

I employ five men and keep four horses, which are sufficient to run the outfit unless the water is more than two miles away when another man and team are required. About 80 barrels of water per day is used. I find a good grade of Crow's Nest steam coal to give the best satisfaction and one ton will plow about ten acres.

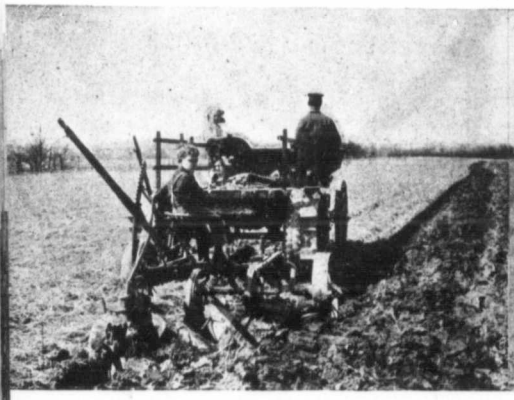
Two shacks also form a part of

engine and a John Deere six bottom plow, in central Alberta where the land is black sandy loam on clay subsoil. I encountered at times, more or less brush, stone and gumbo.

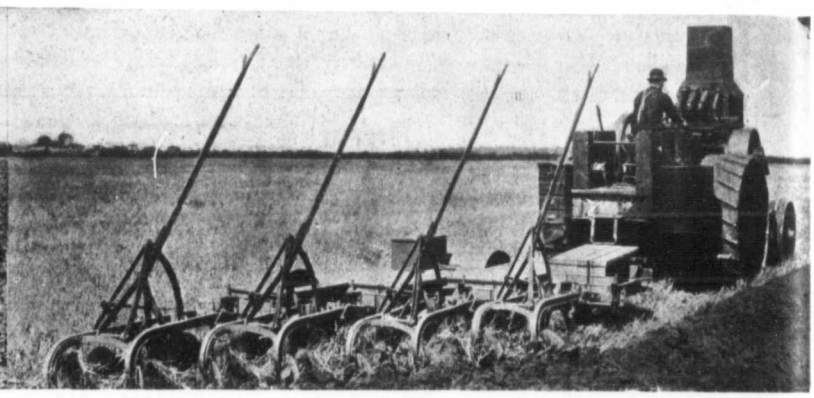
My crew consisted of 4 men, engineer, fireman, plowman and water hauler, and one team to the water wagon. Coal cost me delivered at the wagon $2.75 per ton, and the average consumption was two tons. Of water we used about five tanks, the tank being a 9 barrel one.

I am satisfied that plowing is quite a lot harder on the engine than threshing, although when the ground is in good shape I could easily have used two more bottoms than I had, and in fact I have already purchased them for another season's work.

My average day's work was about 11 acres with the six bottoms and expenses ran about



An Avery Tractor, ("The Hired Man's Friend") pulling a 3 bottom gang plow



A. Rumely "Oil Pull" Gas Tractor pulling an 8 bottom John Deere Engine Gang

Burns Straw

I haven't had much experience in steam plowing, but will give you what I have had.

I own a Rumely 25 h.p. plowing engine and use six Imperial bottom plows and four John Deere bottom plows. If a man is going to make money in plowing he should have an engine gang and should also have a good crew, especially a good engineer.

I employed four men and two teams. I used about four big loads of straw per day and four tanks of water, which make about 40 barrels per day. It is my opinion that by using straw one can save about $10.00 per day. I haven't burned any coal yet.

One should buy the very best oil for their engine and use

plenty of it to protect the gearings. Plowing is much harder on the engine than threshing. While

bent a couple of points on the stone and cut off a few stay bolts on the plow, but had no breaks of any account. However, we do not recommend traction plowing for that sort of land.

We were at little expense as we did the work among ourselves. We picked up our wood the previous winter and did not crowd the work as we might have done. With only four plows we did not make a very big acreage.

We used about three tanks of water per day and burned less than a cord of wood. We used a tank man and team, an engineer and fireman who attended the plows.

On the whole we liked it better than the heated efforts of the horse, or even the steady pace of the patient ox, whose labors although not of the swiftest must still be reckoned among the factors that go to the developing of a nation and the building of an empire.

Yours truly,
Charles Connerford,
North Battleford, Sask.

the equipment, one of which is a kitchen and dining room and the other is fitted with bunks in which the men sleep. These are on wheels so that they are easily moved about and always kept within easy distance of the work being done.

Plowing is undoubtedly harder on a traction engine than is threshing, as is proven by the fact that only about two-thirds as much water is required for threshing. There is no longer any question as to the success of traction plowing and I feel that much credit is due to the untiring efforts of your valuable paper.

Yours very truly,
Alexander MacGregor,
Pasqua, Sask.

Traction Plowing in Loam or Sub-soil

I have been doing traction plowing during the past season with a 25 h.p. J. I. Case simple

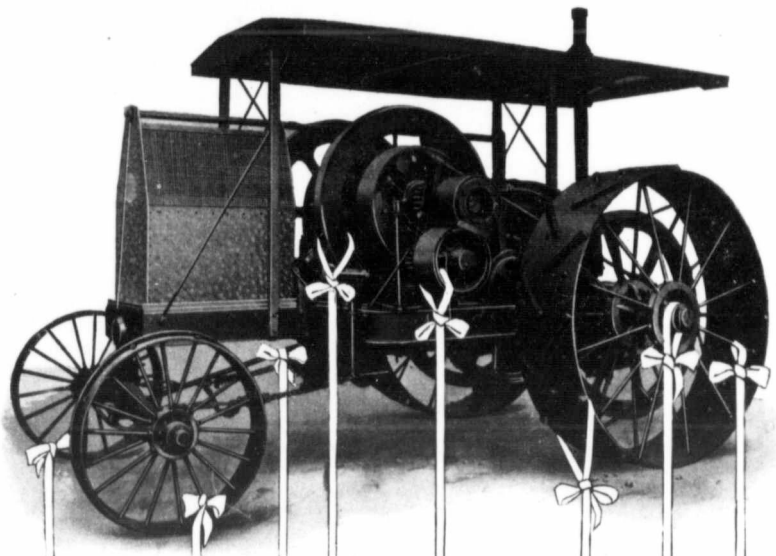
$17.50 for labor, team, board, blacksmithing, oil and coal.

I may say that labor cost me less than most traction outfits pay, and with two more bottoms and the same expense, I expect another season to average from 14 to 15 acres per day. The price of plowing for ordinary ground is $3.00 per acre, though where it was stony or brushy the price sometimes ran from $3.50 to $4.00 per acre.

Yours truly,
L. E. Hagen,
Wessington, Alta.

A Boy runs the Outfit.

In reply to your request for information regarding my experience with traction plowing, would say as I have kept accurate data of expenses will give you the plain facts.



UNDEFEATED—*A World Wide Winner*

These medals were won by International tractors at different world contests held in America and Europe last year. They are records of superiority in competition on a basis of power and cheapness in operation. These honors were not awarded for technical or laboratory tests, but for the capacity of these tractors to do common everyday farm tasks, such as plowing, hauling and belt work—actual tasks that a farm-owner faces every season. That these engines are medal winners in the "higher income" contest of the farmers out in Iowa, the grain growers of the Northwest and the pioneers of the newly settled Canadian provinces, is shown in the unprecedented demand for them. At no time last year were we less than 200 engines behind the incoming orders. This year plans have been made at the Works where International gasoline tractors are made to treble the output, and even this increase does not reach the estimate sent in for 1910 by our field forces.

The traction engine has become a necessary part of the equipment of every good farm, and farmers have learned that it is an economical time and labor saver—from drawing a plow, disk harrow, roller and drill to furnishing the power for the thresher and ultimately hauling the produce to market. Improved methods of manufacture and the gradual perfection of gasoline engines in general have put these powerful tractors within the reach of the average farmer. He does not have to have a large ranch to make an engine pay, nor need he be a master mechanic to make it work. It is this increased availability which has caused the increased demand for these engines. There are great money-making possibilities for the farmer who owns an International tractor, because this engine will enable him to greatly increase his profits by reducing the time and labor required to do the general farm work, such as plowing, hauling, threshing, shredding fodder, grinding grain and sawing wood.

Call on our local agent in your town and talk the matter over with him. He will supply you with catalogues and all information. Or, if you prefer, write the International Harvester Company of America at nearest branch house for catalogue and full particulars.

CANADIAN BRANCHES: Brandon, Calgary, Edmonton, Hamilton, London, Montreal, Ottawa, Regina, Saskatoon, St. John, Winnipeg, Yorkton.

INTERNATIONAL HARVESTER COMPANY OF AMERICA

(INCORPORATED)

CHICAGO U S A

I purchased a 20 h.p. International Harvester Gasoline Engine, single cylinder with 30 x 50 Buffalo-Pitts Separator complete and a six furrow John Deere Engine Gang.

My eldest boy, 19 years of age, operated the engine and a second boy of 14 handled the plows. Of course, I gave the boys a good start and was on the job occasionally to see that everything was O. K.

We first plowed 230 acres of fallow which had been previously cultivated the fall before and the bulk of it had been plowed, harrowed and disced both the fall and spring.

We started to plow about July fifth. There was a very rank growth of weeds on the land. We hauled four plows from six to seven inches deep and dragged the weeds with chains and covered everything out of sight, doing a first class job. After harvest we put on the other two plows, six in all, and found we had no trouble to haul at a depth of from four inches in heavy clay to six inches in lighter soils, doing a better job than we could do with the horse gang, five horses on each gang.

We plowed in all 535 acres, used 1,301 gallons of gasoline at a cost of $287.00, a little less than 2½ gallons per acre, which cost about 53½c. per acre. The grease cost ½c. per acre, cylinder oil 1⅛c. per acre, or a total cost of 54⅝c. per acre for fuel, oil, etc.

We used two barrels of water every day. The heaviest break we had cost 55c. and all the breakages and replacing of weakened springs did not amount to $6 including threshing. All the experience the boy had who operated it was what he picked up at two terms in the Manitoba Agricultural College.

We did not do any threshing besides our own. We only had five men besides myself and four boys to run the rig, that is drive the teams, look after the machine and the grain in the bins (we threshed into portable bins) and we could not do very big threshing, but I got the cleanest and least expensive job done I ever had done and I have threshed continuously with horse and steam power for twenty-seven years.

It cost me about $100.00 outside of our own work to thresh 630 acres. We got our threshing done just when it was ready. The wheat never got a shower of rain and every pound has been graded No. 1 Northern.

We did not thresh as fast as we might have done had we had more help. We had no fireman to rout out at four o'clock, no tanks and extra teams to tramp and waste bushels of grain, both in the field and stable, no fuss or worry about extra help, no cooking for a big gang; in fact the threshing passed off just as the ordinary routine about the farm and we were well satisfied in every particular. This year, however, I purpose threshing for one or two neighbors just to exchange help and we will not require any extra help.

Just a word about the cost of gasoline. When we buy a barrel of gasoline, it is marked probably forty-three and seven-tenth gallons, and I presume should be filled to the lip, but when we knock the bung out and find by actual measurement that it takes from three to eight inches to reach the gasoline in the barrel, it means that we are paying for a great many gallons that we never get. But this is all charged up to the engine account which makes the cost of plowing considerably more than it should be. I think it is up to the manufacturers of gas engine to devise some way of supplying their customers with a full gallon of gasoline and then an engine would probably plow on two gallons instead of two and a half per acre. The present method of handling gasoline in wooden barrels is wasteful on account of evaporation.

Yours truly,
J. D. Baskerville,
Dominion City, Man.

Considers Steam Coal Best.

I have been a subscriber to your most valuable paper for some time now and have found it a necessity in the home as well as a pleasure. There is always good reading with valuable information to both husband, wife and children and as I happen to belong to those who are running a threshing machine and steam plow, I might give my experience along the plowing line, which might be of some assistance to someone else.

We, my brother and I, own a 36 h.p. compound Sawyer and Massey engine and a ten furrow 14 inch John Deere engine gang, both of which we are very well satisfied with.

This was our first year in the steam plowing and we were somewhat late in starting and were also laid up for some time for lack of coal which we could not procure.

We plowed about 800 acres, worked about 280 acres in shape for crop next year, discing it four times at once with the engine. We of course have a lot to learn and expect to profit much this year with last year's experience.

We could handle the 10 furrow with our engine with good success and do a first class job in sloughs, scrubb or level ground. My brother and I ran the engine and plow, while a third man hauled the water and a boy the coal. The blacksmith bill was very small considering the stony land we plowed.

We used from 1¼ to 1½ tons of Galt coal per day and from 40 to 60 barrels of water per day, depending on the land, and have plowed from 28 to 30 acres a day. We consider the steam coal the best, if obtainable.

Hoping to have a better experience this year and wishing your paper every success we remain,

Yours truly,
Bogart Bros.
Traynor, Sask.

Don't Pull too Many Plows.

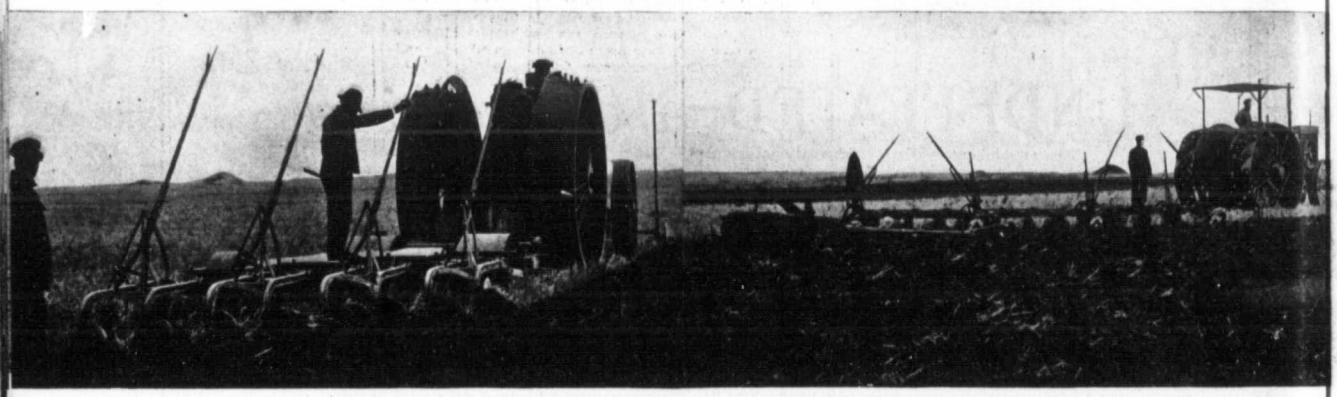
I have a Reeves 32 h.p. cross compound engine and ten Cockshutt plows. I find, however, that eight plows are sufficient to pull in our heavy land as I had more breakages when I was pulling ten, and considering the lost time and the cost of repairs consequent to my using ten plows I decided that I made more headway by only pulling eight. It racks an engine too much to give it all it can do.

It takes four men and two teams to run the outfit; an engineer, fireman, man to draw coal and a man to draw water. The fireman also attends to the plows. As the plows are set right they do not give any further trouble. They go from one end of the field to the other and one needs scarcely look at them.

To plow 25 acres of land it takes about two and one half tons of steam coal which cost $6.50 per ton. It also requires ten, twelve barrel tanks to plow twenty-five acres, and that is a good day's plowing.

Plowing is a great deal harder on an engine than threshing. This is the case with my engine, for it just plays with a 40 x 60 separator.

I might say that this was a poor season for plowing here as it rained so much that we could not work, but last year I



A Gas Traction Engine pulling an 8 bottom 14" John Deere Engine Gang in Manitoba Gumbo

An Imperial Gas Tractor pulling a 12 bottom Emerson Engine Gang and a Soil Packer in Gumbo

broke, 1,800 acres and threshed 33 days.

We have a caboose and stable with our outfit and we just draw the caboose and stable and plows and extra coal wagon behind the engine when we move from one place to another.

Yours truly,
W. Irvin,
Rouleau, Sask.

Plowing Hard on Engine.

I think the steam outfits are alright. I have a 25 h.p. Aultman and Taylor engine pulling 8-14 Cockshutt plows which I think are fine plows, and have given good satisfaction. I have three men, a steady engineer, and I attend to the plows. We also have a water wagon and one team. I burn one ton of coal a day and have coal team half of the time. The three men steady does the work. I only have the coal team three days a week and a six mile haul.

I plowed 800 acres in 49 days and only worked eight-hour days. I have a very good engine but it is as easy again on the engine to thresh as to plow. Plowing runs an engine very hard. It is also much easier to fire for threshing than for plowing. It takes 75 pounds of steam to run a separator while 125 pounds for the plows.

Enclosed is photo of plowing.

J. H. Pilant.

A Beginner

In regard to plowing I have a 20 h.p. International Gasoline Engine water cooled which I operate myself and it is a very simple engine to operate. When I received this engine on the 18th of September last fall I was a total stranger to any engine of any make and by reading the directions I started the engine, run her a mile and half and lined up to my separator and threshed for 22 days. I used 18 gallons of gasoline per day of ten hours on an average, and consider it the only reliable oil to use. With the cheaper grades I receive a lot occasionally with a low fire test which means a shortage of power.

I also like the water cooled for this reason, if your cylinder gets hot, and they all do at times under constant load in warm weather, I don't have to sit down and wait for the engine to cool. I open the tap under the water tank and draw out two or three pails of hot water and replace it by the same amount of cold. Less than five minutes wasted if plowing and none if threshing.

When plowing I use a six frame Cuckshutt with five 14 inch braker bottoms and pull them easily backsetting, plowing a good depth.

I have 800 acres and with my son's homestead makes 960 of land to break this season, and we intend to handle that and 400 acres of crop with the help of two men and six horses.

From my experience I consider plowing is the harder on the engine on account of the unevenness of the ground the engine has to work on.

Wm. Pennington,
Eyebrow, Sask.

A Yankee Farm.

We arrived in Taber the first of March 1909 representing a New York Syndicate who had purchased 3¾ sections of land south east of Taber. As we were strangers in the country we experienced some difficulties, but think the land and the way the people cultivate it is far superior to the way we had been doing it back in New York.

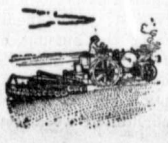
We began to break about the first of June and broke one section. Have a hundred acres sowed to winter wheat, and the rest disced ready for spring wheat.

This spring we expect to employ about twelve men and break all we can. Our Mr. Penfield expects to bring a car of horses with him on his return from New York. We have also purchased two carloads of machinery including 11 ten foot discs, 4 binders, 4 seed drills, wagons etc.

Answering your questions might say that we have a 32 h.p. cross compound Reeves engine with ten gang 14 inch bottom Cockshutt plows. Last year at the time we were building we employed nine men, but later in the fall only five. We used nine horses. Running twelve hours a day we used about 2400 pounds of steam coal, and about 75 barrels of water per day. Yes, plowing is harder on an engine than threshing, but we did not run a thresher as we had only forty acres in grain.

We enclose a couple of pictures of our outfit and hope that this will do, as we are not in a position to give information as to the best results. Next year perhaps we can do better.

Yours truly,
R. F. McGibbon, Foreman
New York Syndicate Farm.
O. L. Penfield, President.



THE TRACTOR vs. THE HORSE

Some Comparisons Founded on the Motor Contests by L. W. Ellis

THE recent motor competitions in western Canada have afforded a mass of hitherto unavailable data regarding the performance of steam and gasoline traction engines. The detailed results, including the names of competitors have been widely published in farm and trade journals, and great interest has been aroused in the use of tractors for farm purposes. Much of the published information has been of such a nature as to be grasped with difficulty by the average farmer, owing to his unfamiliarity with the terms employed. The full educational value of the contest has, therefore, not been realized and an analysis of the data should be undertaken with this fact in mind. The horse being the most prominent source of farm motive power in the United States and Canada, a comparison of the results obtained by the use of tractors and horses, respectively, is suggested as possibly the most effective presentation of the subject that could be made. The material from which such a comparison can be drawn is to be found in the official tables prepared by the engineers in charge of the motor contests, and in various publications reporting tests of the efficiency of horses.

A number of factors affect the value of the data secured. In none of the contests were horses tested in comparison with traction engines, and the figures presented later for the work of horses must be qualified to correspond with the variation in conditions under which they were gathered. The motors in competition were handled by experts who undoubtedly secured greater efficiency than the average operator. Owing to the expense and effort required for conducting the contests each separate test was of such short duration as practically to eliminate the factor of endurance, to permit the securing of abnormally high averages, and to magnify the importance of a slight accident such as might occur at any time without seriously crippling an engine. No standard, either of power developed or load carried, was set for qualification in any test, hence the full capacity of any motor is not necessarily indicated by the results of the contests. Economy figured largely in deciding each contest, consequently in most cases the amount of work performed was that which could be done with the lowest fuel consumption per unit of work. This amount of work is usually much below the possible maximum. Considerable weight was given in the arrangement of the score card to points which were used more largely on the expert opinion of the judges than the actual work of the tractors. This was unsatisfactory to some of the competitors, but reserved to impartial engineers the power to criticise many points of prime importance not brought out by the tests, such as design and construction, accessibility of parts for repairs, etc. The criticisms on these important points were not given out however, for the information of the public. Decisions were required to be made hastily, hence exhaustive comparisons were impracticable. Owing to these factors which influenced the value of the results it is unadvisable to make close comparisons between various individual entries, but so little is the relative efficiency of animal and mechanical prime motors understood by the average farmer that such general comparisons as can be made of one class of motors with another and with the horse may be of value. It is to be remembered, however, that the greatest development of both steam and gasoline traction engines for field purposes has been within the last six years, and many of the motors are of such recent design that it will not be practicable to make the performance of those already in the field the basis for general conclusions with regard to their future efficiency.

Full details of these contests have already been published in these columns, hence the reader is referred to the August editions in 1908 and 1909 for information as to the conditions governing the trials. In the following comparisons both the contests at Winnipeg and the one at Brandon are considered, but data on some of the engines which did not finish all the tests at Winnipeg in 1909 are omitted in comparing performances in plowing, hauling and on the brake. For reasons previously set forth, individual motors will not be compared, but steam engines, single cylinder gasoline engines and multiple cylinder gasoline engines will be compared by classes with each other and the horse. The steam engines, it will be remembered were all rated 30 h.p. or higher. The single cylinder gasoline motors were all of one type and small horse power, while the multiple cylinder gasoline engines varied considerably in size, power, and efficiency. The last factor must be taken into consideration

in drawing conclusions for, as will be shown later, there was a wide range between the best and poorest in the latter class.

The writer has rather minutely analyzed and compiled the data from the contests already held, but owing to the great length to which a detailed discussion would etxend has sought in this article to present only certain facts brought out by the contests which will be of interest to the farmer rather than the agricultural engineer.

The tests consisted of belt driving, hauling and plowing. While not especially interesting, to the spectator, the brake test was extremely important in giving a uniform basis of comparison. It measured the actual power of the engine part without taking into consideration differences in the efficiency of the transmission gearing. Unfortunately, the brake test rules did not specify whether the power developed was to be regarded as the most economical or the maximum and competitors took their choice. The steam engines developed about 90% of their brake rating at Winnipeg and 99% at Brandon; the single cylinder gasoline motors about 81 and 91 per cent respectively; and the multiple cylinder gasoline about 73 and 77 per cent. For this reason it may be unfair to make too close comparisons.

The horse's motion is linear, and in order, to convert it into rotary motion as used on most machines, an additional piece of machinery, either a tread or a sweep power, must be used. This cuts down his power immensely, a tread power in good running order probably wasting from 10 to 40 per cent of the power applied to it, hence on a brake test thte horse would not develop his rated power.

A horse power, as the term is used by engineers, was first determined by measuring the work performed by some English cart horse. It it a definite unit, no matter to what class of motors it may be applied, hence it is not inconsistent to say that a horse may net less than half a horse power when used on a threshing machine.

The average farm horse is stated by one authority to weigh about 1100 pounds and to be able to exert a force equal to lifting one tenth his weight continuously for ten hours a day. (The writer found 1,300 pounds a trifle under the average weight of 275 work horses on 52 Ohio farms.) Within certain limits the horse is said by another authority to be able to do proportionately more work per unit of time as the hours of work are decreased. Investigations show that his hours of work on a large number of Minnesota farms do not exceed seven per day as an average of the busiest month and average only about three per day for the year. Another authority states the average safe working draft of a horse to be 150 pounds, but in every day practice horses may be seen exerting 20 to 30 per cent more force than that on farm machinery. Another authority puts the average horses capacity at two-thirds h.p. and another at .79 h.p. These details are noted here in order to show the difference of opinion as to the usual capacity of a horse, but in comparing horses and tractors it will be well to reconcile the extreme. To assume four-fifths h.p. as the average work horse's normal capacity will probably be a fair compromise.

The investigations in Minnesota showed an actual farm cost of feed per hour of horse labor of 4.6 cents on a farm of 1960 acres and 5.64 cents on a group of farms averaging 297 acres. This would mean a fuel, or feed, cost of 5.75 to 7.05 cents per horse power per hour, to compare with the fuel cost of the engines on a straight haul. If we assume 25 per cent as the power wasted by a tread or sweep power we shall have to raise the cost of feed again to compare it with the cost of fuel in a brake test. This would bring it up from 7.7 to 9.4 cents per brake horsepower per hour. In the tests figuring coal at $8.50 per 2,000 pounds and gasoline at 20 cents per imperial gallon of 7 pounds (the rate quoted by the Exhibition management), the fuel used by steam engines cost 1.7 cents per brake horse power at Winnipeg and 1.9 cents at Brandon. A trifle should be added to this in ordinary practice for the amount used in getting up steam. The fuel for single cylinder gasoline engines cost 1.6 and 1.5 cents at the two places, and for the multiple engines 2.6 and 2.8 cents. All of these costs are probably lower than could be maintained by operators of ordinary skill, but in the United States there would be a lower price of fuel to balance this. These figures show clearly one reason why the engine has taken the place of the tread power and the sweep. All engines and horses require some water. Steam engines require more than horses, and horses more than the ordinary gasoline engine. At Winnipeg 33.2 lbs, and at Brandon 32.7 lbs. were required by steam engines for each horsepower hour. The water consumption was not given for gasoline engines at Brandon, but at Winnipeg it averaged about 1.7 lbs. A horse in active work will drink from 75 to 100 lbs. per day, or 8 to 12 lbs. per hour. Increasing this in the same way as the cost of feed we have from 10 to 15 lbs. per brake horse-power

hour. The steam engines required a mean of 7.98 lbs. of water per pound of coal at Winnipeg, and 7.21 at Brandon. A horse requires from about 2.35 to 3.5 pounds of water to one pound of dry matter in food.

Thermal efficiency is the term applied to the percentage of the total fuel taken into a motor which comes forth in the form of useful work. Internal combustion engines naturally have a big advantage over steam engines in this respect, but since the latter use fuel which is cheaper on the basis of heat units the difference in cost is not so marked. The horse is said to have a thermal efficiency of about 20 per cent and man about the same. The steam engines at Winnipeg had a thermal efficiency of 4.49 per cent and at Brandon 3.99 per cent calculating this on the high heat value ordinarily accepted for coal. The single cylinder gas engines are credited with a remakably high average, i.e., 23.4 per cent at Winnipeg and 24.2 per cent at Brandon. The multiple cylinder gasoline engines showed 13.8 per cent at Winnipeg and 13 per cent at Brandon. In comparing with the horse, this figure must again be cut down to around 15 per cent to correspond with the mechanical inefficiency of the power apparatus, but we must remember that in his case we have not only an efficient motor but one which takes care of the firing, oiling, repairs and a large part of the operating.

It is worth while to consider what becomes of the large excess of fuel supplied to the various motors over that which is expended as work. In the steam engine, a considerable amount of coal is never burned at all, but is sucked through the flues and out the stack in finely divided form, falling as soot and cinders. A very large part of the heat passes out and is lost, only a part of the total heat being absorbed by the water surrounding the tubes. Radiation from the boiler pipes and cylinders wastes considerable, especially in traction engines, and a large amount passes off in the exhaust. It is said that the working pressure (mean effective pressure) in a traction engine cylinder is only about half the boiler pressure, and from 10 to 15 per cent of the power actually generated in the cylinder may be lost in friction of the piston, crank shaft bearings, etc., before it gets to the flywheel.

In the internal combustion engines a fierce heat is generated inside the working cylinder by an explosion, but the temperature rapidly falls as the gas expands and pushes the piston ahead of it. The cooling water and the exhaust valve must get rid of the excess of heat at once, and of course part of that which is actually used goes to overcome friction in the engine.

The horse must be kept warm, whether he works or not. He must raise to body heat the temperature of food and water taken in, and must use more heat to digest it. He uses heat with every motion, breathes off heat and excretes it. A portion of the heat units in food are stored up in the body as muscle, or fat, ready for use later on, and a large part of the total goes to repair worn out tissues. A brood mare uses a part to develop her foal. Where work is done, some of the tissue in the muscle is converted into energy. About one-third of this comes forth as useful work and the rest goes to raise the body temperature. Even nature is wasteful, from the standpoint of power alone.

When it comes to pulling, the horse has the advantage of the tractor. The thermal efficiency of the steam engines at Winnipeg drops to 1.75 per cent as a mean of the hauling and plowing tests. Where a pound of coal came forth in the shape of work applied to the brake, only 0.39 pound was available at the drawbar. Owing to the better footing there was more left after moving the engine in plowing than in hauling, the thermal efficiency being 2.1 per cent in plowing and 1.3 per cent in hauling. Out of 100 pounds of coal, only 1.3 pound recovered in work: No wonder the world's supply of coal is in danger.

The horse on the other hand, is not hampered by any inefficient tread power in pulling and makes a better showing. If necessary he can double his efforts for some time, and, for an instant only, a horse has been known to exert over eleven times his normal capacity. The thermal efficiency of the horse is usually based on his performance in pulling. His 20 per cent is far in excess of the 9.3 per cent credited to the single cylinder gasoline engines and the 7 per cent for the multiple cylinder gasoline. In comparison with the thermal efficiency in the brake test, the single cylinder motors were 39.7 as effective, and the multiple cylinder 50.6 per cent. Three-fifths of the fuel converted into power was spent in moving the steam and single cylinder gasoline engines over the ground, and about half for the multiple cylinder. The latter class lost relatively less of their available power in propelling themselves than the two former classes, and did practically as well in hauling as in plowing. The latter fact is particularly remarkable in view of the fact that the steam engine class gained in plowing about 90 per cent in drawbar horsepower and 60 per cent in thermal efficiency over the performance in hauling; that the

single cylinder gasoline engines gained about 22 per cent of power and 25 per cent in thermal efficiency in plowing as compared to hauling; and that a horse will ordinarily show 30 to 50 per cent greater traction power in firm footing, as on sod, than in soft or lose ground like that in the hauling course.

An engine is a big and expensive toy, but on the basis of power the horse is often more so. A study of 119 work horses and mules on Ohio farms in the spring of 1909 resulted in an average age of about nine years, a weight of about 1370 pounds, and a value of a trifle under $160, or about $11.60 per hundred weight. From $10 to $20 should be added to this, however, for a "side" of harness to render the horse fit for work. A horse of this size, worked only from 5 to 8 hours per day, might develop a horsepower without injury in plowing or hauling and considerably less on the belt. Taking the weight per actual brake horse-power developed at Winnipeg in 1909 we have for steam engines 456 pounds; for single cylinder gasoline 534 pounds, and for multiple gasoline 430 pounds. Taking the mean between performances in hauling and plowing, we find the weight per actual drawbar horsepower to be 1033 pounds for steam, 950 pounds for single cylinder gasoline, and 857 pounds for the multiple cylinders. Steam engines f.o.b. Winnipeg cost $43.90 per actual brake horsepower, $102.05 per actual drawbar horsepower, and $9.65 per hundredweight. For single cylinder gas engines the figures were $91.50 the drawbar, and $17.30, uffl for brake horsepower, $162.35 at the drawbar, and $17.10 per 100 pounds, and for the third class the figures were $74.50, $14.45 and $17.30, respectively. These prices include a 27½ per cent duty on motors from the United States. The steam engines, by reason of their greater size, show up very well in these points, and would have even a greater advantage if comparisons were based on the power developed in plowing alone.

One of the greatest sources of confusion to the farmer is the lack of uniformity in rating engines. We have been considering up to this point only those engines which completed all three tests. Now take these same engines and consider their rating and performance. Four steam engines at Winnipeg had an average rating of 95 brake horsepower and 32 nominal horsepower, a ratio of 1 to 0.337. That conforms quite closely to ordinary steam engine rating, but the ratios ranged between 1 to 0.5 and 1 to 0.29 for the different engines. They developed 90.4 per cent of the brake rating and 115.4 of the nominal rating, with a ratio between actual horsepowers developed of 1 to 0.429, which is not far from the ratio between the thermal efficiency at the brake and drawbar respectively, and indicates consistent behavior.

Four single cylinder gas engines were rated at 25.875 brake horse-power and 18.75, a ratio of 1 to 0.725.

They developed 87.7 per cent of the brake rating and 68.1 per cent of the nominal rating, with a ratio between actual horsepowers of 1 to 0.562. The ratio of thermal efficiency at the brake and drawbar was 1 to 0.397, showing that a high proportion of the brake horsepower was obtained at the drawbar by using a relatively greater amount of fuel than in the brake test. If the nominal rating, which is most often used in speaking of engines, is based on the power of the average horse, and he can develop only two-thirds horsepower on the average, there can be no fault to find with this rating provided the basis is explained The amount of work an average horse can do is readily understood by the farmer, but the actual horsepower is a mathematical unit. like a pound, and is, therefore constant. The contests brought out clearly the need for a standard basis for rating engines, owing, if to nothing else, to the intense popular interest aroused.

Five multiple cylinder gas engines at Winnipeg were rated at 49 horsepower, brake, and 21.4 horsepower, nominal, a ratio of 1 to 43.7. They developed only 72.6 per cent of brake rating and 83.5 per cent of the nominal rating, but it is striking to note that the ratio between actual horsepowers at brake and drawbar, and that between thermal efficiency at the same places, are practically identical, each being about 1 to 0.5 in each case. This is a remarkably consistent average.

Objection has been made to all kinds of tractors because of their great weight. The objection is not so serious as might at first be supposed. Excluding the lightest motor at Winnipeg, one which had a hard wheel to figure on, and taking an average of the other seventeen, we have a drive wheel 76.5 inches in diameter and 24.8 inches across. In the absence of data on the size of guide wheels it has been assumed that they would average at least 36 inches in diameter and 8 inches in face. If these drive wheels sink an inch into the ground and these guide wheels half an inch, the engine would have about 1036 inches of wheel surface in contact with the ground. The average weight of the 17 motors was 21,230 pounds or 20.5 pounds per square inch. We have already seen that the tractors were lighter than the horse in proportion to actual power developed. The blacksmith says the average 1200-pound farm horse will take a No. 4 shoe, which will indicate an area of about 28 square inches for each foot, or 56 inches for the two on the ground at one time. Assuming that the area of the two feet would not be over 60 inches, and that the whole surface comes in contact with the ground, the pressure per square inch would be in the neighborhood of 20 pounds. It will be noted, however, that to equal this the wheels of the tractor have to sink into the ground somewhat. Theoretically a wheel touches a flat surface at one point only, but practically it touches a greater or less area as the ground is soft or firm.

The average draft 14-inch plow bottom was about 700 pounds, or about 4,200 pounds per engine. Allowing 175 pounds as the working draft of a 1200 pound horse ,which is much higher than the draft usually considered safe, 24 horses would be necessary to do the work of the average engine in the contest. The average total width of furrows for the 11 engines at Winnipeg was 98.5 inches. The two drivers covered a strip 49.6 inches in width, or a fraction over 50 per cent of the ground. If the guide wheels were each 8 inches wide they covered a litttle over 16 per cent of the ground a second time, and the engine covered once the equivalent of about 57 per cent of the ground.

If we assume three feet as the average horse's stride, then for each plot 36 by 98.5 inches there would be 24 footprints, with an area of 30 inches each, and 20.3 per cent of the ground is covered. As the front and hind feet strike in practically the same spot, the ground is twice subjected to a pressure of 20 pounds, or the equivalent of 40.6 per cent of the total. This is on the assumption that 24 such horses could have done the work. Taking one-tenth his weight as the normal draft of a horse, as Professor King recommends, we should require 35 1200-pound horses, which would mean over 59 per cent of the ground covered with footprints. In spite of figures, it is a fact that horses can go some places where tractors can not, but the foregoing figures ought to show that it is not because of lighter weight so much as because of the power to exert occasionally a tremendous increase in efficiency.

Never Mind.

Never mind the other fellow, attend to your own business.

Never mind the other fellow, he will do as he sees fit, anyway.

Never mind the other fellow, do your full duty all the while.

Never mind the other fellow, and you will surely succeed.

Never mind the other fellow, and your faith will be well founded.

Never mind the other fellow, his turn will surely come.

The Manure Harvest.

In the midst of the harvest of grain, and grass, and tubers, we must not forget the compost heap, in which we garner and store the unsowed crops of a future season. The saying that "anything that grows in one summer will rot before the next," is a safe guide in collecting vegetable matter for the compost heap. When sods, muck, and weeds form a part of the heap, it is not alone the material which we are assiduous in collecting, and put into the heap, that constitutes its whole value. The fermentation induced by the dung and liquid manure and the action of the lime or ashes added, work upon the earth, adhering to the roots of the weeds, and forming a considerable part of both sods and muck, and develop an admirable quality of plant food. Hence this element of the compost heap, which is generally overlooked as possessing any special value, should never be wanting. It has, moreover, its own offices to perform, in promoting decay, in the formation of humus, and in preserving, locking up, and holding on to valuable ingredients of plant food.

The compost heap should always be laid in even layers, and each layer should go over the entire heap for thus only can final uniformity be had. We do not mean special-purpose composts, but those made for general farm crops. It would be well if every particle of dung, liquid manure, straw, litter, leaves, weeds, etc. could be worked together into uniform fine compost, and there is really no substantial reason why this should not be done.

the hill and taking the general compost as a basis, to make one of turnips, by the addition of a large percentage of bone dust. All this may be done—establish once the rule to compost everything of manurial value, and we have in prospect an abundance of farm-made fertilizers at all times and for all crops—victory over weeds, a good place for decomposable trash of all kinds, a sacred burial ground for all minor animals and poultry, whose precincts need never be invaded. There will be-sides be no stagnating pool in the barn-yard, for all liquids will go to the tank, to be pumped over the compost heaps—no nasty, slumpy barn-yard, for everything will be daily gathered for the growing compost heap, and the harvesting of the manure crop, and its increase day by day, all the year round, will be a source of constant pleasure to master and men.

The Preparation of Soil, Kind of Seed Care and Cultivation of Field Roots and Potatoes on the Farm.

I have tried several ways of growing these lines of farm industry, and my experience has proved that to have the best success we must give these plants the best and richest of land. In the first place select a part of your stubble land that is high enough that no water lies upon it, manure it well during the winter, and then summer fallow it by plowing down the manure to a good depth and harrow. After the top weeds have began to grow do not neglect to harrow them down on a nice hot day, and continue the use of the harrows now and again all summer, then last thing in the fall give the land a good stroke of the disc harrow to secure a good bed for the seed, and in the spring, then before planting go over it again with the drag harrow. Plant the seed between May 10 and 24th. Do not say Oh, there is no hurry for the potatoes they will be all right after everything else is in, but no, take a day, go out with the hoe walk up the edge of the field and make shallow holes with the hoe about one yard apart in the row and the rows about three feet apart. Have the seed nicely sorted out taking the best shaped and cleanest potatoes if too large cut them, taking care to have one or two eyes in each seed, take out your hired man and probably your wife would not object to helping (mine don't) then one can make the holes and drop the seed three to five in a hill according to size, and the other fellow follow up with another hoe and cover the seed up to a depth of about two inches, in this way the warm sun soon brings the young shorts to the light, as as soon as they are a few inches high. go through them with a one horse cultivator and continue to do this every week or so until the tops are too large to work among when they will be all right till digging time, then I take them up with a fork. My choice of potatoes is Rochester Rose and I have found that potatoes grown in this way ripen earlier, and yield heavier than any other method, and I have tried a good many, and also give better satisfaction than by having in a whole lot on poor land with the plough and probably burying them about six or eight inches deep and getting half a crop. Those of your readers who have not been successful in the raising of field roots, try my method, and I am sure your work will not be in vain.

Then in the same field, along side the potatoes I plant my mangle and turnips. I use a home made seed planter which drops the seed out fast or slow as it is regulated in a little drill made by the planter as you push it along, and covering in the same way as you go. Sow these in rows also about three feet apart and cultivate in same way as described for the potatoes, thus keeping down the weeds, and keeping the land soft and mellow for the growing bulbs and roots, and one main point to bear in mind is to not have the roots too thick, then to form 12 to 16 inches apart in the row. I use the Prize Mammoth Long Red Mangle and the Jumbo purple top Swede turnip.

Hoping I have not made my letter too long, and that you will consider it worthy of a place in your valuable paper, I am

Yours faithfully,
A young farmer,
Grenfell, Sask

Case Hardening.

To those who desire a practical knowledge of the handling of steel and iron at the forge, the following process of case hardening will be found of interest:

The quality of hardening steel is one of its distingishing features. Wrought iron does not possess this characteristic. Steel contains carbon, which gives it the quality of being hardened; wrought iron contains only a small per cent of carbon, but the iron can be subject to a process called case hardening, causing it to absorb carbon and giving it a coating of steel on the outside, then chilling the steel thus formed.

The most simple process is to heat the iron to be case hardened to a cherry red heat, rub the surface to be hardened with a piece of cyanide of potassium or ferrocyanide of potash; it is then rapidly heated and plunged into the water. Too slow heating after treating with the cyanide will fail to produce the results desired.

Care should be taken to keep the cyanide off the hands or the fumes from the lungs, as it is poisonous.

Pieces of iron can be packed in charcoal or other materials containing carbon and heated in an air-tight box for about twenty-four hours; then plunged into cold water. The result is the same as the cyanide process. Leather, hoofs, or charred bone are sometimes used instead of charcoal.

The uses of case hardening are many; it makes a good substitute for steel in a great many cases, especially on bearing surfaces; it is sometimes used for a cutting edge, although not very lasting. It is extensively used in the manufacture and hardening of gun and sewing machine parts also small pieces that require a hard wearing surface. Crank pins are generally case hardened.

The conceit is usually taken out of the wise graduate soon after college announcement.

So far we have failed to form the acquaintance of men who love their neighbors as themselves.

Religion seems to be sort of a moral fire-escape, in the estimation of some people.

MAR.

The Canadian Thresherman and Farmer

CANADA'S FARM MACHINERY MAGAZINE

PUBLISHED MONTHLY BY
E. H. HEATH COMPANY
LIMITED
WINNIPEG - CANADA

Members Western Canada Press Association

Authorized by the Postmaster General, Ottawa, Canada, for transmission as Second Class Matter.

E. H. HEATH
PRESIDENT AND MANAGER

E. W. HAMILTON
SECRETARY

F. C. BRAY
TREASURER

1910

"Everything begins and ends with the soil."

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Postage prepaid United States and Foreign Countries $2.00 Per Year.

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OUR GUARANTEE

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

TRACTION cultivation is no longer a theory or a fad. The thousands of farmers who have tried it both in Canada and the United States during the past five or six years and more especially during the past two or three years, have placed it upon the plane of practicability and it has now reached that stage where the farmer must consider it just the same as he had one time considered buying a drill as against sowing his grain by hand.

Traction cultivation has done and is doing a large amount of good towards Western Canadian development. Thousands of acres of virgin prairie have been turned into well tilled fields that would otherwise have lain idle had it not been for the traction plow.

One of the first questions that comes to the farmer in this traction cultivation proposition is, "Can I make more money with a traction engine than I can with my horses?" It is a question that in so far as we know, has never been answered. It may have been answered in individual cases; men have purchased traction engines and traction cultivation outfits and have demonstrated to their own satisfaction and profit that they can make more money with a traction engine than what they can make with horses. On the other hand men have purchased expensive traction plowing outfits with the result that not only their outfit, but what little property they had when they purchased it, went under the auctioneer's hammer.

This, however, is no argument for or against the traction cultivation proposition. Hundreds have gone broke with a horse equipment. It is simply a question of management, of making their outfit suit the conditions at hand. The traction engine and the traction plow is nothing more or less than a machine designed by the hand of man to turn the latent energy of coal and wood or oil into useable power. It is, therefore, simply a question of skill and business ability on the part of the purchaser of such an outfit as to whether or not he can compel it to make money for him.

The steam tractor has done a valuable piece of work for Western Canada. It has pulled its six, eight, ten, twelve or fourteen bottoms in tough gumbo, turning it over into a seed bed. It is still doing this and will continue to do it so long as there is land to be plowed.

There is no occasion for the farmer who owns a steam tractor today to get all stirred up over the gasoline traction proposition, despite the fact that there is considerable to it. As we have said before in these columns, the gasoline traction engine is a thing with which we have to reckon. In the majority of cases where it has been tried, it is furnishing the farmer wih a cheap and economical power and in the case of the small farmer with a quarter or half or a section of land, it appears to be better adapted to his needs than the large steam tractor.

When it comes to making a comparison between steam and gasoline as a traction power on the farm, it is largely a question of fuel and water supply. There are places in Western Canada where it is very difficult to obtain water and even when it is obtained it is of such a quality as to be exceptionally hard on the engine. In a great many cases the gasoline tractor has, therefore, been able to furnish the farmer with a better and cheaper power than the steam tractor could, but if we were to travel over Western Canada during the 1909 breaking season and take an inventory of the number of steam outfits that are at work and of the work that they are doing, we would key our shouts for gasoline in a somewhat lower scale than we are apt to do at the present time.

Remember, this is no slur at the gasoline traction engine. It has its work to do and its place to fill and from all reports it is doing its work well. It is doing it remarkably well considering the fact that the steam tractor has had several years the start.

We do not believe that the subject, Steam Versus Gasoline is a debatable question as there is very little to debate. Here is a case in point. We had occasion to talk with two farmers recently who were attending the Winnipeg Bonspiel and who own two farms side by side in the Saskatoon district. One owned a 30 h.p. steam traction engine and the other owned a gas tractor of practically the same horse power. We happened to talk with these two farmers at different times and took occasion to ask them their opinion regarding the steam and gasoline engine. The man who owned the steam tractor was loud in its praises and so well satisfied with the work done that he would not consider using anything else. He was an intelligent farmer and has his system of costs carefully worked out. He was not considering gasoline in the proposition at all, as he was well satisfied with steam and was also satisfied in his own mind that he could cultivate his farm with his steam tractor a great deal cheaper than what he could cultivate it with horses. A few days after talking with this gentleman we happened to meet the man who owned the gas tractor and he was just as loud in its praise as his neighbor who owned a steam engine. He had quite a large farm and he had figures which prove conclusively that he had made over $1000 more last year by cultivating his farm with a gasoline traction engine as against using horses. He also expressed himself in no uncertain terms as being strictly in favor of the gasoline traction engine.

As we have mentioned before, both of these men were intelligent farmers. They could not both be wrong; consequently both in a measure must have been right.

This proposition of steam and gasoline is largely one of personal opinion and of personal desire, at least at the present time. Some will say that if steam is so satisfactory, why are all the thresher companies anxious to get into the business. The answer is simply this, that there is a demand for the gasoline traction engine at the present time. Every farmer does not want one, but there are a large number of farmers who do. The thresher companies have their organizations in the field. They are out to sell anything that the farmer wants and if the farmer wants a gasoline traction engine, they are going to place themselves in a position where they can sell it to him. It is but another case of a merchant who handles two brands of tea. He has a call for each of those two brands and consequently he is going to stock both.

The real debatable part of this proposition is "Mechanical Power versus the Horse" and it is with the idea of solving this part of the problem that The Canadian Thresherman and Farmer put out its Plowing numbers.

We have been accused of putting these numbers out wholly and solely from the standpoint of profit ourselves and to a few of the manufacturers who patronize our advertising columns. We would ask that our readers or any one go through this particular number and take note of the large amount of correspondence that it contains. Every letter that we have in this issue cost us over $3.50 to secure. It takes time and money to round up the photographs from which the illustrations must be made. These illustrations have cost us wholly and solely from the engraver's standpoint about 22 cents a square inch. If these things are all figured out, it will be seen that the extra amount of advertising that this issue contains will not meet the extra cost, which should acquit us of any desire to make these plowing numbers wholly and solely a business proposition.

We have hundreds of letters on file in our office at the present time that are open to the inspection of anyone; these letters being from farmers and threshermen in Western Canada who express themselves as saying that our Traction Plowing numbers have been of more benefit to them in the traction cultivation proposition than anything they have been able to get hold of. A great many have expressed themselves as looking forward to our Annual Traction Plowing number as an issue for which they would willingly pay $5.00 if it could not be obtained otherwise. In this issue our own personal opinions are kept in the background and we open its columns to a free and fair discussion by everyone interested in the proposition.

* * * * * *

In this issue will be found an article by Mr. L. W. Ellis on the "Tractor Versus the Horse." Mr. Ellis has spent several years in an investigation of the traction cultivation proposition and is probably in a better position to give a clear and thorough discussion of the matter than any other man in the United States or Canada. He has gone at the subject in an unbiased, unprejudiced way and while his deductions are drawn largely from the results of the Winnipeg and Brandon Motor Contests, they are nevertheless worth the careful consideration of every farmer in Western Canada no matter whether he farms by mechanical power or by the horse.

COURSE IN GAS ENGINEERING

This Course will consist of a series of practical talks on the theory and practice of the gas, gasoline and oil engine. They will be simple, illustrated where necessary, and of such a mature that ths gas engine owner may easily adapt them to his daily engine work

LESSON IV.

Ignition.

IGNITION is one of the most important, and, at the same time, the least generally understood proposition with regard to the modern gas engine. It is the thing which renders active the otherwise inactive, fuel charge within the cylinder and while it possesses no power whatsoever

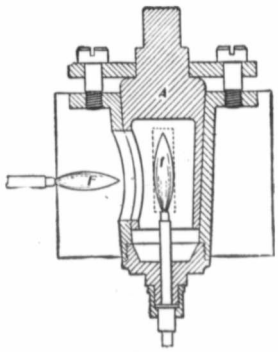


FIGURE I

within itself it is nevertheless in reality "The Power Behind the Throne."

Generally speaking, the charge in the cylinder of an internal combustion engine may be ignited by any one of the four following methods:

1. By means of a naked flame.
2. Contact with a surface which is at high temperature.
3. By the spark of an electric arc.
4. By raising the temperature of the charge to its point of inflammation by compression.

The point of ignition is the most important factor in the application of any method or device used for this purpose. For proper ignition, the moment at which the charge is ignited, and which corresponds to a certain point in the cycle of operations, should be neither too early nor too late relatively to the ending of the compression and the beginning of the power strokes.

When the moment of ignition occurs too early, the maximum pressure of the explosion is reached before the end of the compression stroke, thus retarding the motion of the piston, increasing the friction on the crank pin, and consequently reducing the brake horsepower.

When the moment of ignition occurs too late, the mean effective pressure is reduced, and consequently the brake horse-power also.

The highest efficiency is obtained by adjusting the point of ignition to suit the amount of compression, and the speed of the engine.

As an interval of time, no matter how short, must lapse between the moment of ignition and the moment of maximum pressure in order to prevent the delivery of a dead blow on the piston, the moment of ignition should occur immediately after the crank passes its inner dead center at the end of the compression stroke.

Furthermore, as the time of combustion or the interval of time between the moment of ignition and the moment of maximum pressure is not affected by variations in the speed of the engine; in order to obtain complete combustion and a resultant maximum pressure at the beginning of the power stroke, the moment of ignition should occur later for slow speed, and earlier as the speed increases.

The naked flame method is now practically obsolete although in engines of the Otto slide valve engine type it is still used to some extent. This method of ignition can best be explained by Bennett's ignition cock (Fig. 1). In this method of ignition two gas jets are necessary. One, the flame of which is employed for ignition of the charge, and the other F for relighting f when

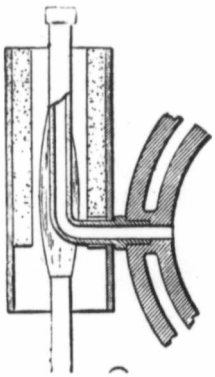


FIGURE II

blown out by the explosion within the cylinder. The plug valve A is shown in proper position for relighting the flame f. At the right moment, the valve makes a quarter turn so that the opening in the plug is opposite the opening into the cylinder indicated by the dotted lines. The resulting explosion extinguishes the flame F and the valve returns to the position shown in the figure, the gas rushes out through the opening and ignites at the flame F.

The above method is not worthy of note only in so far as it represents one of the methods that have been employed to ignite the cylinder charge.

Method No. 2. viz., that in which the charge comes in contact with a highly heated surface is best exemplified in the hot tube. This method is also rapidly going out of use and is now employed mostly as an emergency device. In other words it is the pump on a steam engine when

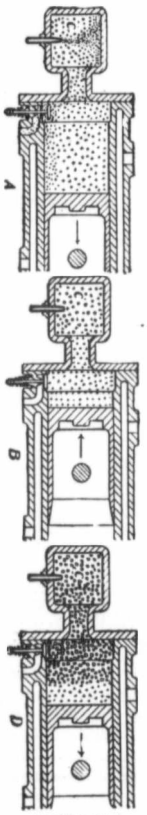


FIGURE III

an injector is used. However for stationary work many manufacturers still supply both a hot tube and an electirc combination.

The hot tube consists of a short tube of metal or porcelain which is maintained at a dull red heat by contact with a gas or gasoline flame, and which is attached to the engine cylinders in such a manner that a portion of the explosive charge is forced into it, and, being ignited by contact with the hot walls of the tube, inflames the whole charge. Much of the difficulty, however, in maintaining a constant and uniform explosive effect from the hot tubes used in the early or experimental period of the explosive motor was due to the the inability to know or to see what was the exact condition of the process which was taking place within the tube and passage to the combustion chamber of the cylinder.

In the early days of the hot tube igniter there was also a lack of a durable and inexpensive material from which to make the tubes. The use of iron with its uncertain and perishable nature, under the intermittent high pressure and at the continual high temperature of the Bunsen burner, oxidized the tubes on the outside making them thin so as to burst in a month or week, or a day; but only occassionally a tube would last a month, although by the use of extra strong iron pipe their life has somewhat lengthened. The porcelain tube however, gives good results but requires considerable care in fastening it into place. When once properly set the wear is almost imperceptible, and if not broken by accident, it will stand the pressure well and have a life of a year or more. Tubes made of nickel alloy have been found to give very good satisfaction, some tubes made from it lasting for more than two years.

The earlier tube igniters used what is known as a timing valve. This valve opened communication with a tube, so as to time the ignition on the proper down of the cycle. It is now the common practice to time the firing point automatically by the compression charge. When the engine exhausts the pressure within, the tube falls to that of the atmosphere and it is filled with the products of combustion. When the engine compresses a fresh charge a portion of the mixture is driven into the ignition tube, forcing the products of combustion ahead of it, and when the pressure within the cycle has reached the right amount the fresh mixture is brought into contact with the heated portion of the tube and ignites.

Audel's Gas Engine Manual gives the following disadvantages from the use of hot tubes:—

1. The necessity for maintaining an open flame outside the cylinder is extremely hazardous in some localities, and is especially dangerous in the case of a gasoline engine.

Continued on page 86

AUTOMOBILES FOR THE FARMER

Horses and Automobiles Economically Viewed.

By John Q. Jamieson.

We have been hearing a great deal about the high prices of the commodities of life and the cost of supporting a family, and many articles have been written on the subject suggesting remedies therefor. Collectively, all might prove a panacea, but not one offers a specific remedy or relief. We have to offer a few thoughts along the line, that can be taken for what they are worth, but in connection with our actual experience.

During the past year I have used an automobile, being engaged as superintendent of several oil leases for Eastern Companies, being only a working man. I have practically discovered that the auto is a great money-saver for the companies necessitating my daily visits to the several leases. The one auto served me better than five or six horses, and with less care and attention and a much smaller investment and risk. Not only was there a saving in the support of the horses and in the maintenance of vehicles, harness, horse-shoeing, etc., but was such a saving that I could cover the territory travelled in less than one-half the time required with a horse. For quite a while the company supported the investment of a number of horses and equipment, and I soon discovered that there was more economy and less risk of loss in hiring from the livery, all of which has proven out—since disposing of the live stock and accessories and the acquisition of the automobile.

The automobile is "The Poor Man's Friend"—because it reduces the price of the necessaries of life. The number of horses is about two-thirds of the total of the human beings, and all must be fed and kept alive. Put the work of the horse on the auto and other motive power, and then we have the food stuffs required to keep them—on the market—to feed to our cattle, hogs sheep and the like, naturally reducing the price of same and benefitting the poor man and assisting the farmer in raising more marketable products.

The skilled mechanic must live, and it requires mechanics, who command good wages, to produce automobiles, but it requires no labor to produce horses. Thus, we see new factories springing up on all sides of us, employing skilled and unskilled labor of all kinds, while should we depend upon the beast of burden entirely, these thousands of laborers would be without employment and without the breadstuffs that the horse consumes.

The horse has been, and will undoubtedly continue to be, a noble servant of the people, but as the public learns the difference in cost of the support of the horse and other motive power, they will gradually drift to the less expensive and more reliable gasoline motor power. The horse will, of course, continue to be used as an animal of burden and of pleasure for years and years to come, but the auto and other means of locomotion will gradually supplant him.

The automobile or gasoline engine is always ready, and you are at once in action, whereas the horse must be fed, watered, curried, harnessed, hitched, unhitched, re-fed, bedded, shod and numerous other attentions given, which in total far exceeds the expense of maintaining the ever-ready and swift-flying auto. From any point of view—investment, service, reliability, maintenance and get there qualities—the auto has the horse bested forty ways.

Do Farmers Buy Automibles?

In view of the numerous statements of farm paper publishers and others that farmers are becoming heavy buyers of automobiles, The Farmer, of St. Paul, decided to make careful investigation of the subject, the results of which are submitted herewith.

They selected the records for the state of Minnesota for the reason that Minnesota has a state law compelling each owner of an automobile to take out a license which is purchased from the Secretary of State. The figures were, therefore, obtained from the office of the Secretary of State and include every automobile in Minnesota which had been purchased up to about the first of October, 1909.

In considering the figures that follow, it should be remembered that there are few men in towns of 3,000, and under, who are in position to own an automobile. If you doubt this visit some country town and you will find not to exceed seven or eight automobiles in the town proper. The large majority of cars credited to towns of this size are owned by farmers in the immediate vicinity.

The figures for Minnesota follow:

In towns under 1,000 population	1,169
In towns between 1,000 and 2,000 population	705
In towns between 2,000 and 3,000 population	280
In towns between 3,000 and 4,000 population	87
In towns between 4,000 and 5,000 population	84
In towns between 5,000 and 6,000 population	136
In towns between 6,000 and 7,000 population	153
In towns between 7,000 and 8,000 population	62
In towns between 8,000 and 9,000 population	90
In towns between 9,000 and 10,000 population	67
In towns between 10,000 and 21,000 population	252
Total number of cars in Minnesota	6,282

These figures show that 3 per cent of the total number of automobiles in Minnesota are in strictly country districts, in the

vicinity of towns of less than 30,000 population. The percentage is really larger than that as the heavy motor trucks used for commercial purposes in the Twin Cities and Duluth are also licensed and thus help to swell the number of city automobiles, although they are pleasure vehicles.

It is further to be noted that in towns of less than 2,000 there are 1,874 automobiles. Reports from dealers, and our own personal knowledge, shows that many of the automobiles listed in towns of from 3,000 to 10,000 really belong to farmers in the immediate vicinity.

These figures are even more surprising when it is considered that there are over 125 different automobile manufacturers fighting tooth and nail for the city business, while only a small number have gone after the farmer's trade and this solicitation has all been done within the past three years.

The following tables show the number of each of the leading makes sold in the country:

In towns of under 1,000 population:

Ford	191
Buick	154
Rambler	92
International Harvester	81
Oldsmobile	68
Cadillac	54
Maxwell	50

In this list it should be noted that the Ford and Buick lead, as they possibly will, temporarily, because of their cheapness. Note that the Rambler, which has the largest sales of any higher priced car, has been advertised almost exclusively in farm papers. The International Machine is sold exclusively through country farm machinery papers. Both the Cadillac and the Maxwell, the next two highest sellers, have been extensively advertised in the farm papers, and their campaigns are now increased, evidently having proven very successful.

In towns from 1,000 to 3,000:

Ford	209
Buick	163
Rambler	65
Cadillac	64
Maxwell	47
International Harvester	42

It should be noted, that with the exception of the Ford and Buick the next three highest sellers have been advertised in farm papers, and the next is sold exclusively through farm implement dealers.

In towns from 3,000 to 5,000.

Buick	28
Ford	26
Rambler	14

Notice in all towns of under 5,000 population the Rambler, which is exclusively advertised in farm papers, is the biggest seller of the higher priced cars and third in the list of all cars.

In towns from 5,000 to 10,000.

Buick	80
Ford	56
Maxwell	49
Cadillac	38
Reo	24
Rambler	20
Buick	47
Ford	23
Pope	19
Reo	16
Maxwell	15
E. M. F.	9

Note that none of the automobiles advertised to farmers, with one exception, are sold in towns of this size. While the Maxwell has sold 15 cars in these towns, it is probably because they have advertised in magazines and daily papers in addition to the farm papers.

In the Twin Cities there are one hundred and twenty-five makes represented. If an automobile manufacturer is looking for the keenest possible competition and the lines of greatest resistence, he can unquestionably secure it by attempting to sell automobiles in the Twin Cities and Duluth. If, on the other hand, the automobile manufacturer wants to reach the class of men who have the largest income, where the competition is the lightest, he will naturally turn to the country districts.

Several new lines of goods are being shown throughout the country by the Massey-Harris Co., Limited, Canadian Farm Implement Manufacturers. Chief among them is a Drill built to receive either Shoes, Single or Double Discs.

They are also supplying a Harrow Cart, a Disc Harrow Forecarriage, a Cream Separator with self balancing bowl (a great advance in Cream Separator manufacture) and a low metal wheel Farm Truck.

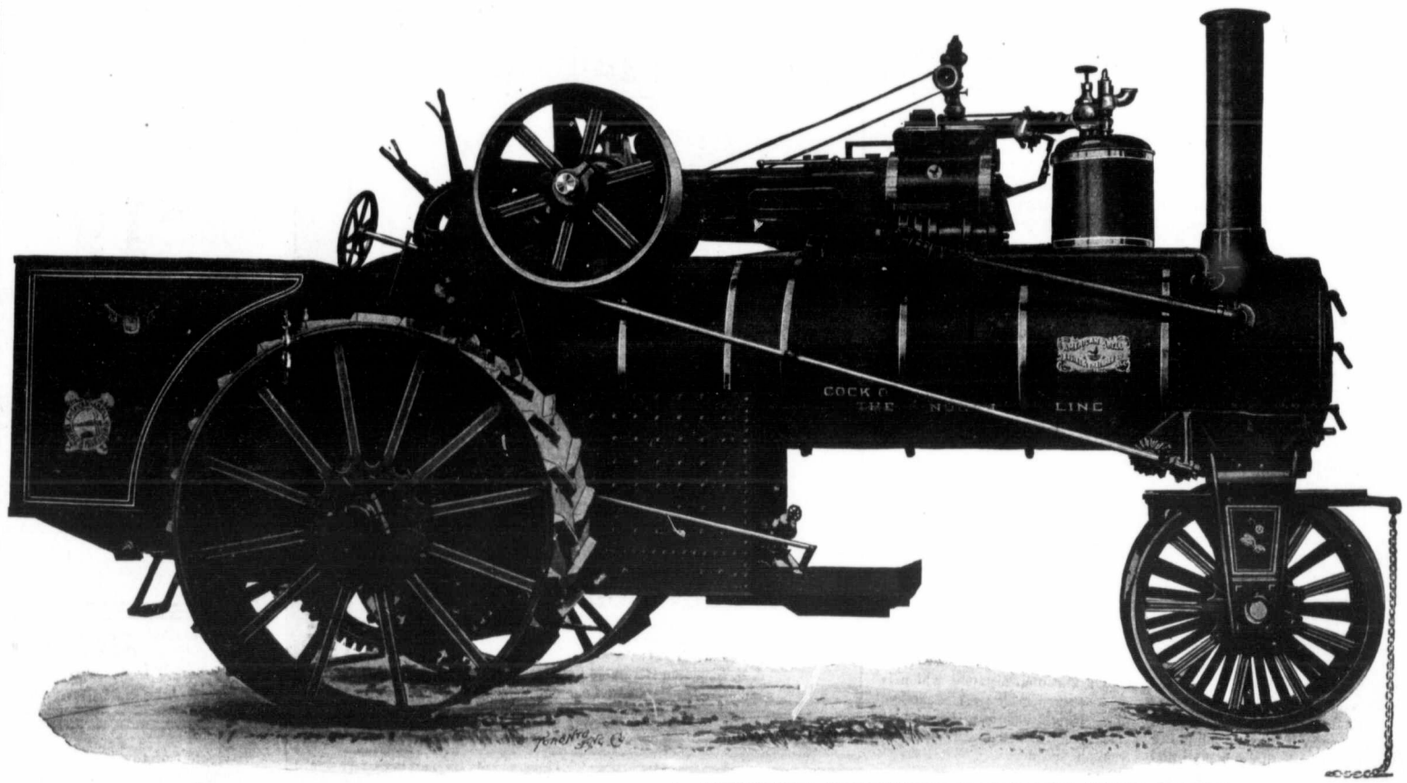
Last year their new high lift plow, "The Great West," made a name for itself in the fall plowing, and they are manufacturing this plow in large numbers for this year's trade.

We have been telling the people that we have something new in a plowing engine

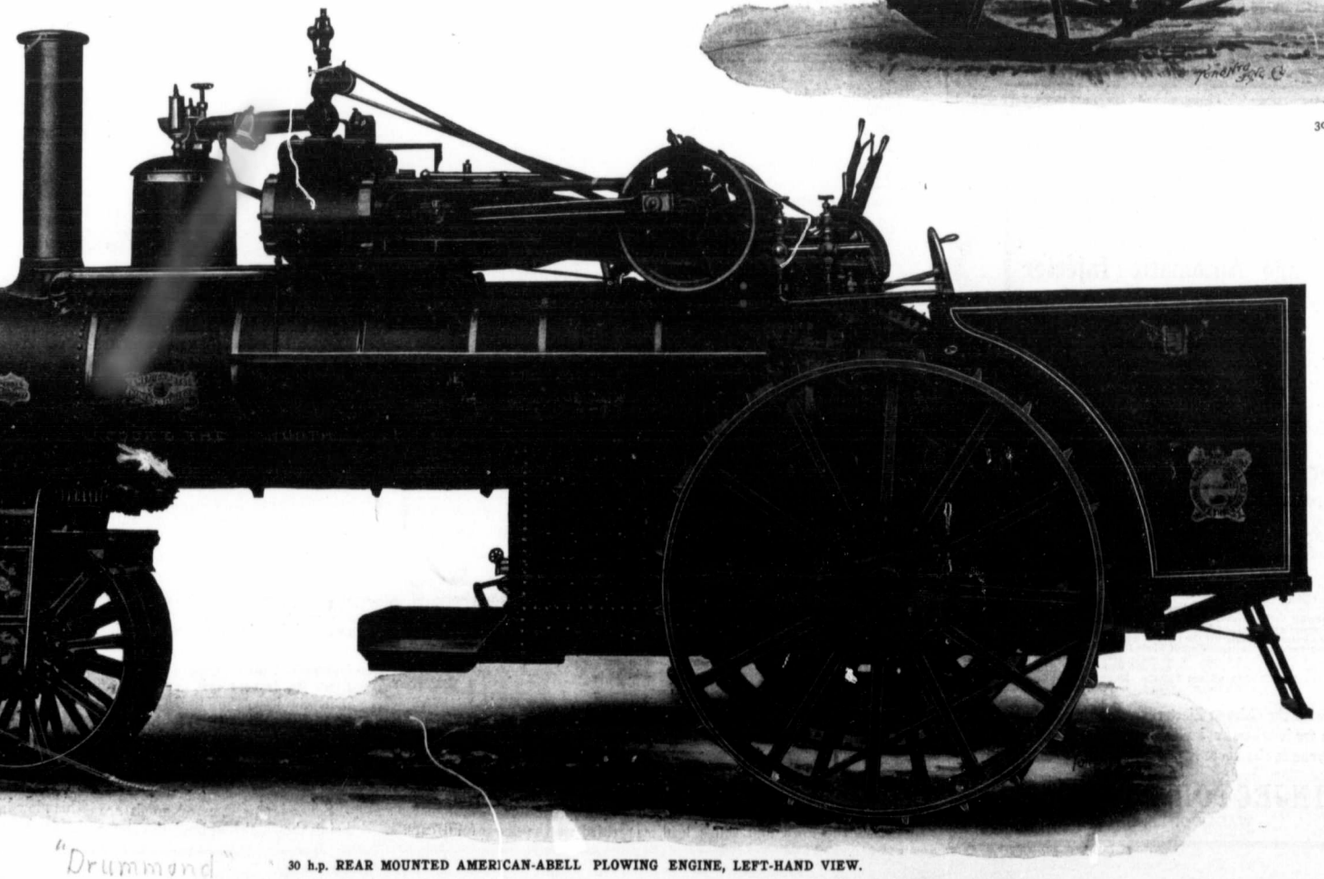
Here it is! Judge for yourself!

It has many special features too numerous to mention in an advertisement, but we will give you just a few; the rest are all fully explained in our 1910 catalogue. Write for it.

- ¶ It is rear mounted.
- ¶ It has a worm steering device. Consequently there are no chains to break.
- ¶ It is equipped with step gears, which are the strongest and most durable known.
- ¶ It is cross compound.
- ¶ It is equipped with the best balance valve on the market to-day. It has an intercepting valve that is automatic in its working, giving an extra amount of power when needed; yet never causing an undue strain upon the engine.
- ¶ It has unusually large water and fuel carrying capacity.



30 h.p. REAR MOUNTED AMERICAN-ABELL PLOWING ENGINE, RIGHT-HAND VIEW.



"Drummond"

30 h.p. REAR MOUNTED AMERICAN-ABELL PLOWING ENGINE, LEFT-HAND VIEW.

We have got the best plowing engine on the market to-day. It is built to plow and it will plow. We want you to thoroughly investigate our new plowing engine before purchasing, as we have got something to show you that is all to the good. The first step is to write for a catalogue

THE AMERICAN-ABELL ENGINE AND THRESHER COMPANY Ltd.

TORONTO REGINA WINNIPEG CALGARY EDMONTON

We also represent the Advance Thresher Co., of Battle Creek, Mich., and the Minneapolis Threshing Machine Co., of Hopkins, Minn.

The Thresherman's Question Drawer

Answer to Correspondents

STETTLER, ALTA. **Q.** They tell me that the way a boiler is fired, using straw for fuel, has much to do with the leaking of flues. I have a great deal of trouble with my flues and would like to know how to prevent them from leaking.

A. The burning of straw for fuel in a boiler, is, if not well managed, very hard on the tubes. The straw if dry burns so freely, and there being so much heat in the straw, the end of the tubes can be very easily overheated. That is to say, they can be heated beyond the degree required to maintain the steam pressure and a great deal beyond the tube sheet. Thus when the fire changes from its maximium to minimum heat, there is greater change in the ends of the tubes due to the expansion and contraction of the metal, This is one of the bad features about a straw fire, and by no means the last. If, just after the fire is the hottest, the fire box is allowed to get empty and the fire door or the draft door is left open, the exhaust of the engine will cause a volume of cold air to rush through the tubes and chill their edges below the temperature of the tube sheet though these were a minute before above the temperature of the sheet. If this goes on at intervals, which it sometimes does, the tubes will leak in a few days, sooner or later, as the conditions vary.

To prevent untimely tube trouble in a straw burning boiler the fireman should, as far as possible keep an even fire; and when it is necessary to quit firing, the doors which will admit air into the firebox should be closed. If the suction produced by the exhaust is sufficient to raise the weighted door in the feeding funnel, the weight should be increased to prevent its lifting when firing is discontinued.

H. B. L. CARMAN MAN. **Q.** Is a double tube steam gauge better than a single tube gauge?

2. Why does the Canadian government insist on having double tube steam gauges on traction engines?

3. Why does a double tube steam gauge go to pieces so much sooner than a single tube gauge of the same make and why does it gail in say a few weeks use?

A. If both gauges are equally well designed, there will be no difference. In a Bourdon single tube gauge, the tube, which is of elliptical cross section, is longer than in a single tube gauge of the same class. In practice, we find that some single and double tube gauges are superior to each other as applied to traction engines.

2. They no doubt consider the double tube gauge the better of the two likely because they have come in contact with some single tube gauges on traction engines, which were not designed to meet the requirements of a traction engine.

3. The traction engine gauge is their single tube gauge. Their double tube gauge as it has been built heretofore, was designed for stationary work, and when put to traction work, would not stand the excessive vibrations which the engine gives it. The reason for the failure is that the sector gear and pinion are too light, also the journals and spindles have not sufficient bearing. The traction engine guage whether single or double tube must needs be much heavier in its working parts than does a stationary gauge which is secured to a wall or some other place which has not the violent vibration which is common to a traction engine.

G. S. T, WEYBURN, SASK **Q.** How will improperly set valves cause an engine to pound.

2. How should a sight feed lubricator be properly connected and what principle do they work on?

3. Why do some engines require heavier balance wheels than others?

4. In what ways may the speed of an engine be changed by the governor?

A. If a valve is set in such a way that it has no steam cushion at one end of the stroke, it will cause the engine to pound. The reciprocating parts are quite heavy and they are required to come to a dead stop twice during each revolution. If there is a cushion of steam for them to meet at the end of the stroke, they will be brought to rest quite gradually, but if there is none then the strain of stopping these quickly moving parts will fall upon the crank and the bearings which support it. The result will be a knock.

2. There are two or three styles of sight feed lubricators which each work on an independent principle. If we knew which one you have in mind it would be easy to give you the required information. Such lubricators as the Detroit, Swift, Lunkenheimer, and lubricators of that class,

are known as hydrostatic, or water pressure lubricators, from the fact that they depend for their action upon the pressure developed by a column of water which has condensed from the steam in the pipe above and which rests upon the oil in the reservoir. This water pressure forces the oil out of the oil reservoir and into the steam main.

Another class of lubricator sometimes made in the sight feed style is known as a water displacement lubricator. The lubricators used often on the steam chest of an engine for lubricating the valve are of this class. A central tube extends up through the oil, steam comes up , condenses against the cold walls of the cup. Water being heavier than oil settles to the bottom and oil is forced by displacement, into the steam chest.

4. You can change the speed with the governor by changing the adjustment of the valve in the valve chamber, or by changing the tension of the speeder spring. The method of making these adjustments depend upon the peculiarities in design of each particular governor.

E. A. K. MANITOU, MAN. **Q.** How are the slide valves set on a Reeves compound engine; and how are eccentric and rocker arms set to be rebabbitted? Must the reverse arm be in center line with eccentric, like on woolff valve gear?

2. What is the best way to find the clearance in the cylinder without removing connecting rod and crosshead pin on Reeves engine?

A. Directions for setting eccentric and valves on a Reeves engine. The eccentric is keyed to the shaft and is likely not out of place, but should it be necessary to set or test the eccentric, it can be done by the following: Set the engine on dead center, then the eccentric should be nearly opposite the crank pin or at a place that will bring the pin in the lower part of the eccentric yoke, central with the tumble or reversing shaft. To test this more accurately, have someone pull the reverse lever backwards and forwards while you watch the valve or valve rod. If the eccentric is in its proper place the valve rod will not move while the reverse lever is pulled backward and forward when the engine is on dead center. This should be tested on both centers of the engine. If the one center shows up all right, and the other does not, this would indicate that the tumble shaft is either too high or too low; more likely too high, which can best be fixed by placing a liner between the engine frame and the rear saddle which will raise the crank shaft.

After the eccentric is set, all there is to do with the valve is to see that it has the same amount of lead on each end which will be about one-sixteenth of an inch. The valve is set on the stem by the clamp blocks.

There is another part that should be looked after and that is the reach rod or the rod that connects the reverse lever with the tumble shaft. This rod simply controls the cut off If not right, the forward motion will not have the same cut off as will the backward motion. An easy way to test this is to put the reverse lever as far as it will go one way and note what the maximum port opening is. Then place the reverse lever to the extreme opposite end and again note the maximum port opening. The case will suggest whether the reach rod should be lengthened or shortened, which can be done by means of the thread on the ends of the rod.

2. Turn the engine on the dead furthest from the cylinder, screw the piston rod into the crosshead until the piston strikes the end of the cylinder. Then turn the engine on the dead center and measure from the piston to the end of the cylinder. The difference between this measurement and the distance the cylinder head projects into the cylinder is the sum of the clearance on both ends; and one-half of this amount is the clearance on each end. The clearance on each end of a Reeves cylinder is three-sixteenth of an inch.

G. W. R. RAYMOND, ALTA. **Q.** I want to use steam from my boiler to heat the office building. The floor of the office is about two feet higher than the top of the boiler from which the steam will come. Can I use the steam from the top or dome and pipe it to and through the office, then back to the boiler again. Will the steam and water cause a circulation so as to heat the office?

A. You can heat your office from a boiler under the floor and return the condensed steam to the boiler. If you use a radiator which has but one opening, the full size of the pipe should be used throughout the connection. The water from the radiator will then run through the pipe back to the boiler. Care should be taken so as not to have any pockets in the pipe to hold water and thus prevent the steam from getting by. If the radiator has an inlet and an outlet, the outlet may be connected to the feed pipe of the boiler or to the steam line of the radiator, if the steam line is of liberal size. As we do not know the size of the room or radiator we cannot advise you as to the size of steam pipe to be used. However, you will meet with success if you use the full size pipe which the radiator calls for.

Practical Talks to Threshermen

Conducted by PROFESSOR P. S. ROSE

TALK No. XXX.

There are a good many points to be considered before a man finally decides to buy a threshing outfit. It is the purpose of this lesson to discuss briefly some of these things. We will assume to begin with that the points brought out in the last lesson have been settled and that all that is now necessary to consider is the business or money side of the proposition.

No man of sense cares to engage in a business unless there are at least fair prospects for making a profit. And if he has the qualifications that make for success he will go over the situation carefully and figure out with actual figures every item that enters into the problem. Then after he has checked his figures carefully in every way and has made due allowances for the usual risks, he is justified in going ahead, provided the figures show a good margin of profit.

If every man who buys a rig would first figure carefully his chances for success, it is quite likely that fewer threshing rigs would be bought. On the other hand, it is equally certain that there would be fewer bad sales and the business would be in better shape both from the manufacturer's and the operator's standpoint.

No man should allow a salesman to do his figuring for him. A clever salesman can make any proposition look attractive even when the actual facts are against him. His business is to sell That is what he is paid for, and if he deosn't he knows he will lose his job. His figures and his arguments may be and often are perfectly accurate, but very often they are purposely misleading, or if they are not purposely misleading, the facts are very rarely carefully gathered and analyzed. It is the duty of the prospective buyer to do his own figuring before he says a word to anybody about buying a rig.

There are a good many men who are talked into buying. They haven't any intention of buying to begin with and know they shouldn't, but they allow themselves to be "worked." Right here I want to say emphatically that a man who allows himself to be "worked" in this way is a pretty poor sort of a man. I once knew a man of this sort who gave a salesman an order to get rid of him. When he went home he told his wife what he had done. She didn't approve of his action and asked him to cancel the order at once. He objected and she, being a big, strapping woman, wasted mighty few words but took a piece of tug that happened to be handy and gave him a sound threshing. That rig was never delivered and it is a safe bet no salesman would have "worked" her for an order. I have often thought it might be a good thing for the threshing business if there were more wives that had her ability.

Now I do not mean to cast any reflections on threshermen generally. They are on the whole keen, competent men, but there are some who are not. There are some who have been coaxed and flattered and almost forced into buying by a clever salesman. They have listened to a smooth talker when they knew they had no business to even consider the proposition and have ended by giving an order. They dallied with temptation and were lost. Such men really deserve our sympathy. The only safe course for anyone to pursue in business matters is the one I pointed out in the beginning, that is, first figure out the posibilities before talking with any salesman. After you have decided, let it be known as widely as possible that you are in the market an then don't be in too big a hurry to place an order. You may save a nice little sum by waiting a while before placing an order. And above all don't allow anyone to talk you into buying until you have definitely decided after carefully considering the merits of the case.

Let us proceed to consider the principal factors that a thresherman should consider before buying a rig. The first one that presents itself to a careful business man is the amount of business in sight which he can be reasonably sure of getting. The best way to get at this is to figure out how many acres of wheat, oats, barley, flax, etc., that he is reasonably sure of. Then estimate the number of bushels of each kind of grain that will probably be produced per acre thus get at the total number of bushels of each kind of grain that he will probably have to thresh. The average yield of grain per acre as computed by the commissioner

When writing mention:
"Canadian Thresherman and Farmer."

of agriculture of the state should be taken in estimating the yield per acre. This number may and will probably appear low, but taking one year with another, it will be found a pretty accurate average.

The next thing to consider is the price paid per bushel for threshing each of the different kinds of grain. From these figures it is easy to compute the average gross earnings of the outfit. In some localities there is other work that the engine may be put to during all or a part of the rest of the year, such as plowing, shredding, sawing, grading, etc. The amount of this work should also be estimated and the probable gross earnings from all these other sources added to the earnings made threshing. This will give the total gross earnings.

The next thing to consider is the matter of expenses and here is where some careful figuring or estimating should be done.

In looking over the territory, one should consider the size of the jobs, the probable number of settings, and the distance that must be travelled from one job to the other on an average. In order to get at his matter of distance one should make out his territory as carefully as possible and decide upon the route to take from one job to the other. In this way it will be possible to get to all the jobs during the seasons' run with the least time spent on the road. There are sure to be many times when it is impossible to follow out a definite program of this kind because there are often certain good customers who can not wait beyond a certain time for a machine. In a case of this kind it may be necessary to change the line of travel for the sake of accomodation or to keep out a rival. In any case, however, the good business man will figure the added cost of moving and if it is too great a sacrifice, point it out to the customer and refuse. In estimating the cost of setting and of moving, one must consider the time spent, the wages paid to labor, and the wear and tear on machinery. If possible, and I believe it is, the thresherman should figure the cost per mile for moving and the cost for setting and make these items a part of the fixed charges just the same as wages, fuel, etc.

The next important item is that of wages. If a full crew is used, an estimate should be made of the total daily wages and the cost of boarding the crew per day. The owner should figure his own wages higher by a dollar or two a day than that of his men, and these wages should under no circumstances be considered as a part of the profits.

The next items of expense are those of fuel, oil and repairs. These must be estimated since it is impossible to get at all of them with absolute certainty. Fuel and oil can be estimated fairly close but repairs can not be, The best way to do in a case of this kind is to make an allowance that will be sure to amply cover all expenses of this nature, and if the estimate is too high the difference will appear at the end of the season as an item of profit.

(Continued next month.)

A drawing room—A dentist's office.

An old maid's definition of a benedict, is an ex-bachelor overtaken by misfortune and a widow.

The Third Annual Agricultural Societies' Convention, and the Farmers' Short Course, held at the Manitoba Agricultural College, Feb 14-18 inclusive.

ONE of the most successful agricultural conventions ever held at the Manitoba Agricultural College was brought off during the week of Feb. 14-18 inclusive. The main outstanding feature, however, of the convention was the short course put on for the first time for the farmers' own special benefit.

This course covered complete classes in live stock judging which classes included draft and agricultural horses, beef cattle, milch cattle, sheep and hogs.

Prof. J. H. Grisdale, Agriculturist at the Central Experimental Farm Ottawa had the entire charge of the animal husbandry course. Prof. Peters, M.A.C., was also in the ring throughout the entire course.

A full series of classes in the judging of the various grains was also given by Prof. S. A. Bedford who was ably assisted by James Murray, Superintendent Experimental Farm, Brandon Man.

These classes included the judging of wheat, oats and barley, for seed purposes, also a class in the grading of wheat for marketing purposes, and a class for the identification and eradication of weed seeds. These classes were well attended, note books were freely used by all the farmer students and great interest was taken in all the lectures.

Professor Mitchell on dairying also gave a lecture on Farm Dairying, chiefly emphasizing good cows, kindness, cleanliness, comfort, good ventilation, plenty of sweetened food during the winter months, silages, roots, and plenty of pure water, soiling crops during the summer, plenty of shade for the cows, and the immediate cooling of the milk for marketing purposes.

Prof. Peters also gave a lecture and demonstration on "dressed meat," three animals were used for this purpose, one a prime steer and the other two showing the unfit and undesirable kind. The animals were shown to the farmers before they were slaughtered and their different conformations were pointed out and then these same animals were shown in the dressed and cut up condition.

In the agricultural engineering department under the able supervision of Prof. Smith, some valuable lectures and practical demonstrations were given to the farmers. Lectures in the classroom were given on "Protection from Lightning," the Gasoline Engine on the Farm," Concrete Construction and Concrete walks and floors." In the Engineering Building practical demonstrations were given in the handling of gasoline engines some eight different makes of engines being used for this purpose. The college has in its possession for this purpose such engines as the 5 h.p. Brandon Engine, made by the Brandon Machine Works Co., Ltd., the 5 h.p. Stickney Engine, 3 h.p. Ideal, 4 h.p. Famous Engine, made by the International Harvester Co. a 2½ "Goes Like Sixty" Engine, made by the Gilson Mfg. Co., Guelph, Ont. and a 3 h.p. Empire engine, made by the Empire Cream Separator Co. Ltd. This latter engine was attached to the famous Cock-o-the-North Separator made by the American Abell Thresher Company, and a portion of it run by the engine, which exhibit was a very interesting one. These engines were operated by senior students of the college while Prof. Smith lectured upon their various working parts. Senior students also demonstrated the making of concrete building blocks. The blocks were made in full view of the farmers, the mixing of the ingredients and the whole process being explained by Prof. Smith throughout the whole process. Concrete sidewalks were also made in the presence of the farmers, the mixing, watering, tamping of the filling, the laying of the top-dressing and the final finishing of the surface being done by the students while volumes of questions were put to Prof. Smith on the various parts of the work while it was in progress. Note books were freely used by the farmers, and questions of information were asked the student demonstrators themselves after the lecture proper was over, this showing the eagerness with which the farmers sought for information on these different subjects.

Demonstrations in saw filing, the pointing and the sharpening of plow shares were also given to the farmers. Dr. Torrance also

gave an excellent demonstration on "How to Administer Medicines to a horse." A very suitable patient was brought in from the horse barn, drenches, powders, and balls were given to him, and the method of examination for soundness was also ably demonstrated on him by the doctor.

THE GRAIN EXHIBIT.

The grain exhibit was not quite so large as previous years but some excellent samples of wheat, oats and barley were up for competition, the final sweepstakes being awarded as follows:

WEEPSTAKES.

Wheat.

First: Silver Cup and $50 cash donated by Farm Crops city, won by Wm. Dodge, Birtle, 92¾ points; second, $30 cash by Farm Crops, won by Alex. Johnston, Hargrave, 91 points; third, $20 cash by Farm Crops, won by R. D. Laing, Stonewall, 89½ points.

OATS.

First: Silver cup, medal and $20 cash donated by the Nor'-West Farmer, city, won by M. P. Mountain, Solsgirth, 94 points; second, $10 cash, Nor'-West Farmer, won by Chas. Darrell, Birtle, 93 points; third, $5 cash, Nor'-West Farmer, won by Jas. Douglas, Crandall, 92¾ points.

BARLEY.

First: Silver cup and $20 cash donated by Randell, Gee and Mitchell, city, won by W. H. English, Harding, 90 points; second, $10 cash Jas. Vann, Franklin, 88½ points.

THE AGRICULTURAL SOCIETIES MEETING.

The opening gun was fired early on Monday, but the principal meeting of the day was the one held in the evening when Principal Black delivered his address of welcome. After the principal had delivered his address and read the report on the agricultural societies for the past year a general discussion was held upon the state of affairs of the societies in general, and a resolution was finally made stating that the feeling of the convention was that the management of the societies, which was at the beginning of the year taken from the college and placed with the Deputy Minister of Agriculture, J. J. Golden, should be transferred back again to the college.

The principal in his address of welcome stated that it was an extreme pleasure that he was able to annouce the great increase in the membership of the various societies the total of which was a trifle over 7,000. The principal spoke very highly of the good which the good farming competitions had done for the country as also did J. J. Ring, of Crystal City, and H. A. Fraser, of Hamiota, who followed him with short enthusiastic speeches. S. C. Henderson, of Kildonan, was chairman of the evening.

On Wednesday morning Prof. Broderick gave an illustrated lecture on "How to improve the Farm Home." Many beautiful slides were thrown upon the screen showing how much more attractive could the bare dilapidated looking buildings be made by the judicious planting of a few trees, shrubs, and a few flower pots placed here and there.

The delegates of the different agricultural societies also had a meeting to arrange dates for their summer fairs.

On the evening of Wednesday, Feb. 16, the Hon. Robert Rogers, minister of public works for Manitoba, was the chairman, in the absence of the Hon. R. P. Roblin, minister of agriculture and premier, who was absent through illness. The Honorable minister took advantage of the opportunity to let the delegates know exactly what was contemplated in the way of extending the institution, and still further increasing its delegates. He spoke of the great need of immediate extension to enable the college to meet the rapidly increasing demands being made upon it, and he intimated that the time was not far distant when buildings even larger than those already erected would be necessary. In the connection he mentioned that negotiations were at present under way for the purchase of over fifty acres additional land for college purposes, two tracts being in view.

Another important move was the establishment of a domestic science course, and the declaration by the speaker that he hoped to be able to next year announce the setting apart of a sum sufficient to erect a domestic science building in keeping with the other structure. Another thing which Mr. Rogers announced was the completion of plans for a new dairy building, which will be much larger than the one recently destroyed by fire.

Mr. Rogers also said he would fail in his duty if he failed to express the appreciation of the people of the province and the government of the magnificent work being carried on by the agricultural college board. The government had been fortunate in being able to select a number of representative men from different parts of the province to serve on the board, and they had been acquitting themselves with great satisfaction.

"We must recoznize that we are in a new province," declared the chairman, and that we are responsible and answerable to the people of this great agricultural province to lend every assistance in our power to lend every means

at our command as a government to give that education that are calculated to assist in the betterment of the great industry of our country—that of agriculture.

There is still a greater work before us in respect to the agricultural interests of this country. A few years ago this site was selected believing as we did then that the one building in which we are now gathered to-night would be sufficient for years to come. We had scarcely got started when the necessity presented itself to us for the erection of a larger building alongside to accommodate the large number of students ready and anxious to come and take the course. I am here to tell you that recognizing as I do the great responsibility and the heavy expenditure which is necessitated at the present moment to maintain and operate the institution which we now have, I am sure you will perhaps not be surprised when I tell you that the estimates that have come to us for the agricultural college purposes for the year amount to something like $80.000. This is much larger than we expected it would be for some time to come, but the estimates have been carefully considered by our agricultural college board.

Now I want to say more in respect to this question of domestic science. I want to say that the government recognize this responsibility, and while during the coming summer we are only going to be able to put on a class with the plant which we have at our disposal. I am here to be able to tell you that the establishment of a domestic science college is one that should engage the closest possible attention, because, with the great advancement and the great development in our province we must provide for bigger and greater things than we have anticipated up to the present time.

Miss A. B. Juniper, professor of household science at the M.A. C., then addressed the meeting on "Influence of Household Science Teaching on the Development of Home Life." Her opening was certainly a propitious one. She said: "Mr. chairman, ladies and gentlemen: Before making the following remarks, I wish to state that I am fully alive to the fact that there are many beautiful homes in Canada, and many excellent housewives.

It is not for these that my remarks are meant, but rather for those who learn by bitter experience, which they are often too proud to let anyone guess. I want the young wives of the future to benefit by all the experience of all the first class housewives, of many years standing. A household science centre should be a sort of bureau for collecting and distributing information bearing on the home. I expect to learn quite as much as I ever hope to teach.

The influence of household science teaching on home life was sent to me as a subject on which to prepare a paper for to-night.

This text, I take it, was chosen by a man, and it encouraged me, for it seems that people are beginning to realize that the home has not yet been developed as it may be, and that it has not received the earnest attention and study which any other successful business enterprise has. And immediately one question "Why?" The answer is not far to seek. The province of home-making has been viewed in a wrong light. Take any helpful line or worker from the carpenter to the farmer, doctor or lawyer; each has a varying apprenticeship to serve, a time in which to study his chosen vocation in all its aspects, the practical work and the science which underlies it which he has to master. It is only during the last few decades that it has dawned on mankind that home-making, the highest of all women's vocations needs careful preparation if the home is to be happy and the nation strong.

Let us consider a moment what home-making includes. It embraces a knowledge of cooking, laundry, needlework, what constitutes a healthy, comfortable home and how to keep it so. Natural training, hygiene, and physiology. The care and training of children, home nursing, with physics, chemistry, and bacteriology, sciences which explain these subjects, whilst for those in country districts must be added home gardening, poultry, and dairying. And the average girl is supposed to know all more or less by instinct or at best after a few months with her mother.

Three fourths of the girls of the land are destined to become wives and mothers, and all will probably at some time be engaged in the household duties. Cooking is, of all the domestic science subjects, the one which creates the most interest.

People are apt to speak disparagingly of scientific cooking. Deep scientific cooking may be beyond the brain of an ordinary woman. That is left to man scientists. It is a homely science that is needed in the home kitchen. It is no use imitating the French chemist who spent his time trying to produce milk from grass, failure following for want of the

homely intervention of the cow. But a broad knowledge of the theory of cooking will be found not only very interesting but helpful.

Generally a ton of coal for a 20-horse power engine and a dollar a day for oil will cover the first two items. The matter of repairs should be figured at say two dollars per day for actual running time. The first year or two this estimate may be too high for a new rig, but after that it may run somewhat higher.

Then interest on the investment should be figured at the ruling rate of interest in the community where the rig is located. If the outfit costs $3,000 and the rate of interest is eight per cent, there must be $240 placed in the column of fixed charges. Depreciation must also be figured. If the outfit can be made to last ten years the depreciation per year will amount to $300, and this must be added to the fixed charges. This item of depreciation is the sum which is set aside, as it were, to pay for the rig.

After all the items of profit are made up and all the items of expense, the difference will represent the total net profit.

At the end of each season, whether it be the plowing season, threshing season, or shredding season, the total expenses and the total profits should be figured. Then at the end of the year an estimate should be made of the actual running expenses per day for each kind of work. In doing this, interest and depreciation should be spread over the actual running time. In this way it will be possible to estimate with greater exactness just how much work must be done each day at whatever kind of work in order to meet current expenses and pay a fair profit. In some other lesson these matters will be taken up in detail and a method of estimating will be devised.

J. H. Grisdale, of Ottawa, was the next speaker. He gave a very interesting and practical talk on the progress made in agriculture, and the outlook for the future. Some of the points touched on were: soil cultivation, rotation of crops; manuring; growing of clovers to refertilize the soil; use of good machinery and the value of drainage. He laid emphasis on the need of going into stock raising, laying special stress on the opportuntiy afforded in the west of breeding horses. He also advised sheep raising, poultry raising.

Senator Derbyshire made one of the humorous addresses, for which he is famed at eastern dairy meetings, and which proved equally popular in the west.

Don't judge a painting by the size of the artist's signature.

NO. 1 HARD

February 28, 1910.

The past month has been one of uncertainty for all connected with the purchase and sale of grain. Professional traders particularly have shown signs of frequent changes of opinion, for a day or two they would see nothing but the Bull side, and then with reported heavy shipments by Russia, Australia, and Argentine would switch over to the bear side, only to stampede again on the first news unfavorable to the growing crop.

Canadian markets have been kept above export values by the strong situation existing in the United States, where, though primary receipts have been running well above last year, the visible supply is about 13 millions less than a year ago. The demand for flour has been good, and in consequence the big millers have been constant buyers of wheat of the flouring grades. It is estimated that there has been fully 20 millions more wheat marketed over there from this crop than was the case up to this time last year. This shows about 33 millions more either exported or ground into flour than last year, and therefore disposes of just that many bushels of the increase of present crop over last. It would be reasonable, therefore, to think that the farm reserves cannot be much in excess of a year ago. American markets have been advancing lately on crop damage reports from the southwestern winter wheat states. It is claimed that from 25 to 50 per cent. of this wheat has been killed by the changeable weather, alternate freezing and thawing. From the action of the distant futures in Chicago, July and September, it would seem that there is some truth in the damage reported, as the advance in those months has been principally due to buying orders from the damaged section. It is, of course, impossible to tell exactly the percentage of damage done until the warm growing weather comes. Should the claimed damage then be realized, all the American markets should remain firm on high levels and compare favorably with the values of the past two years.

Values of oats slowly dropped from range of a month ago, due to increased receipts and lack of demand for the cash article. They have been saleable at about present values for the past two weeks, and there has been a good healthy trade done in them. Indications are that with moderate weather we should see increased deliveries and a consequent depression of values. We can hardly expect a big slump, but the general impression seems to be that there are still very large quantities of oats to come forward.

Flax and Barley values remain very steady with but small trade in either. Receipts of flax are light, and it looks as though the high prices brought out all the surplus.

Following are values of grain now in store Fort William and Port Arthur.

1 Northern 103¾.
2 Northern 101¾.
3 Northern 99¾.
2 C.W. Oats 36.
3 C.W. Oats 34¾.
3 Barley 48.
4 Barley 45.
1 N.W. Flax 1.90.

Furnished by Randall, Gee & Mitchell, Ltd.

Moline Wagon Company's Factory.

DEERE & CO. ACQUIRE MOLINE WAGON FACTORY.

The announcement is made of the acquisition by Deere & Co., Moline, Ill., of the plant and business of the Moline Wagon Company, also of that city. Negotiations have been pending for some time, and a proposition recently made by Deere & Co. has been accepted by the stockholders of the wagon company.

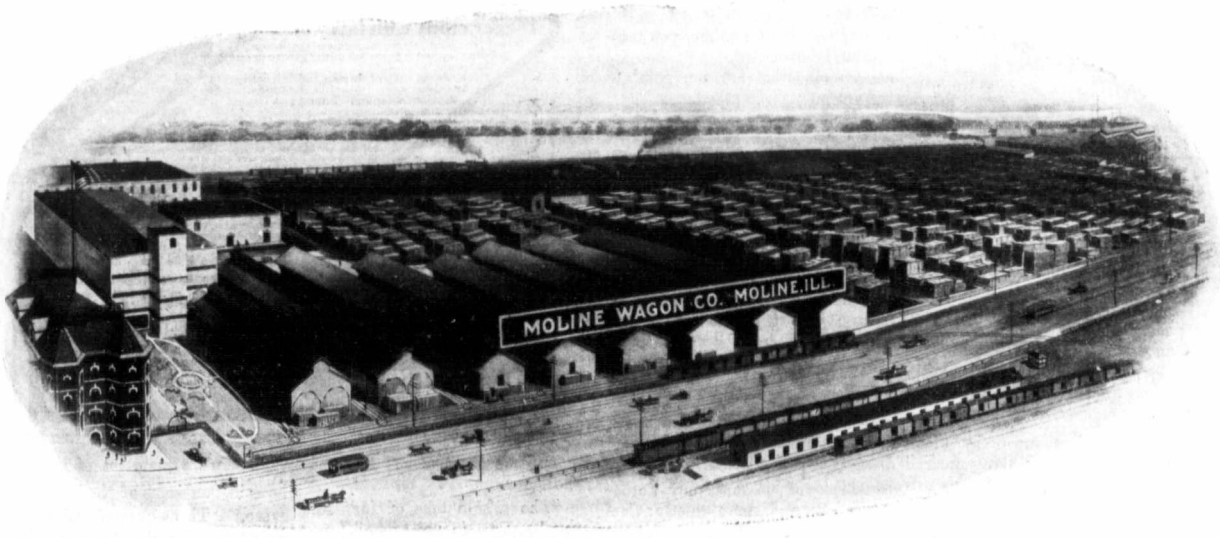
Among the various causes influencing Deere & Co. in this matter were, first, the close business relations which have existed between the Deere interests and the Moline Wagon Company, for over thirty years. Second, the fact that the site of the Moline Wagon Company's factory adjoins the property of Deere & Co., and it was considered especially desirable by the Deere people that they obtain possession of the site occupied by the wagon factory, and provide room for further expansion in their various enterprises.

The Moline wagon has been identified with the Deere line for more than thirty years, during which time the Deere houses have been the largest customers, taking about 76 per cent. of the annual output. The capacity of the factory will be increased as soon as the necessary plans can be made, and the trade on Moline wagons will be pushed more vigorously than ever.

Because of the close business relations between Deere & Co. and the Moline Wagon Company, the policies of the two organizations are similar in many respects. By the consolidation of the two businesses, following the recent purchase, greater economies will be possible in both the manufacturing and selling departments.

In commenting on the transfer, Mr. Butterworth, president of Deere & Co., said: "Our only regret in acquiring this business, is that Mr. Rosenfield has signified his desire to eventually withdraw from its management, and business relations, of the most pleasant character, having their inception with Mr. Morris Rosenfield, and continuing uninterruptedly for so many years, may thereby be terminated."

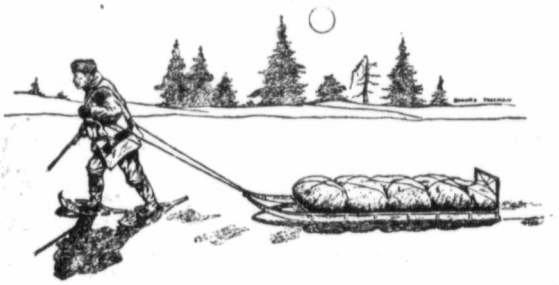
The Moline Wagon is handled in Canada by the John Deere Plow Co., and is well known to many Canadian farmers. The acquisition of the Moline plant by Deere & Co. will make no difference whatsoever in so far as the purchase of a Moline Wagon is concerned except what was formerly a sales arrangement is now both a sales and manufacturing proposition.



Lumber Yard of the Moline Wagon Company.

RASCALS THREE

By Theodore Roberts.



BOTH Dupree and O'Leary had mixed blood in their veins. O'Leary was as much a Frenchman as Dupree, and Dupree was no less an Irishman than O'Leary; but neither of them possessed enough of the spirit of those generous races to make an honest man of him. Men whom they had outwitted—their methods had but little to do with wit, after all—called them "Injuns." Both were in the same business, which was the trapping of furs; and as their reputations grew more and more unsavory through the fringe of the wilderness, in self-defence they entered into partnership.

They built their cabin under the gradual and wooded heights of Beaver Head, beside John's River, and set their traps and deadfalls up and down the stream and for miles to the right and left. For two months they lived in harmony, shut away from the world in that white and frosty wilderness. While one tended the traps the other slept and rested, and so on, turn and turn about. Fur was plentiful, and opportunities for the practice of dishonesty were few.

One day a violent storm forced Dupree to turn back to camp before he had reached the nearest trap. He awoke O'Leary, who was snoring in the bunk, and proposed a game of "Forty-fives." O'Leary was willing, and produced a square-face of gin from his private store for refreshment during the game. Dupree drank the liquor without comment; but O'Leary eyed his companion suspiciously and rubbed his tongue along his lips with a dissatisfied air.

"Tastes darn weak," he said. "No need to water it any, I guess.'

"What d'ye mean by that?" inquired Dupree, looking up darkly from the dealing of the cards.

"Maybe the frosty weather thins it'," replied the other hastily.

He was far too cautious to let so small a matter as the theft of a little gin get him into trouble with big Dupree.

One evening, on his way back to camp, Dupree stumbled upon a neat little cache of four mink skins hidden in a rocky cleft under a sheltering hemlock. He examined them carefully, chuckling all the while with a sneering angry mirth. The pelts were of the best quality and large.

Presently he tucked them under his arm and continued his homeward way. By the time he reached the cabin the last of the daylight was gone. Pushing open the door he found his partner frying bacon by the smoky illumination of a lantern. He discarded his snow-shoes and blanket "jumper" in silence—then, stepping forward suddenly, he threw the frozen pelts on the floor at O'Leary's feet. O'Leary recoiled with such perturbation that the frying-pan was sent clattering onto the hearth of the stove and the good bacon was shot this way and that.

"What d'ye think you're doin'?" cried O'Leary.

Dupree pointed at the mink skins.

"Don't bluster to me, you trap-thief," he snarled.

"Well, what are you goin' to do about it?" he asked.

Dupee stepped back and slipped his knife swiftly into its leather sheath.

"What am I goin' to do about it?" he mocked—"why you junk of white liver, I'm goin' to bust the partnership. Think I can afford to trap with a thief like you? Well, I can't.

"Keep a decent tongue in your jaws," retorted O'Leary, continuing to finger the knife with which he had been turning the slices of bacon, "or I'll slit it for you."

Dupree who was the larger and stronger of the two laughed coolly at the threat.

"One of us must buy t'other out," he said, more quietly; "an' whoever sells will have to hit the trail to-night. We'll both be safer sleepin' under separate roofs for awhile."

"What's your plan?" inquired the other.

"The whole take of fur for the traps, cabin an' ground," replied Dupree.

O'Leary considered for a moment.

"There's a main lot of skins," he said, "an' some of the best ever I see. Three-quarters of them would pay for the shack an' the outfit."

"Then you take three quarters

of the fur an' I'll stay," said Dupree.

"I was thinkin' of stickin' it meself," replied O'Leary.

They argued for an hour, while sorting over the store of pelts. At last Dupree agreed to go with grub enough to last him to the settlements and with only three-quarters of the furs as payment for his interest in the traps and business. More bacon was fried and fresh coffee boiled and, after a hearty meal, Dupree loaded his light toboggan, fastened on his snowshoes and set out on the lonely trail. No farewells were said; Dupree strode off smoking his pipe with evident relish, and O'Leary leaned in the doorway and watched him plod out of sight among the black shadows of the forest.

The moon was full, the snow well packed and the air moderate. The loaded toboggan slid easily in the wake of the broad shoes. Dupree's heart was as light as such a heart can ever expect to be. The furs at his heels were worth much good money. He was clear of a partner whom he distrusted, knowing him for as great a knave as himself. Companionship and rude carousals awaited him in the settlements.

From the outskirts of civilization he would pass on to the towns—and when his money was gone it would be time enough to think of working again. A holiday spirit stirred in him. He took his pipe from his mouth and whistled a jig to the still shadows and brooding spruces.

It was Dupree's intention to travel all night and all the following morning. He felt that the greater the distance placed between himself and O'Leary before making camp, the greater his security. He would follow John's River down to the farthest dead-fall, then cross and strike due south; and noon should find him at a deserted timber shack on the Tinkettle. There he would sleep and rest for a few hours. With fair going after that, old Tom Gleeson's pretty granddaughter would get supper for him somewhere about seven o'clock in the evening.

Sometimes his course, which he had set by compass, led him through tangles of forest which he could not avoid without adding miles to his journey. He crossed John's River by the empty but ready-baited dead-fall, shortly after midnight, and, inspired by sheer ugliness, he paused long enough to demolish the trap with his axe. O'Leary should reap no harvest of bear-skins from it. Then, well pleased with his work of destruction, he consulted both his compass and his flask and continued on his journey.

By this time the moon was set, and the belief that he was being trailed asserted itself sharply in Dupree's mind. He had heard nothing. He had seen nothing. But some finer sense than sight or hearing told him of a menace behind; and deny it as he might, he could not clear himself of creepy, unnerving apprehension. On reaching an open glade in the forest shortly before dawn he halted, built a small fire and made a cup of tea. Throughout the whole operation his rifle was at hand and his eyes and ears were on the alert. But the vague edges of the woods disclosed nothing. When the tea was ready, uneasiness had spoiled his desire for it. But he forced himself to drink it to the last drop, and then filled his pipe with a fine air of carelessness.

As he dragged the toboggan after him across the unbroken wilderness and watched the scarlet and gold miracle of sunrise in the east, the idea that O'Leary was the unseen danger at his heels became a certainty in his mind. Of course, the fellow was waiting for him to make camp and sleep. Then he would bind him— perhaps kill him outright —and take the furs. All his self-control was required to keep him from turning back on the trail and hunting the supposed pursuer. Caution cried to him to hold to his course until the deserted shack was reached. There he might outwit his pursuer—but to awake suspicion now was to court death from O'Leary's sure rifle. So he held on, keeping to the more open ways of the wilderness and turning to scan the back trail only from sufficient cover.

"He'll travel slower now," he muttered, "so as not to reach the shack until I am sound asleep."

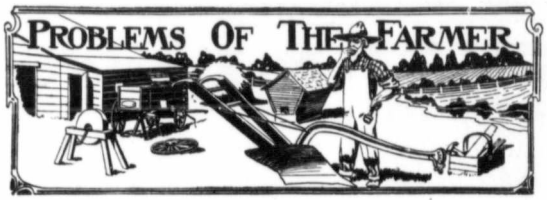
Swiftly and cautiously he returned to the trail and continued his journey with a fresh burst of speed.

On reaching the shack beside the frozen Tinkettle, Dupree discovered that it was no longer deserted. A supposedly harmless and brainless Malicete named Gabriel Bear was in possession. In a flash Dupree saw that the Malicete might be made to serve in the scheme of outwitting the persistent O'Leary. So, after a cordial greeting, which the red man received stolidly, he asked him to mind the pelts while he went back for something he had dropped on the trail. Gabriel nodded indifferently, but with a clouded eye noticed that the trapper took his rifle along with him.

Dupree broke into the woods and traveled circumspectly back the way he had come, keeping well out of sight of his old tracks He halted frequently to listen with bated breath. When the shack was something more than half a mile behind he stole out to the edge of his old trail and crouched in the shelter of a tangle of spruces and firs. For more than an hour he waited there, with aching joints and a dry throat. At last, suddenly, he leaned forward and cocked his rifle. His hands trembled on grip and magazine as if he were suffering from an attack of "buck fever." But he was neither nervous nor afraid. He was just pleasantly excited at having guessed O'Leary's game so surely and played back so skilfully.

"Good-morning," he said; and O'Leary, wheeling at the sound, looked into the tiny black mouth of the Winchester.

Half an hour later the trappers marched up to the lumber shack. O'Leary walked ahead, with his wrists bound in the small of his back, and Dupree strode behind with a rifle under each arm. In front of the shack lay Dupree's toboggan, and all around it on the snow, tossed carelessly, lay the most bulky but least valuable portions of the cargo pelts. And miles away, with a start of an hour and a half, that harmless Malicete, Gabriel Bear, raced for the settlements with a great pack of furs on his shoulders.



I

WESTERN Canada is stirred at the present time from the Great Lakes to the Rockies with organization on the part of the farmer. At first it was merely marketing of his own grain crop that engaged the farmer's attention, but to this has been added the marketing of his live stock and also to a greater or less extent, the buying of his supplies and equipment direct.

There must be some cause for grievance or the farmer would not take hold of these things as readily as he has. There is not the slightest question of a doubt, but that the farmer is supporting a large body of middlemen, all of whom earn a living to a greater or less extent by exacting a commission for handling his products as well as charging him a profit on everything that he buys. From the days of Adam we have had the middleman among us and until the horn of Gabriel is sounded, it is quite likely that he will be with us. This is of course absolutely no reason why the farmer should not do everything in his power to better his condition. It is absolutely no reason why he should not do his utmost to get the highest possible price for his products or why he should not buy in the cheapest possible market.

There is a side light upon this buying proposition that pertains particularly to the buying of agricultural implements. The farmers of a community seem to feel that they are paying too high a price to the implement dealer for the implements which they are obliged to use. They seem to feel that they are supporting this implement dealer out of their own pockets, which is all true, but we wonder how many farmers stop to think of the courtesies and favors that have been extended to them by these same implement dealers. We wonder if they ever stop to think if they, in a great many cases, are playing upon the line of credit which this implement dealer enjoys and that in a large number of cases if these same farmers were obliged to pay spot cash for the implements which they must of necessity use in the cultivation of their crops, that it would bankrupt them and they would not be able to stem the tide until such a time as they could make their land yield them a profit.

There is also another side to this particular buying that relates particularly to the buying of implements by mail. There is not the slightest question of a doubt but that the mail order house can provide the farmer with a plow somewhat cheaper than his local implement dealer can provide him with the same tool. But right here ask yourself the question, "Have you ever seen a plow made by one of the old established, reliable concerns sold through a mail order house?" Have you ever gone back through the mail order house that advertised plows for sale and found out just exactly where they bought these plows? In the majority of cases you will find that they are made by some small concern who have not spent millions in building up a reputation for good goods.

The mail order house of necessity buys in the cheapest market it possibly can and for this reason is liable to change the make of plow which it handles, providing it can make a better bargain another year with a different manufacturer. Granted that you buy a plow from a mail order house and that you break a piece on that plow. You cannot go to your local implement dealer and get a repair part and when you write to the mail order house that sold you the plow, in all probability, you will find that they have nothing whatever more to do with it and you are under the necessity of finding out who the original maker was and go back at him for the repair. This may take anywheres from two weeks to a month and your plow has been a useless tool all this time.

This same thing applies to practically any mail order implement. The farmer may think that he is paying an unusually high price for repairs, but when you stop to consider that the manufacturer is under the necessity of stocking repairs to the extent of millions of dollars in order that he may have on hand repairs for implements that were made years ago, you will realize that he must of necessity charge a premium on these implements in order to carry their actual cost.

There are some things that the farmer may be able to buy direct at a considerable saving to him, but when it comes to buying implements it is a case of "penny wise and pound foolish" to patronize anything but a good reliable house that carries only the

goods that are backed by a manufacturer who handles his products in his own way.

II

The old problem of seed grain is again coming home to the farmer. Have you got a good supply of seed stored up that you know to be absolutely fertile and clean? Have you tested it? It not, you should in order to get at its germinating strength. If you have never been in the habit of treating your seed for smut, do so in 1910 for by testing and treating there is not the slightest question of a doubt but what you can improve the yield anywheres from ten to twenty-five per cent. It only takes a short time and is in reality only a small amount of work, but the results are wonderful.

III

All soils are composed of soil grains of different shapes and sizes, and these differences in shapes and sizes have a great deal to do with the fertility of the soil, and with its water holding and air holding capacity. There are two kinds of water in the soil, one existing in a thin film around each soil grain. Hence, the smaller the gr... the more surface in proportion to its size, and the greater amount of what we call capillary water—which alone is used for growing crops—it will contain.

A sandy soil is always a thirsty soil, for the simple reason that the grains are large, even in the finest sand, and hence can hold comparatively little water. In clay soils the grains are exceedingly fine and close together; hence clay soils hold a vast amount of water in capillary surface form, although they take up water slowly. Sandy soils take up water rapidly and get rid of of it rapidly. So much for capillary, water, or water that sticks to the surface of the soil grains and, as above remarked, the only water that is of any use in crop production.

When the spaces between the grains are filled up with water, crops cannot grow, for they can use only that portion of the soil that is aerated. If we draw away the water, air fills up the space, and this is the reason why farmers drain their land. The drawing away of this surplus water, or water of gravit..tion, does not in the least affect the amount of capillary water. Each particle of soil grain when it has opportunity will surround itself with a film of water and will, when evaporation from the surface robs it of its water, get water from below or the water of gravitation. It is by this means that oil rises in a lamp wick and feeds the flame. It is by this means that coffee rises in a cube of sugar when you put the edge of it in the cup, because the grains of sugar are pressed close together, but cannot be pressed solid. The reason why surface cultivation of corn retains the moisture in the soil below is because the surface grains are kept so loose, in other words, so far apart that the water drawn up from below by capillary action cannot climb out and get away.

These are simple elementary statements of facts, and the knowledge that the farmer has of these will have a great deal to do with his farming operations the next year. If he has a piece of ground in which, during the entire year, the soil is filled with water he knows it is no use for him to expect to grow a crop. Why? Simply because no grain worth growing will thrive in that kind of soil. In fact, no matter how rich the land is or how deep the soil, no man can cultivate any more than that part of it in which the air is allowed to circulate by the removal of the water of gravitation. If this soil is sandy or gravelly, there is too much air, and soil grains cannot get enough water for the plants. The finer the soil grains as in volcanic ash or in clay, the greater the water-holding capacity of that land, and the more it can deliver to the plant if properly handled. The farmer who has to wait until late in the season for the sun to evaporate the water from his land knows two things; that he can use that land only part of the season and furthermore, that it has been rendered cold by the process of evaporation.

This is probably enough for one lesson; but we wish our readers to study their soils, note the character of the soil grains, note its water holding capacity. They can then so cultivate the land that the maximum of this water can be used for the growing of crops.

A Correspondence Course in Farm Bookkeeping.

Much greater interest is now being taken in the subject of farm bookkeeping than ever before. To supply the demand for a strictly farmer's course on bookkeeping the Principals of The Wheat City Business College, Brandon, Man., the pioneers of farm accounting systems in Western Canada, have compiled a complete course by correspondence on farm bookkeeping, covering the primary, intermediate and senior principals of bookkeeping, and including their advanced College course from start to finish. It should prove a boon to all progressive farmers throughout the West.

Do You Know Why All ARE BUILT UNDERMOUNTED?

And did you know that although all Railroad Locomotives are now built on the Undermounted design, that they were at first built Topmounted? (That is, with Cylinders mounted on top of the Boiler and the other working parts bolted to it.)

Now ask yourself this further question—"If Railroad Locomotives, which are to be used for pulling, are built Undermounted, is there not as much reason why a Traction Engine which is to be used for pulling should be Undermounted?

The same principles apply in the construction of one as in the other. There is the same reason for Relieving the Boiler of Pulling Strains in order to secure Greater Durability. There is the same reason for mounting the Cylinders Low Down in order to secure Increased Pulling Power.

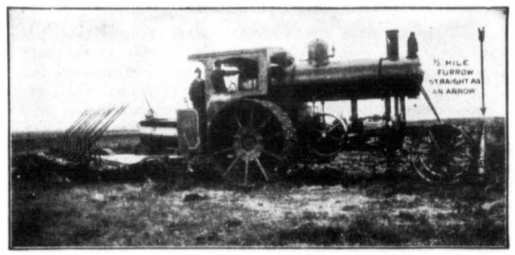
A careful study of these questions and reasons led the Avery Company to build an Undermounted Traction Engine as shown on opposite page. Hundreds have been sold and are in successful operation. The Tests of Actual Use, as well as the best principles of Engine Building, have strongly proven the superiority of the Undermounted over the Topmounted construction.

In Competitive Contests, the Avery Undermounted Engine has also proven its superiority. This Engine was entered in the Motor Contests last July at Brandon and Winnipeg. These were the greatest contests of their kind ever held on this continent. Every Avery Engine entered won a medal, the 30 H. P. Undermounted Engine winning both the Gold Medal (First Prize) and the Sweepstakes as well, in the Brandon Contest.

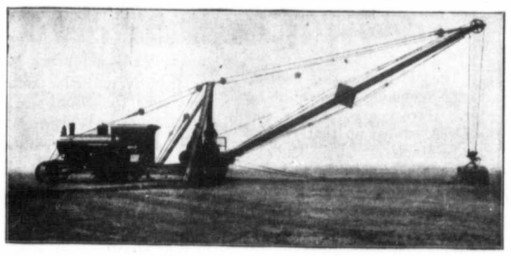
When you buy an Avery Undermounted Engine you get the only Undermounted Traction Engine on the market, and an Engine, proven by the evidence of Mechanical Authorities, by Use and by Test to be Superior to any other Traction Engine built.

Furthermore, when you buy an Avery Undermounted Engine you not only get an Engine having a Superior Construction, but also an engine which you can use for more kinds of work than any other. Note the Special Attachments below which we build for use with this engine. When you buy an engine it pays to look ahead to the future and get the engine that you can use for the largest number of kinds of work, for you may wish to do such work at any time. This is another of the strong reasons for buying an Avery Undermounted Engine.

Special Attachments for the Avery



The illustration above shows an Avery 30 H. P. Undermounted Engine and a 10-gang Plow, making the only perfect plowing score at the 1909 Winnipeg Canada, Motor Contest.



STEAM SHOVEL ATTACHMENT

This outfit is designed for digging drainage and irrigation ditches, for use in gravel pits, digging cellars, stripping coal road and street work, and for other similar purposes. The shovel can also be detached and the outfit used as a crane for handling heavy materials of all kinds.

You should not place your order for an engine until you investigate the Undermounted Avery. Our new catalog. with illustrations of all sizes and complete detailed descriptions, is ready for mailing. Get our catalog and learn all about the construction and work of Avery Undermounted Engines. Send a postal or a letter at once for our free 64 page Engine, Thresher and Steam Plow Catalog or use the coupon at the right.

GET INFORMATION ABOUT THE MACHINES THAT MEET EVERY TEST

Don't place any orders until you know all about the Avery "Yellow Fellows." Get our new 1910 complete 64 page Engine, Separator and Steam Plow Catalog. We send it free Write a postal or a letter at once and get a copy of our catalog.

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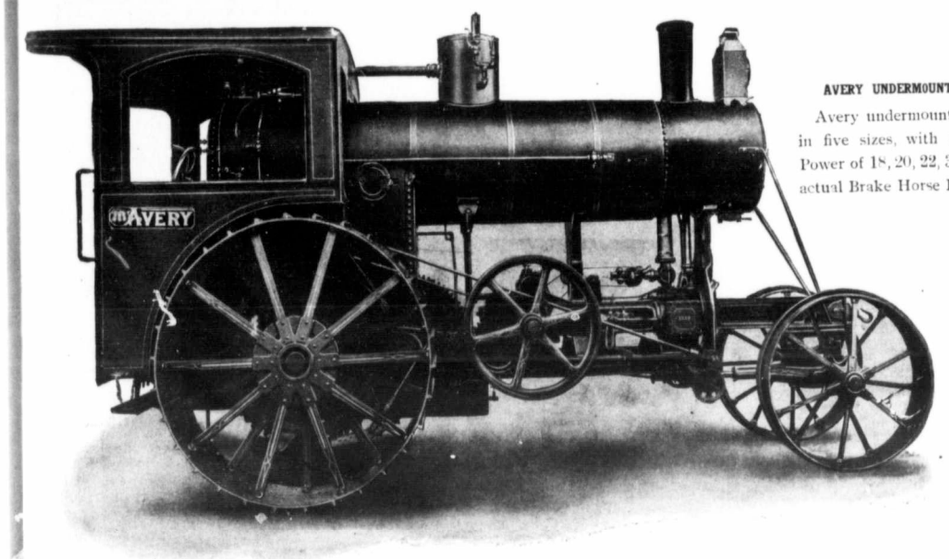
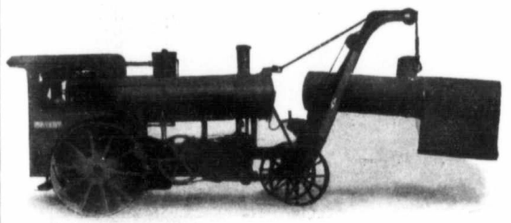


AVERY UNDERMOUNTED TRACTION ENGINE

Avery undermounted Engines are built in five sizes, with nominal rated Horse Power of 18, 20, 22, 30 and 40 Horse. The actual Brake Horse Power which each will develop is more than three times this amount.

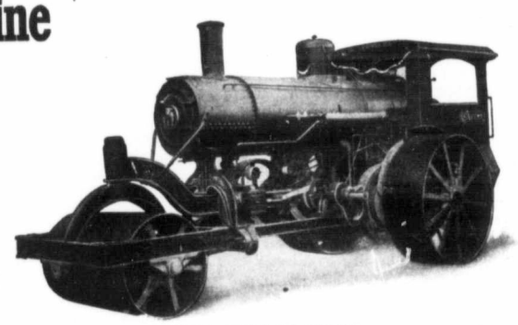
Wood, Coal or Crude Oil can be used for fuel. The 20, 30 and 40 H. P. Engines are also splendid Straw burners.

Double Undermounted Engine



STEAM CRANE ATTACHMENT FOR THE AVERY DOUBLE UNDERMOUNTED ENGINE

This attachment is designed for handling heavy materials and transferring them from place to place. Can be attached to any Double Undermounted Engine.



ROAD ROLLER ATTACHMENT

The roller front truck is easily interchangeable with the regular truck, thus making this a Combination Interchangeable Traction Engine and Road Roller. In road building work the same engine can be used for hauling the material and rolling it as well.

AVERY COMPANY,
Iowa Street, PEORIA, ILL.

Please send me your 64 page Catalog of Engines, Threshers and Steam Plows.

I am particularly interested in:—

[ ] 18 H. P. Undermounted Engine
[ ] 20 H. P. Undermounted Engine
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[ ] Steam Shovel Attachment
[ ] Steam Crane Attachment
[ ] Road Roller Attachment
x Size Separator

[ ] 5 Gang Steam Plow
[ ] 6 Gang Steam Plow
[ ] 8 Gang Steam Plow
[ ] 10 Gang Steam Plow
[ ] 12 Gang Steam Plow

Name..... Town..... R.F.D.

Province..... Date.....

The Indian Summer of Dry Valley Johnson

By O. HENRY

DRY Valley Johnson shook the bottle. You have to shake the bottle before using; for sulphur will not dissolve. Then Dry Valley saturated a small sponge with the liquid and rubbed it carefully into the roots of his hair. Besides sulphur there was sugar of lead in it and tincture of nux vomica and bay rum. Dry Valley found the recipe in a Sunday newspaper. You must next be told why a strong man came to fall a victim to a Beauty Hint.

Dry Valley had been a sheepman. His real name was Hector, but he had been rechristened after his range to distinguish him from "Elm Creek" Johnson, who ran sheep further down the Frio.

Many years of living face to face with sheep on their own terms wearied Dry Valley Johnson. So, he sold his ranch for eighteen thousand dollars and moved to Santa Rosa to live a life of gentlemanly ease. Being a silent and melancholy person of thirty-five—or perhaps thirty-eight—he soon became that crust and earth-cumbering thing—an elderlyish bachelor with a hobby. Some one gave him his first strawberry to eat, and he was done for.

Dry Valley bought a four-room cottage in the village, and a library on strawberry culture. Behind the cottage was a garden of which he made a strawberry patch. In his old gray woolen shirt, his brown ducking trousers and high-heeled boots, he sprawled all day on a canvass cot under a live-oak tree at his back door studying the history of the seductive, scarlet berry.

The school teacher, Miss De Witt, spoke of him as "a fine, presentable man, for all his middle age." But, the focus of Dry Valley's eye embraced no women. They were merely beings who flew skirts as a signal for him to lift awkwardly his heavy round-crowned, broad-brimmed felt Stetson whenever he met them and then hurry past to get back to his beloved berries.

And all this recitative by the chorus is only to bring us to the point where you may be told why Dry Valley shook up the insoluble sulphur in the bottle. So long-drawn and inconsequential a thing is history—the anamorphous shadow of a milestone reaching down the road between us and the setting sun.

When his strawberries were beginning to ripen, Dry Valley bought the heaviest buggy whip in the Santa Rosa store. He sat for many hours under the live oak tree plaiting and weaving in an extension to its lash. When it was done he could snip a leaf from a bush twenty feet away with the cracker. For the bright, predatory eyes of Santa Rosa youth were watching the ripening berries, and Dry Valley was arming himself against their expected raids. No greater care had he taken of his tender lambs during his ranching days than he did of his cherished fruit, warding it from the hungry wolves that whistled and howled and shot their marbles and peered through the fence that surrounded his property.

In the house next to Dry Valley's lived a widow with a pack of children that gave the husbandman frequent anxious misgivings. In the woman there was a strain of the Spanish. She had wedded one of the name of O'Brien. Dry Valley was a connoisseur in crossed strains; and he foresaw trouble in the offspring of this union.

Between the two homesteads ran a crazy picket fence overgrown with morning glory and wild gourd vines. Often he could

Studying the history of the seductive scarlet berry.

see little heads with mops of black hair and flashing dark eyes dodging in and out between the pickets keeping tab on the reddening berries.

Late one afternoon Dry Valley went to the post office. When he came back, like Mother Hubbard, he found the deuce to pay. The descendants of Iberian bandits and Hibernian cattle raiders had swooped down upon his strawberry patch. To the outraged vision of Dry Valley there seemed to be a sheep corral full of them, perhaps they numbered five or six. Between the rows of green plants they were stooped hopping about like toads, gobbling silently and voraciously his finest fruit.

Dry Valley slipped into the house for his whip and charged the marauders. The lash curled about the legs of the nearest—a greedy ten year old—before they knew they were discovered. His screech gave warning; and the flock scampered for the fence like a drove of javelis flushed in the chaparral. Dry Valley's whip drew a toll of two more elfin shrieks before they dived through the vine-clad fence and disappeared.

Dry Valley, less fleet, followed them nearly to the pickets. Checking his useless pursuit, he rounded a bush, dropped his whip and stood, voiceless, motionless,

Plaiting and weaving in an extension to its lash

the capacity of his powers consumed by the act of breathing and preserving the perpendicular.

Behind the bush stood Panchita O'Brien, scorning to fly. She was nineteen, the oldest of the raiders. Her night-black hair was gathered back in a wild mass and tied with a scarlet ribbon. She stood, with reluctant feet, yet nearer the brook than to the river; for childhood had environed and detained her.

She looked at Dry Valley Johnson for a moment with magnificent insolence, and before his eyes slowly crushed a luscious berry between her white teeth. Then she turned and walked slowly to the fence with a swaying, conscious motion, such as a duchess might make use of in leading a promenade. There she turned again and grilled Dry Valley Johnson once more in the dark flame of her audacious eyes, laughed a trifle schoolgirlishly and twisted herself with pantherish quickness between the pickets to the O'Brien side of the wild gourd vine.

Dry Valley picked up his whip and went into the house. He stumbled as he went up the two wooden steps. The old Mexican woman who cooked his meals and swept his house called him to supper as he went through the rooms. Dry Valley went on, stumbled down the front steps, out the gate and down the road into a mesquite thicket at the edge of town. He sat down in the grass and laboriously plucked the spines from a prickly pear, one by one. This was his attitude of thought, acquired in the days when his problems were only those of wind and wood and water.

A thing had happened to the man—a thing that, if you are eligible, you must pray may pass you by. He had become enveloped in the Indian Summer of the Soul.

Dry Valley had had no youth. Even his childhood had been one of dignity and seriousness. At six he had viewed the frivolous gambols of the lambs on his father's ranch with silent disapproval. His life as a young man had been wasted. The divine fires and impulses, the glorious exaltations and despairs, the glow and enchantment of youth had passed above his head. Never a thrill of Romeo had he known; he was but a melancholy Jacques of the forest with a ruder philosophy, lacking the bitter-sweet flavor of experience that tempered the vetran years of the rugged ranger of Arden. And now in his sere and yellowing leaf one scornful look from the eyes of Panchite O'Brien had flooded the autumnal landscape of his heart with a tardy and delusive summer heat.

But, a sheepman is a hardy animal. Dry Valley Johnson had weathered too many northers to turn his back on a late summer, spiritual or real. Old? He would show them.

By the next mail went an order to San Antonio for an outfit of the latest clothes, colors and styles and prices no object. The next day went the recipe for the hair restorer clipped from a newspaper; for Dry Valley's sunburned auburn hair was beginning to turn silvery above his ears.

Dry Valley kept indoors closely for a week except for frequent sallies after youthful strawberry snatchers. Then, a few days later he suddenly emerged brilliantly radiant in the hectic glow of his belated mid-summer madness.

A jay-bird blue tennis suit covered him outwardly, almost as far as his wrists and ankles. His shirt was ox-blood; his collar winged and tall; his necktie a floating oriflamme; his shoes a venomous bright tan, pointed and shaped on penitential lasts. A little flat straw hat with striped band desecrated his weather-beaten head. Lemon-colored kid gloves protected his oak-tough hands from the benignant May sunshine. This sad and optic-smiting creature teetered out of its den, smiling foolishly and smoothing

its gloves for men and angels to see. To such a pass had Dry Valley Johnson been brought by Cupid, who always shoots game that is out of season with an arrow from the quiver of Momus. Reconstructing mythology, he had risen, a prismatic macaw, from the ashes of the gray-brown phoenix that had folded its tired wings to roost under the trees of Santa Rosa.

Dry Valley paused in the street to allow Santa Rosans within sight of him to be stunned; and then deliberately and slowly, as his shoes required, entered Mrs. O'Brien's gate.

Not until eleven months' drought did Santa Rosa cease talking about Dry Valley Johnson's courtship of Panchita O'Brien. It was an unclassifiable procedure; something like a combination of cake-walking, deaf-and-dumb oratory, postage stamp flirtation and parlor charades. It lasted two weeks and then came to a sudden end.

Of course, Mrs. O'Brien favored the match as soon as Dry Valley's intentions were disclosed. Being the mother of a woman child and, therefore, a charter member of the Ancient order of the Rat-trap, she joyfully decked out Panchita for the sacrifice. The girl was temporarily dazzled by having her dresses lengthened and her hair piled upon her head, and came near forgetting that she was only a slice of cheese. It was nice, too, to have as good a match as Mr. Johnson paying you attentions and to see the other girls fluttering the curtains at their windows to see you go with him.

Dry Valley bought a buggy with yellow wheels and a fine trotter in San Antonio. Every day he drove out with Panchita. Knowledge that he could say nothing of interest kept him dumb; the feeling that Panchita was there kept him happy.

He took her to parties and dances, and to church. He tried—oh, no man ever tried so hard to be young as Dry Valley did. He could not dance; but he invented a smile which he wore on these joyous occasions, a smile that, in him, was as great a concession to mirth and gaiety as turning hand-springs would be in another. He began to seek the company of the young men in the town—even of the boys. They accepted him as a decided damper, for his attempts at sportiveness were so forced that they might as well have essayed their games in a cathedral. Neither he nor any other could estimate what progress he had made with Panchita.

The end came suddenly in one day, as often disappears the false afterglow before a November sky and wind.

Dry Valley was to call for the girl one afternoon at six for a walk. An afternoon walk in Santa Rosa was a feature of social life that called for the pick of one's wardrobe. So Dry Valley began gorgeously to array himself; and so early that he finished early, and went over to the O'Brien cottage. As he neared the porch on the crooked walk from the gate he heard sounds of revelry within. He stopped and looked through the honeysuckle vines in the open door.

Panchita was amusing her younger brothers and sisters. She wore a man's clothes—no doubt those of the late Mr. O'Brien. On her head was the smallest brother's straw hat decorated with an ink-striped paper band On her hands were flapping yellow cloth gloves, roughly cut out and sewn for the masquerade. The same material covered her

"Walked slowly to the fence with a swinging, conscious motion."

shoes, giving them the resemblance of tan leather. High collar and flowing necktie were not omitted.

Panchita was an actress. Dry Valley saw his affectedly youthful gait, his limp where the right shoe hurt him, his forced smile, his awkward simulation of a gallant air, all reproduced with

Tiptoed back to the gate and home again.

startling fidelity. For the first time, a mirror had been held up to him. The corroboration of one of the youngsters calling, "Mamma, come and see Pancha do like Mr. Johnson," was not needed.

As softly as the caricatured tans would permit, Dry Valley tiptoed back to the gate and home again.

Twenty minutes after the time appointed for the walk Panchita tripped demurely out of her gate in a thin, trim white lawn and sailor hat. She strolled up the sidewalk and slowed her steps at Dry Valley's gate, her manner expressing wonder at his unusual delinquency.

Then out of his door and down the walk strode—not the polychromatic victim of a lost summertime, but the sheepman, rehabitated. He wore his old gray woolen shirt, opened at the throat, his brown ducking trousers stuffed into his run-over boots, and his white felt sombre on the back of his head. Twenty years or fifty he might look; Dry Valley cared not. His light blue eyes met Panchita's dark ones with a cold flash in them. He came as far as the gate. He pointed with his long arm to her house.

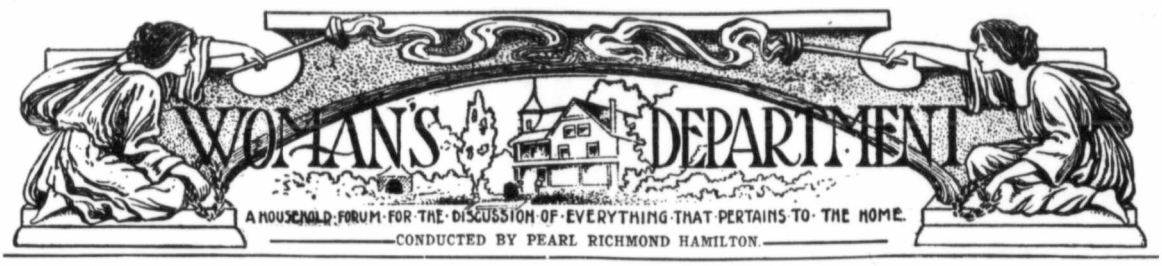
"Go home," said Dry Valley. "Go home to your mother. I wonder lightnin' don't strike a fool like me. Go home and play in the sand. What business have you got cavortin' around with grown men? I reckon I was locoed to be makin' a he poll-parrot out of myself for a kid like you. Go home and don't let me see you no more. Why I done

Panchita came steadily toward him through the strawberry vines.

it, will somebody tell me? Go home, and let me try and forget it."

Panchita obeyed and walked slowly toward her home, saying nothing. For some distance she kept her head turned and her large eyes fixed intrepidly upon Dry Valley's gate. At her gate she stood for a moment looking back at him, then ran suddenly and swiftly into the house.

Continued next month



Write Them A Letter.

Don't go to the theatre, concert or ball,
But stay in your room tonight;
Deny yourself to the friends that call
And a good long letter write.
Write to the sad old folks at home,
Who sit, when the day is done,
With folded hands and downcast eyes,
And think of the absent one.

Don't selfishly scribble, "excuse my haste,
I've scarcely got time to write,"
Lest their brooding thoughts go wandering back
To many a bygone night—
When they lost their needed sleep and rest,
And every breath was a prayer,
That God would leave their delicate babe
To their tender love and care.

Don't let them feel that you've no more need
Of their love and counsel wise;
For the heart grows strangely sensitive
When age has dimmed the eyes.
It might be well to let them believe
You never forget them, quite;
That you deem it a pleasure, when far away,
Long letters home to write.

Don't think that the young and giddy friends,
Who make your pastime gay,
Have half the anxious thought for you
That the old folks have to-day.
The duty of writing do not put off;
Let sleep or pleasure wait,
Lest the letter for which they looked and longed
Be a day or an hour too late.

For the loving, sad old folks at home,
With locks fast turning white,
Are longing to hear from the absent one,—
Write them a letter to-night.

—Anon.

Prayer for a Friend's Perfecting.

I cannot tell why there should come to me
A thought of someone miles and years away,
In swift insistence on the memory,
Unless there be a need that I should pray.

Perhaps just then my friend has fiercer fight,
A more appalling weakness or decay;
For courage, darkness—some lost sense of right
And so, lest you should need my prayer I pray.

Then do the same for me, if I intrude
Unasked, upon you on some crowded day,
Give me a moment's prayer as interlude,
Be sure I sorely need it—therefore pray. (The Advocate.)

Out Into Somewhere.

(By Pearl Richmond Hamiltom.)

"Sup-per! Sup-per! Sup-per!" The call rang clear and loud through the crisp cold of a wintry evening. A young girl in front of the door of a comfortable-looking house with her hands encircled about her mouth, yelled again a second call.

"Sup-per! Sup-per! Sup-per!"

Presently from the barn at the other side of the lot a boy came out leading a clumsy bay horse and tied it to a post. Behind him a tall young man with hands in both pockets shuffled along lazily toward the house while two little girls with rosy cheeks ran up the front walk and pounded on the door.

The father, who sat near a table reading his paper looked up as if troubled by the entrance of these four intruders. He said nothing, however, and they all gathered around the evening meal. Dick the young man, noticing a vacant place, dropped into his chair and raising his disappointed face toward his sister, asked anxiously: "Where's Mother?" The muscles about the father's mouth tightened as if keeping back words too terrible for utterance.

The two little girls with wistful eyes directed at the vacant place, bravely suppressed cries of loneliness, while Tom, the growing boy hid his sorrow in a huge slice of bread and butter.

Meanwhile the young girl who had prepared the meal, after placing the meat before her father's plate, sat down with a sigh and unfolded her napkin.

"Where are you going with the horse, Dick?" the father asked as he began to carve the meat before him. Before Dick could answer Tom blurted out: 'He's going to Reinback to play pool, I reckon he's gettin' to be a cracker-jack at playing pool."

The father's face took on an expression of helpless anxiety; whereupon the young girl greatly disturbed when her father seemed to be in trouble, pleadingly said: "Oh Dick stay at home tonight, why do you go to Reinback so often, can you not stay at home this evening—just one evening?"

"Nothing to stay at home for," Dick replied, shoving his chair nearer to the table and looking over sadly at the vacant place.

"Don't you ever go over to see Jim Strang any more?" inquired the father, handing Tom his plate well filled by a generous parent.

"Oh yes, once in a while, but not often," Dick answered hesitatingly. "You see it's this way—Jim Strang's mother is mighty particular about the company he's with, and I guess she thinks my morals aren't quite up to snuff," he continued.

The young girl lifted her face appealingly to her father. The father pressed his lips tightly together. Then Maggie asked the brother: "Don't you like to go over to Jim Strang's?" "Like to! Like to! Well you'de better believe me I do. It's the best place on earth to go. Jim's mother does everything to make a fellow have a good time. He has all kinds of books to read and can ask the boys home to meals when ever he wants to. If I had a home like Jim Strang's I would never want to go out evenings."

"Our house is nicer than their's," interrupted the father rubbing his hand across the forehead.

"Yes, the outside is, father, but some how it's the inside that counts in a fellow's home."

The father moved his plate of untasted food aside and rested his head in his hands.

"I try to do my part," insisted Maggie, moving aside her untasted food.

"Yes, you're all right, sis, I'm not blaming you. It's a mother I want, one of that kind that gets right into a fellow's heart and understands him."

The father shoved his chair back from the table and thought in exclamation points. Then putting his hand in his pocket he took out a letter, opened it and raising his eyebrows looked very seriously at the younger son.

"Tom, I have a letter here to read to you." Tom did not look at his father—he had a presentment of what was coming. The father after putting on his glasses began.

Dear Sir:—

I regret to inform you that your son is doing very poor work in school and his morals are such that it will be necessary to expel him.

Yours very truly
J. G. Thomas,
Principal.

All were perfectly quiet after the reading of this letter. Tom's face burned with shame and he moved about his chair very uneasily.

"I should think the teacher could manage Tom," Maggie insisted, looking over at very anxiously at Tom whose eyes could not meet those of his sister. The father shook his head and in a doubting tone remarked as if alone.

"The primary responsibility for the child rests within the home—it cannot be charged to the teacher. The school cannot make the character of my boy or any other boy. He must have something else than education and that something else must be inspired from within the home. The boy's character begins in the home. The responsibility of my children rests right here," and the father looked about the room and at the five children around the table.

"Let me alone,' 'cried a little girl at the end of the table and her little sister projected a quick foot and kicked her viciously. The twins had evidently begun their usual evening quarrel. Dick moved his chair back, jumped up, put on his coat and hat and walked out into the dark night. For a few moments not a word was said.

Then the sharp "ge up" was distinctly heard and the family listened to the sleigh bells till they jingled out of hearing.

Maggie cleared the dishes away and the only noise in the room seemed to come from the quarreling twins, who in turn played and quarrelled, played and quarrelled till the father hurried them off to bed.

Tom kept looking towards the door as if expecting to do something desperate, then he pulled on a coat that needed mending and drew his cap down over his ears and he too drifted out into the dark night some where.

The father sighed and reached for his paper but did not read long—he was tired from the strain of work, more tired of the homeless home and still more tired of the endless worry for the welfare of his children.

Maggie sat alone doing a bit of mending when suddenly her quick hearing warned her of familiar steps coming up the walk. Her beating heart seemed to paralyze her for the moment. **Was it right or was it wrong?**

There was no cautious mother to warn her of dangers so common to young women—no companionable mother to take her in her arms and keep her from mixing with fascinating young men whose business seems to glory in finding innocent hearts to break.

Was it right or was it wrong to entertain this young man? Her father had enough to trouble him now without giving him any more burdens for his stooping shoulders to carry. Maggie turned these questions over and over in her mind till the gentle knock at the door startled her as if she expected no one. She opened the door and there stood the young man she had thought about all day and all of the previous night. A night and a day was the length of time they had been acquainted and yet it seemed ages to her. Maggie seemed greatly embarrased as he entered and in a familiar way made himself easy.

"Oh don't sit way over there," he protested, as she sat down at the other end of the table.

She was wondering what her father would say and do if he knew she was entertaining this man—a stranger in the little village. Her heart cried for help. Meanwhile he leaned back in the chair, one leg over the other, with a cigar in the corner of his mouth and as he did so his hand displayed to great advantage a diamond ring. He talked about himself, and Maggie listened till she seemed to forget about her surroundings; a flush had come to her cheeks and she looked with her big innocent blue eyes into the deadly fascination of his dark eyes. Her admiration was easily shown to be sincere.

Before long he realized his power and moving his chair up close beside her he began to pour into her child-like ears flatteries so new to her and so old to the world of women. Then he began to picture to her the value of fine clothes to a girl of her rare beauty. Poor girl—that old old bait and yet always new.

The lure to luxury has charmed many an innocent girl. If only a mother had been in the home that night to say:

"My dear girl, beware of any man who offers you a short cut to luxury."

The visit was brief, the home was cold, the future was a fascinating picture—out—far out in the cold the door opened that evening for a third member of that household and Maggie went into the dark—Somewhere—Somewhere.

One, two, three, four, five, six, seven tolled the clock that hung on the wall of the cold kitchen.

The hall door opened and in limped the father in rheumatic gait—stiff and tired from a restless sleep. "Dick!" he shouted, but no answer came from the room above.

"Tom! Tom!" he called, louder than before—still no answer "Maggie, dear!" he called, more gently.

Somehow there is something indescribably beautiful about the love a true father gives a daughter—it is sacredly wonderful.

"Maggie, dear;" he called again, shaking down the coals of the hard-coal burner.

"The children are hard to awaken this morning," he said, taking up the paper as he waited for the fire to warm the room. He looked long and hard at a head line which read: "A Brilliant Woman Addresses a Crowded House."

"Mrs. Tiffany from the village of——speaks to an appreciative audience on the value of Woman's Suffrage in bringing about moral improvements in villages and cities. She is doing a great work in the cause of Woman's Suffrage and is sincere in her work among young people. She is one of the leaders among the suffragettes of our state."

Mrs. Tiffany was the father's wife and Dick and Tom and Maggie and the twins were her children.

Moral reform should begin—well where should it begin?

The Dower Law.

There is considerable discussion at present among the women in the cities and in the towns in regard to having a law passed giving the wives in the western provinces some legal claim on the property held by their husbands, property for which most wives have worked hard. No wife in the provinces of Canada west of Ontario has any claim on the property held by her husband, no matter how hard, and how long she may have worked to make a home. Husbands can mortgage, sell or will away their property and leave their wives and children without a cent.

A pathetic incident was mentioned in the Manitoba Free Press the other day. I will quote it:

A man and his wife came here several years ago and took up a homestead in the bush far away from any settlers. Both worked hard to get a clearing and a family began to grow up, and all went well with them. Soon the boys were able to help, but by that time the country round was getting settled up and pretty soon a town sprung up pretty close to their home, and first and foremost a saloon opened there which the husband began to visit and pretty soon to spend the most of his time at, leaving the wife and the boys to do all the work on the farm while he loafed and and spent all they made. Still they worked early and late, and cleared more land and planted an orchard, and raised stock. Their next neighbor, seeing what a nice farm it was, wished to get it for his son and took the meanest way to get it. He took, or rather pretended, to take great interest in the drunken husband, and would lure him to spend the evenings and treat him to oyster suppers with lots of drink, and when too drunk to go home would put him in the best bedroom. Pretty soon the poor drunk thought he had the best friend in the world. Finally the friend asked him to sell his farm, and promised him a good figure for it, and being partly drunk he promised to sell. So they went to a lawyer and an agreement was made and part of the money paid before the wife heard anything about it. She would not believe a word of it at first because she thought that he could not sell without her signing off, but to her cost she found it too true, and not only the farm, but the stock, live and dead and even the furniture was included in the sale. This poor woman found she could do nothing but take her children and walk out, which she did, and they are now scattered all over, while the husband still hangs around the hotel spending the money as he gets it by instalments, but the poor wife got nothing.

Many women's organizations are favoring the dower law because the women who have worked hard in Western Canada need protection, so the Winnipeg branch of the National Council of Women have taken the matter up and with the support of the majority of the men they are going to fight for the hard working women in Western Canada to have a legal claim on the property now held by their husbands.

I should like if some of the women readers of this department would write me their opinion on the subject. If you know of some unjust treatment that women have been subjected to because they could not claim some of the property they have worked so hard for, kindly write it for publication in this department. Let me know what you think of the dower law.—[Editor of Woman's Department.]

The Mothers' Corner.

The Young Mother.

By Key Cammock

From what strange journey am I safe returned,
So wearied, yet content;
These eyes still darkened with the mists of Death,
All strength and courage spent,
Yet with such strange, sweet, stirring in my breast—
Such rapture, Heaven-sent.

Shrinking, I left broad day and took the road
Which led me close to Death,
But curved about me were strong Angel wings
Defying his chill breath
As I snatched up my Joy and homeward drew,
Knowing Love conquereth.

The Barometer Baby.

By Jean Dwight Franklin.

When the baby cries the heavens turn gray
And the gathering clouds chase the sunshine away,
And it seems that the world itself should pause
To grieve and condone at the unknown cause;
For with a plenty it wonders why
The Baby should cry

When The Baby laughs—ah! then you should see
How utterly happy a day can be!
The little birds sing and each flower looks up
To catch a smile in its tiny cup:
And the air is filled with a rollicky chaff
At The Baby's laugh!

O Barometer Baby—despot dear,
Do keep to the weather thats fair and clear!
The world is moody—ave, stormy, too,
And we get our sunshine in watching you!

Keep the young baby warm.

Warmth from the surface is peculiarly necessary for the babe where there is tendency to weakness and an imperfect development of animal heat during the early months of its life. Loose flannel garments next the skin are just the thing They must, of course, be loose to give the lungs and heart free action, and not to interfere with a free circulation of blood It is well, too, to watch the weather, and dress the baby accordingly.

Many a mother has laid her baby fully dressed upon a feather bed or mattress, thick and warm to sleep. Over the child she places a thick spread. When the baby wakes it is wet with perspiration. If a current of cool air strikes it, the child develops both catarrhal and bowel complaints.

Bowlegs.

It is much better to prevent bowlegs than to get into trouble by permitting the bending of the bones and then put forth effort to overcome the affliction. If the mother could realize how the victim of her negligence suffers in spirit from legs bowing out and toes turning in, she would put forth desperate efforts to prevent as well as correct the evil. The bowing of the legs is sometimes begun by the baby standing on the lap of someone who is holding it, long before the legs are strong enough to support the weight of the body. It is right and proper for the creeping child to take a part of its weight on its feet, but never all the weight.

Bowed legs come, too, from walking too soon and from improper positions permitted by the person in care of the child when it is learning to walk.

The Mother and The Teacher.

I sometimes think mothers criticize the teacher too much. The best results are seen when the mother and the teacher work in harmony. I quote the following letter from The Mother's Magazine:

Dear Mothers: The other evening a sister teacher was discussing with me the much-talked-of subject of visiting one's scholars. She declared visiting was of no benefit to her. She said she went to a home, was received in the best room, and often did not see her pupil. The mothers seldom return her calls and rarely invited her back. How was she going "to meet her children socially"?

I can speak from my own experience that though I have had a Primary class of from thirty to forty pupils for about ten years, I think only one mother ever invited me to take tea with the family because I was "her little girl's teacher." I really think the mother must awaken to help the teacher, because the teacher can certainly learn more about her scholar and his or her environment by meeting the whole family in a social way. It is not necessary to go to any trouble to entertain her. She will be pleased and delighted to be honored with an invitation to the humblest home, for her work is a labor of love. I make a point of visiting new scholars and the sick, if I know they are ill. Here, again, a mother can help by sending for the teacher to see the sick child. It helps both child and teacher and indirectly the mother. With so large a class as mine, I do not pretend to visit regularly.

Most of us entertain our scholars either at our own homes or at picnics, but then the children are altogether and on their best behavior. We do not meet them individually as we would if meeting them socially in the home. Try it, mothers. Invite the teacher to take tea with you some evening. I think you will be surprised to find how much you can have in common and how much you can help each other, and I am sure it is just because you have never thought about it that it has not been done ere this. Mothers and teachers ought to ponder the following lines by Ella Wheeler Wilcox:

"Lord, give the mothers of the world
More love to do their part—
That love which reaches not alone
The children made by birth their own,
But every childish heart.
Make in their souls true motherhood
Which aims at universal good.

"Lord, give the teachers of the world
More love and let them see
How baser metals in their store
May be transformed to precious ore
By love's strange alchemy.
And let them daily seek to find
The childish heart beneath the mind."

Be interested in your child's teacher. Learn something about her. Maybe she is lonely and homesick and your invitation will be a Godsend to her. She gives time and her best thoughts to your child. She does it for love, not pay. Let the mother-love reach out to the teacher. She needs its inspiration.

M. S. D.

For Young Women.

The Girls That Men Like.

"Has it ever occurred to you to pause and consider why some girls are so much more popular with men than others?" said a woman of the world to a *debutanté* who once complained that she was left out in the cold.

The *debutanté* acted upon the advice. She began to look around her circle of friends and acquaintances, she kept her eyes and her ears open, and she very soon discovered the reason; incidentally she also learned several very valuable lessons in experience at the same time.

The result of her investigations, she declared, proved to her that the girls who are the most popular with men are not the shallow flirts of life, not the prettiest, or the ones who are the best dressed, although without doubt personal beauty and daintiness as regards dress do count a lot with the average man.

When all was said and done she found that it was the girls who are womanly, sympathetic, and natural who are the most sought after by the opposite sex; that healthy, happy, affectionate type of girl who is to be met with in hundreds of homes to-day; the girl who is adored by parents, brothers, sisters and friends alike, because she is bright and unselfish and full of sympathy for those who may want help or assistance; the girl who is clever enough to have interests of her own that in themselves help to make her interesting to those with whom she comes in contact; the kind of girl who, instead of sitting wrapped up in admiration of herself and her own perfections, and waiting for all the men to come and bow down and admire her and is anxious to do her part in helping to entertain; the girl who has plenty of bright, natural conversation, and who can listen intelligently as well as talk, for there is nothing more wearying than the silly chatterbox who babbles on like a tingling bell talking nonsense and saying nothing that anyone wants to listen to, for the mere sake of talking.

The girl that all men like is the kind of girl that can be depended upon never to have moods, for what is more trying or more wearisome than the girl who is everlasing subject to the blues, who sulks if things don't go quite as she wants them to, and who indulges in jealous tempers and tantrums upon all occasions? She is every whit as dull and depressing

as that melancholy type of womanhood who is everlastingly being misundersood by someone or other; the woman who tries to enlist your sympathy because parents, brothers, sisters, employers, in short everyone with whom she comes in contact fails to understand her peculiar and particularly unteresting temperament.

The girl that possesses that particular charm which appeals irresistibly to all men alike, and which causes her to be dubbed essentially the kind of girl every man likes, has nothing in her composition that can be condemned as self-consciuosness. She is interested in anything and anyone save herself. She has an even temperament that is by no means easily ruffled; she has the happy knack of smiling at life, and so making life smile back at her.

You find that she is quite content to find enjoyment in the little things of life, and in consequence she has an infectious way of making all those who come in contact with her enjoy them also.

Contrary to a great many folks' expectations, you never find such a girl flirting. Her role is essentialliy one of a friend rather than a flirt for she looks at life with that friendly look that has nothing in common with flirtation, though it must be confessed it is often mistaken for the same. Still men are quick to recognize the difference, quite ready to realise it. They appreciate that she is the kind of girl who can be friendly, yet modest and self-restrained at the same time. Consequently they are all anxious to single her out to talk to, and to be entertained by. In short, she is the kind of girl men like as a friend and as a chum, the kind of girl they want as a wife.

—By Mary Marsh in woman's Life.

Receipes

Egyptian Cannelon

Chop fine two pounds of beef from the round; add and mix two level teaspoonfuls of salt, a saltspoonful of pepper, half a pint of chopped almonds or pine nuts, a tablespoonful of chopped parsley and two tablespoonfuls of grated onion. Form in a compact roll, wrap in a piece of oiled paper, place in a baking-pan, add a cupful of stock and a tablespoonful of butter. Bake and baste, over the paper, for three-quarters of an hour. Remove the paper and lift the cannelon to the centre of a platter. Rub together two tablespoonfuls of butter and two of flour; put in the pan with a pint of stock; stir until boiling; add a level teaspoonful of salt ana if you have it two tablespoonfuls of tomato ketchup. Strain this over the roll and garnish with toast.

Fricandeau of Veal

Select a thick slice from a leg of veal weighing from four to six pounds. Cover the bottom of a baking-pan with chopped carrot, onion and celery; add two bay leaves. Bind the veal with a strip of muslin and place it on top of the chopped vegetables, adding a teaspoonful of salt and a pint of boiling stock. Cover the pan and bake the veal in a moderate oven, about 300 degrees Fahrenheit, for four hours basting once or twice. Dish the veal and garnish it with nicely cooked red beans. Rub together in the pan two tablespoonfuls of butter and two of flour; add half a pint of stock; stir until boiling. Add a teaspoonful of kitchen boquet, half a teaspoonful of salt, half a teaspoonful of Worcestershire sauce and strain it over the meat.

Mutton Balls

Remove the meat from a shoulder of mutton, put it twice through a meat-chopper; add and mix two teaspoonfuls of salt, a saltspoonful of pepper and two tablespoonsful of chopped onion. Form in balls about twice the size of English walnuts. Place them in a baking-pan; pour in a pint of strained stewed tomatoes, add a bay leaf, and on each ball place a piece of butter the size of a pea. Bake in a quick oven for half an hour, basting four times. When done, dish the balls. Add to the sauce a tablespoonful of butter, and if too thick, four tablespoonfuls of stock. Strain over the balls and garnish with rice.

Blanquette of Mutton

Cut the meat from a shoulder of mutton in cubes half an inch in size. Put the bones in the bottom of a kettle, add a quart and a half of cold water; bring to boiling point, skim and add the meat. Cover, bring to a boil and simmer for an hour and a half. Rub together two tablespoonfuls of butter and two of flour; add a pint of the liquor in which the meat was cooked; stir until boiling, then add a level teaspoonful of salt, a saltspoonful of pepper and the meat. Take from the fire, and add the yolks of two eggs beaten with four tablespoonfuls of cream. Reheat but do not boil. Serve this in a border of boiled rice.

Puddings

During the heat of summer one does not crave hearty hot puddings, but with snow on the ground and cold, bracing air one does enjoy the hot fruit puddings and mince pies. The housekeeper finds that the labor necessary in preparing the richer kinds of food is not as irksome as in Midsummer, and while mince pies and plum puddings would soon pall upon the most fastidious appetite, the occasional use of them is very welcome.

When the small fruits are out of season it is difficult to provide the variety which is always desirable. The Christmas plum pudding is one standby for emergencies, as it is always ready for the unexpected visitor, and lasts until Spring, but the steamed and baked puddings seem to fill the bill for the "every day dinner."

This Graham pudding is one which gives great satisfaction and is good the second day. Take 1 cupful of finely chopped suet, 1 cupful of New Orleans molasses, 2 cupfuls of sour milk, 3 cupfuls of graham flour, 1 teaspoonful of soda, ½ teaspoonful of salt, 1 cupful of chopped raisins, ½ teaspoonful each of clove and cinnamon. Bake in a long deep pan for half an hour. If sweet milk is used, then add two teaspoonfuls of cream of tartar to the flour. Use any sauce.

A steamed pudding, which the children enjoy and call the "black pudding," is very easily made. Take ½ cupful of butter, 1 cupful of molasses, 1 cupful of sour milk, 1 teaspoonful of soda, ½ teaspoonful of nutmeg, 1 cupful of seeded raisins. Scald the molasses and butter, add the milk and the flour until the batter is as thick as gingerbread batter. Steam three and one-half hours. Serve with a rich creamy sauce.

Another steamed pudding, which is very simple of construction and makes an agreeable change, is made by taking ½ cupful of sugar, 1 tablespoonful of melteu butter, 1 cupful of sweet milk, ½ teaspoonful of soda and 1 teaspoonful of cream of tartar, 1 egg and 2 cupfuls of flour. Steam for two hours and serve wth a hard sauce.

Every housekeeper knows how invaluable a rice pudding is to fall back upon, when at her wits' end for a change, or when the stores are depleted. The following rule is unlike those in ordinary use, and so is accorded first place among our rice puddings: Take ½ cupful of rice, 1 quart of milk, ½ cupful of seeded raisins. Steam for one and one-half hours, then put in baking dish, add 1 cupful of sugar and the yolks of 2 eggs. Bake until nicely browned. Have the whites of the eggs well beaten, and put on the top and return to the oven to brown. Serve either hot or cold.

A rich pudding which has been handed down for years in our family, and which is much like an English plum pudding, is made by taking 1 loaf of baker's bread, soak it for two hours in 2 quarts of milk, then beat until it is thoroughly crushed. To this add 6 eggs, ¼ cupful of molasses, 1 cupful of brown sugar, salt, 1 teaspoonful each of clove, cinnamon, allspice and nutmeg, 1 pound of raisins (sprinkled with flour). Bake slowly five hours and stir when it begins to thicken. Place pieces of butter on the top when it is put into the oven. This is to be eaten cold, with a hot sweet sauce.

S's.

One-half pound of butter, one-fourth pound of sugar, one pound of flour, yolk of one or two eggs. Mold into strips and shape into the letter S. Bake in moderate oven.

Zweibach Torte

Twelve ounces of powdered sugar, eight ounces of grated and sifted toast, six ounces of grated almonds, fifteen eggs, the grated rind and juice of one lemon, one teaspoonful each of cloves and cinnamon. Stir the yolks, sugar, lemon and spices half an hour, add stiff whites, then toast and almonds. Bake in moderate oven.

Experience Extracts

For the Comfort of the Sick, especially those suffering with inflammatory rheumatism or other painful ailments, cut a barrel hoop in half and fasten a block to each end so that the hoop forms a semicircle over the blocks, which are used as standards. Place this in the bed over the sore limb, stomach, or other tender place of the sufferer. This lifts the covers from the invalid, raising the bedding just enough to free the sore member and not enough to give danger of cold. Have the blocks solid enough to keep the hoop from tipping.—D.E.C.

Heat Blisters on Wood

Blisters or white spots on polished table-tops caused by wet or hot dishes may be removed by rubbing with spirits of camphor.

There is nothing more soothing in a case of nervous restlessness than a hot salt bath just before retiring.

To Prevent Lockjaw

By Mac M.

A speedy cure for a wound caused by a rusty nail, wire, or any other metal is to place some hot coals in a pan, put some good wool on the coals, then place the wound over the smoking wool, smoke several times or until relieved. Try it; it will save you a case of lockjaw or blood-poisoning.

How to Keep Vegetables Fresh

Sweet potatoes, turnips, carrots and horse radish, if buried in a box of sand in the cellar, will keep fresh for a long time. If parsley and celery are dug up by the roots and some of the earth left on, they also will keep a good while in the cellar. T.K.

To Cure the Most Stubborn Aching or Ulcerating Tooth make common ginger into plaster by sewing a little of the powder in a piece of cloth one inch square. This will positively effect the cure.—Mrs. H. F. H.

The Best Solution for Washing Windows is composed of two quarts of strong soap-suds and one-quarter of a cup of kerosene. Go over the glass carefully and you will not be able to find the shadow of a streak, but you will have obtained a most desirable polish.—M. B. G.

For the Children's Lunch Basket we people who live "nine miles from a lemon" have to put our thinking-caps on many times in order to have appetizing dishes. They walk a distance to school and are gone from eight o'clock until five in the afternoon, and should have more than bread and butter and an apple. My children had tired of sandwiches, so I have given them a cup of baked beans and a prune turnover. For the turnovers, make a good biscuit crust and seed the prunes, which have been soaked overnight but not stewed. Cut in bits or put through the chopper, and add the grated rind of an orange. Cut the dough in pieces about as large as a biscuit and roll moderately thin. Add one tablespoonful of prunes and pinch the top close. A quart of flour makes twelve turnovers. Do not put them too close in the baking pan. Brush the tops with milk and bake about twenty minutes in quick oven. I never add sugar to prunes; the orange rind seems to be just what they need to take away the insipid taste.—Mrs. W. H.S.

The Danger of Quibbling Over Trifles

"Constant dripping wears away a stone" might be altered to "constant nagging wears away a saint," for one sees some of the finest men in creation belittled and made into morose, irritable creatures by a small feminine tyrant wife.

For it is nearly always the best who give in. The man or woman with a large, generous nature, too good-hearted to be always quibbling and quarreling over petty trifles, is the easiest sort of prey for the household tyrant.

A woman who makes "scenes" and uses her tears and weakness as a weapon for tyranny, can often subject the strongest man to her whims and caprices.

She pays a heavy price for her victory for he ceases to love her. She rules because he is a gentleman and rightly regards such matrimonial scenes as vulgar.

But his heart soon becomes cold. He is her husband legally, but her hold on his love is gone. For "love flies out at the window when tyranny comes in at the door."

Never mind the other fellow, be persistent in your own efforts.

Never mind the other fellow, get your price or let him do the threshing.

Like Grandma Used to Do.

I tell you what, I'm goin' back; I'm sorry 'at I came;
Th' way you treat a little boy like me is jus' a shame:
You shake me an' you scol' me, an' you never kiss me, too,
Er ever take me on your lap—
Like gran'ma used to do!

Jus' 'cause I took a cookie er a spoon o' jam er so,
Er try the taits a-coolin' in th' winder in a row,
You whip me 'stead o' smilin'—never say, "Take one or two."
That "all such things is made for boys"
Like gran'ma used to do!

Jus' 'cause I ketch a chicken or teach Tabby how to swim,
Er tie a string on Rover's ear an' ride aroun' on him,
You jaw me 'stead o' saying' that you "really never knew"
A boy so fond o' animals"—
Like gran'ma used to do!

Jus' 'cause I go a-fishin' in th' trough behin' th' barn,
An' use a cane an' button hook an' some o' your red yarn,
You shake me, 'stead o' bringin' me an apple, mebbe two,
An' tellin' me to "persevere"—
Like gran'ma used to do!

I'm goin' back to-morrow where I'm allers treated good,
'Cause you don't love a little boy th' way you really should,
You never gi' me nothin' nice, or call me "dearie," too,
Er tell me I'm a "comfort"—
Like gran'ma used to do!

The Boy Who Knew How.

(Continued from Last Month.)

under the direction of his youngest operator.

"Th re you are, my lad," said the superintendent, "what next?"

"Get a stick, sir, and stir the blue stone in the kettle, please. We must have it dissolved if the battery is to work immediately when we connect it."

The copper bottom of the boiler was at last cut through, and hastily doubling it over several times, in order that it would lie flat in the crock, Alex turned his attention to the zinc on the stove-board.

The scene in the little station had now become dramatic—the crowd of passengers, increased until it half filled the room, looking on in strained silence or talking in whispers; the tall figure of the superintendent at the stove, busily stirring the kettle, and in the middle of the floor, the centre of all eyes, the fourteen-year-old boy hurriedly working with chisel and hammer, seemingly only conscious of the work before him and the necessity of making the most of every minute.

The zinc was cut, and hurriedly folding it as he had the copper, Alex sprang to his feet, and runing to the cupboard dragged out a bundle of wire and began sorting out some short ends.

"How much longer," said the superintendent. "The train should be at Ziesler now."

"Just a minute. But she's sure to be a little late from the fog," said Alex, hopefully, never pausing. "Has the bluestone dissolved, sir?"

"All but a few lumps."

"Then that will do. Now please lift down the water-cooler, sir, and place it by the table."

As the superintendent complied, all conversation ceased, and the crowd, moving hurriedly out of the way, looked on breathlessly, then turned to Alex, on his knees, fastening two pieces of wire to the square of copper and zinc.

This done, Alex dropped the square of copper to the bottom of the big jar, hung the zinc from the top, connected one wire end to the ground connection at the switchboard and the other to the side of the key. And the task was complete.

"Now the kettle, sir," he said, dropping into his chair. The superintendent seized the kettle and emptied its blue-green liquid into the cooler. The moment the water had covered the zinc Alex opened his key.

It worked strongly and sharply.

"Good work! Good work!" said the superintendent, fervently. "Now hurry up, boy!"

Already Alex was whirring off a string of letters. "Z,Z,Z, WS!" he called. "QK- QK- Z.Z—"

The line opened and at the quick sharp dots that came Alex could not restrain a cry of triumph. "It works! I've got him!" he exclaimed. Then rapidly he sent:

"Stop Number 12. Has she passed yet?"

The line again opened and over it again the boy leaned a circle of white, anxious faces. Had the train passed. Had it gone on to destruction. Or—

The instrument clicked. "No! No! He says, no!" cried Alex.

And then, while the crowd about him relieved its pent-up feelings in wild shouts and hurrahs, Alex quickly explained the order to stop the train.

"And now three good cheers for the little operator," said one of the passengers as Alex closed the key. In confusion Alex drew back in his chair, then suddenly recollecting the others who had taken part in the night's work, he told the superintendent of the part played by Mr. Moore and his sons, and of the sacrifice of Mrs. Moore's new wash-boiler.

"And then there was the man on the horse, who told us of the slide in the cut across the river. He was the real one to save the Mail," said Alex modestly.

"I see you are as fair as you are ingenious," said the superintendent, smiling. "We'll look after them all, you may be sure. And by the first express Mrs. Moore shall have two instead of one of the finest boilers money can buy. And as for you, my boy, we'll have a place for you at the division headquarters just as soon as you are old enough to take it."

Some Games for Out-of-Doors.

Garden Quoits.

Garden quoits should be played with wooden rings, or wire ones bound with some soft material. A peg is driven into the ground, and the players stand at a distance, each having a number of rings. They then throw in turn, and those who get the greatest number of rings over the peg win the game, and any prizes that may have been offered.

Cudgel.

Two small holes, ten feet apart, are scooped in the ground, and around each a circle about a foot wide is drawn. At these holes two batsmen stand, each armed with a short stick, one end of which is held in the hole. From a short distance away two bowlers pitch, in turn, a small piece of wood, called a cat, towards the holes. If it drops into one of the holes both batsmen are out, but if it is struck by one of them they change places as quickly as possible while the bowlers try to drop the cat into a hole before either of the batsmen can protect it by popping in his stick. If the cat is pitched by a bowler so as to fall inside the circle surrounding a hole, he picks it up and runs to a little distance with his partner.

They then decide between themselves without the batsmen knowing, which shall hold the cat, and then return to ask the batsmen to guess who holds the cat. As the question is asked they both kneel down, one opposite each hole, and the batsmen answer by simply standing together opposite the bowler they choose. If the guess is correct the game must go on as before; if wrong, the boy holding the cat at once pops into the hole by which he is kneeling, and the batsmen become bowlers.

Hop Skip and Jump.

Scratch line on the ground, and stand so that the toes just touch it. Then, lifting one foot, hop as far as possible. Follow this with a skip, and then, with both feet together, give a long jump, remaining quite still at the end of it till someone has drawn a line where the heels struck the ground. Then the next boy does his best, and the one who covers the greatest distance with his hop, skip and a jump is the winner.

Obstacle Race.

This is great fun and will show the different ways boys have of getting over difficulties. Instead of the race-course being kept quite open, obstacles are put up at different places for the runners to get over as best they can. Those who do so most quickly are likely to reach the winning-post first. For small boys these obstacles should not be too troublesome. The first might be a long hurdle for them to climb; the next, a row of bottomless canvass sacks side by side on the grass, one for each boy to crawl through, and perhaps beyond these a number of ordinary school slates pegged to the ground with pencils attached, upon which each runner must write—quite distinctly—a short sentence arranged beforehand,

adding his number instead of his name at the bottom of the slate. Other kinds of obstacles, will however, suggest themselves to those who manage the race.

Guard The Block.

In the middle of a large circle an old tin or small block of wood is placed, and the "keeper" stands over it to guard it. The rest of the players try to kick it out of the circle, and when one succeeds they all run way and hide. The keeper then replaces the block, and sets off in search; but he dare not go far in case one of the enemy should run from hiding and steal his block again. The moment he spies anyone, he calls out this name and races back to the block to touch it before the boy he has found can get there. If he succeeds in doing this the other becomes his helper, and the first keeper may more safely go on with his search; but he should not go too far, lest several of the hiders come out and attack his new partner. In that case he would have to begin all over again. Every time anyone is found the keeper must touch the block, and when more than half the players have in this way become assistant keepers, the rest must return from hiding, and a new keeper chosen.

The Leaping-Pole.

The leaping pole should be of strong wood, quite smooth, and not too heavy. The boy who uses it should not hold it too high up to begin with, and should not try to jump too far. He ought to make a short run, and taking a firm grip with both hands, putting the right a little above the head and the left about two feet lower down, plant the foot of the pole on the ground, and lift himself up as he swings over. The height and length should be increased by degrees. There is no healthier exercise than that with the leaping pole, if it is used as it should be.

Cousin Doris Letters

Dear Boys and Girls:—

I am offering a prize of a book each month to the boy who sends in the best description of a game he likes to play and also a book to the girl who sends in the best description of a game she likes to play. Let all of the cousins write and we may in this way learn many new games.

Sincerely,
Cousin Doris.

Girl's Prize Letter.

Souris, Man., Feb. 12th, 1910.

Dear Cousin Doris,—I will describe my favorite game which is "Musical Chairs." It is not a very popular game but quite amusing.

First of all a number of chairs (one less than the players) are placed in a row, every second one facing the opposite direction to the rest. The music is played and those in the game march around the chairs, keeping time to music.

Suddenly the music ceases and all make a dash for a chair and as the chairs were one less than the players, there must be someone left standing. This person must pay up a forfeit and drop out of the game for a while. Then one of the chairs is removed so that there is still one less than those marching.

The music again commences and the players once more march around chairs. Again the music stops and all strive to be seated. But as before soneone is left without a chair and will have to pay a forfeit.

This continues until all but one have dropped off the march. The last person is blindfolded and the forfeit-holder is stationed behind hm, or her as the case may be, and holds over the latter's head a forfeit saying, "Here is a thing, a very pretty thing, what shall be done to the owner of this pretty thing?" The blind-folded person then asks "Fine or superfine?" which means "does it belong to a gentleman or lady?" The forfeit holder answers, then comes the most exciting part of the game The blind-folded person tells what must be done by the owner of the forfeit, which, if he fails to do he will not recover his forfeit.

This continues until all have won their forfeits then the game is finished.

Here are a few things that may be done by the owners of the forfeits—The Learned Pig: The forfeit owner goes on all fours. Somebody volunteers to be his master and leads him around the room to show his attainments, asking him such questions as "Who is the best at making goo-goo eyes?" For answer the pig grunts at the person he thinks. The cold water cure: The forfeit owner is blind-folded, a tumbler full of cold water and a teaspoon are produced, any one of them gives him a teaspoonful of water and when he can guess who gave him the water he is free.

An amusing but hard one is to stand with hands folded and keep a serious face for five minutes To mimic somebody is another exciting part, a boy wears a girl's cap and imitiates her in boy's capsqgdonen Jasdemwf emfwym voice and manner; if a girl, she wears a boy's cap and imitates him. I remain, yours sincerely, Netta Cluman.

Boy's Prize Letter.

Sunny Side Farm,
Birtle, Man.

Dear Cousin Doris.—I am a little boy nine years old. I live on a farm. I don't go to school as we live too far away. Mamma takes the Canadian Thresherman and I like to read the children's letters. This is my first letter to your valuable paper I want to tell you my favorite game, which we call hot potatoes; we all sit in a circle, except one who stands in the centre of the circle. One in the centre throws a handkerchief to someone in the circle on the opposite side; we keep throwing the handkerchief fast from one to the other, trying all the time to keep the one in the centre from getting it, if he should get it, the one that lets him get it takes his place in centre of the circle.

Mama lets us play Lost Heir and checkers, pit and fort, in the evenings till 8 o'clock, then we go to bed.

I hope you find this letter good enough to print and perhaps win the prize. I remain, Your Loving Cousin
Willie Beard.

I think your mother is a good teacher, Willie. There are not many boys nine years old that can write as nice a letter as you have written. C. D.

Oakland, Man., Jan. 25, 1910

Dear Cousin Doris.—I would like to join your club. My brother takes the "Thresherman" and I read the letters in it. I will describe the game of Joseph and Rachel. A crowd all catch hands and stand in a circle or oval. One stands in the middle. The people start going around and when the one in the middle which is blindfolded holds out a broom and it touches one he goes out into the circle and says "Joseph" and keeps moving around in the circle. Then the blindfolded one says "Rachel" and they say it turn about. If the blindfolded one is near the other need not answer. When the other is caught he goes in place of the blindfolded one, the game goes on lipe this. Could any of the members send me the words of Kitty Wells or Errand's Lovely Home? I will close, wishing the club every success. Your truly, John Blair, jr.

Oakland, Man.

This is a very nice letter, John, you might win the prize another time. C. D.

Regina, Sask., Jan. 24, 1910

Dear Cousin Doris.—The name of the game which I will describe is "The Priest of the Parish." Any number can play it. One person stands up and is the priest. The others sit down. Then the priest names them any colors he choses. Then the priest says the following:—The priest of the parish has lost his considering cap, some say this and some say that but I say brown (he can say any color he choses) then counts up to six. If brown doesn't say "I sir" before the priest says six, he has to pay a forfeit. The priest says yes you sir Then brown says not I sir. Brown says any color or the priest. If he says the priest he has to count himself, then play etc. After it gets tiresome redeem the forfeits. Yours truly, E.S., Regina, Sask.

This is a very interesting gam E. S. but I wish I could have printed your name. C. D.

Conundrums.

What is a put up job?
The paper on the wall.

Where were the first doughnuts fried? In Greece.

When a man scalds his hand, what three authors does he mention? Dicken's Howitt, Burns.

What is the difference between a butcher and a flirt? The former kills to dress, the latter dresses to kill.

What kind of a hen lays the longest? A dead hen.

What does a stone become in water? Wet

After dark—Chasing a negro.

TILLAGE IMPLEMENTS

By Frank D. Blake

Paper read before the Third Annual Convention of The American Society of Agricultnral Engineers at Ames, Iowa.

"Tillage Implements" is a title that sounds as though it might mean something easy. An able bodied man is likely to regard the subject as harmless, but a little reflection will show that it is quite as bewildering as a lecture on phrenology.

After digging down under the surface a while you must admit that this assignment, "Tillage Implements," was meant for some man who had nothing else to do but talk; some man with a wife at home to do the chores.

"Tillage Imp'ements" is a game that cannot be played to a finish at one sitting. It is too much pabulum for one meal. You might as well try to bail out the sea with a tin dipper as to exhaust this subject in a single paper, Maybe I can scratch it deep enough to bleed before time to escape but, before trying, I am going to prune the subject to one line of implements which shall be nominated on the bill of fare today as—

PLOWS.

The plow is the most ancient of agricultural implements. Attention is called to this fact simply to show that whisky is not the only thing that improves with age. Plows are better to-day than they used to be. Perhaps Pharaoh, centuries ago, had a perfectly good plow, but the pictures of it wouldn't make a hit with many farmers now.

There is no more romance about a plow than there is about a hoe—and every man can recollect times in his boyhood days when he pleaded to go fishing; days in the spring time when the air was sweet with the perfume of flowers, and the song of birds seemed to call him to the cool shade where the waters ran still and deep. But the old man handed him a hoe and pointed to the potato patch. Was there any romance about that? Gentlemen, there is no use to disguise the truth—a plow suggests work. Work is not a romance; it is a blessed privilege which we accord the other fellow. No one can thoroughly appreciate the luxury and dignity of work but the man who is able to hire everything done.

From the day Eden's gates were closed, the ground has refused to yield up sustenance for mankind without systematic and laborious tillage. From the earliest times of which we have authentic record, the ingenuity of man has been exercised in devising implements of husbandry by which the meager and unreliable fruits of the chase could be supplemented. The first implement made was a plow and it is interesting to note that, to-day, the plow presents more difficulties of manufacture than any other implement in the agricultural line, selling price considered. Let us examine some of the difficulties attending the making of the modern plow.

Charity covers some sins but not so many as are covered by paint. Paint makes even a plow of questionable character look perfectly good. Plows for the great corn belt of the United States are made of steel. That fact is well known and the statement is not particularly significant, but just remember this one truth—not all steels are alike, either from the standpoint of larceny of metal, although whitewash and paint in both instances are great levelers, so far as general appearances go. Because paint does make all plows look much alike, it is necessary to diagram the plow situation in order to unearth the inside facts. In the old plow school days we used to diagram all the difficult sentences we were given to parse.

This same method can be used with considerable advantage in simplifying the technicalities of plow construction. The backbone of a plow is the—

BEAM

Plows. like politicians, don't always have a stiff enough backbone. Outward appearances do not suggest the possibility of much difference in plow beams. Some beams are a trifle longer than others and there is a variation in both the weight and the bend; but the vital difference, the quality that makes for strength and wear, is invisible, being the element of quality in the material out of which the beam is made.

The stiffness of beam stock is determined by the points of carbon it contains, provided the right proportion of manganese is present for each point of carbon.

For the purpose of illustration, we might call carbon the fertilizer of steel. It gives to the metal life, strength, elasticity and makes high temper a possibility. High carbon steel is more dense than soft stock, is closer and finer grained and weighs more per lineal foot.

Here is a good place to ring the alarm bell again. Don't judge the strength of a plow beam by its size. Beams of soft stock are sometimes made large in order to stiffen them. You are

not to infer, however, that all large beams are soft. But large beams from high carbon steel are usually special and found on plows made for territories where soil conditions are extremely difficult, like the heavy gumbo soils of the northwest.

It may interest you to know that a large per cent of the beams on the market do not contain above 30 to 40 points carbon, while on plows of the highest quality the beam stock has from 60 to 70 points, occasionally testing as high as 80. What is the answer?

A high carbon steel not only has great strength but elacticity as well. When the plow strikes an obstruction solid enough to spring the beam, high carbon steel will come back to place, while low carbon stock will "set." Suppose that a plow strikes a rock or stump which is so firmly embedded that it cannot readily be dislodged. Naturally the plow goes one way while the team is pulling the other, thus forcing the beam out of the line of draft and placing a twisting strain on it. If the beam is made of high carbon stock, say 60 to 70 points, it will spring back to place and no damage result, but if made from 30 to 40 point carbon stock, it will not spring back entirely to place. Very frequently the bend is quite inperceptible to the eye, but the proper landing of the beam is changed and the suck of the plow more or less destroyed. This condition may not put the plow out of commission, but it does add to the draft and interference with its general good working qualities.

Manufacturers using soft beams get hundreds of damaged plows returned for repair. Such manufacturers do not reheat sprung beams, but fit the plows with new beams, throwing the old ones in the scrap. Why? Certainly not because beams cannot be put in proper shape if once sprung. Every manufacturer of plows has facilities at hand for doing such work at trifling expense; but when a low carbon steel beam is bent the grain of the inside stock is fractured and the molecules separate. Reheating can never make such a beam as strong as it was before.

Right here is where you are likely to ask your self a question so I will beat you to it by asking the question myself. If high carbon steel beams are such an advantage, why are not all plows equipped with such beams? There are many reasons why. I can name a few and you can guess the rest.

In the first place, there is a difference in the price of the material itself, consequently high carbon beams add to the manufacturing cost of the finished plow. In these days when the price of an article is used as a selling argument, this one reason assumes importance. Second, the equipment for handling high carbon stock is much more expensive to install and maintain and the labor charge is greatly increased.

Here are a few examples as a starter.

High speed drills are necessary to make holes 60 to 70 point carbon stock. These high speed drills cost about $1.25 a lb. as against $0.15 a lb. for drills to work in the ordinary beam steel, running 30 to 40 points carbon, and all machinery used must be heavier. Again, one man can drill about 200 soft beams in a day, while 75 to 80 is a good day's work on beams running 60 to 70 points carbon, and frequently a man working on this high carbon stock will drop as low as 25 beams a day, because this high grade steel is sensitive to numerous outside influences which do not affect, in such a marked degree, the soft steel. For instance, after beams are heated and shaped they are cooled gradually and while in the cooling room, high carbon stock is affected by three things.

First—the amount of moisture in the air.

Second—by the way air currents strike them.

Third—sudden or wide fluctuations of temperature.

If beams cool too rapidly, high carbon stock gets exceedingly hard and frequently, under such conditions, one man cannot drill more than 25 in a day.

While the beam is the backbone of the plow, the heart—the most delicate and highly finished portion of the entire machine, is the—

Bottom.

High grade plow bottoms, for the central agricultural districts, are made of steel that can be divided and classified under two heads, namely, crucible and soft centre. In general, there are two distinct grades of crucible and two kinds of soft centre steel. The highest grade soft centre steel is made by taking a soft steel plate and fusing an equal thickness of crucible steel on each side of it—then this ingot or block, is rolled out to proper thickness for moldboards and shares and the three layers are of practically the same thickness,

THE FUNNY WORLD

The matter on this page lays no claim whatever to originality. The one idea is to amuse, to provoke a smile. If it fulfills this mission we shall feel amply repaid for the time and labor expended in its preparation. Have you read or heard something that has made you laugh? Has it chased dull care away for a time? Then pass it along for publication in our Funny World. Such contributions will be greatly appreciated.

"Would you like the floors in Mosaic?" asked the architect.

The Springfield man looked dubious.

"Would you like the floors in Mosaic patterns?"

"I don't know so much about that," he finally said. "I ain't got any prejudice against Moses as a man, and maybe he knew a lot about the law. As regards laying floors, though, I kinder think I'd rather have them unsectarian."

A Denver man says he was standing on the platform of a small town railroad station recently when a youth came up and began gazing at the train-report black board. On the board was written:

"All trains on time Sept. 1."

After studying the board a couple of minutes the young man turned around frowning.

"All trains on time 'cept one," he said "I'll bet that there one is the very one I come here to meet."

When the physician arrived at the designated house he found that his patient was a decrepit negro, who sat up in bed and inquired:

"How much do yo' charge, doctah?"

"Two dollars a visit, which includes my time, experience, advice and medicine."

"A poor old coon like me don't need all dem extras. Just gib me ten cents' worth o' yo' cough medicine, and dat's enough fo' me."

An asylum for the deaf and dumb, being sadly in need of funds, gave a dance. Among the many outsiders present were two good-looking men. As they were talking together, one of them suddenly exclaimed: "By Jove! there's a pretty girl. I would like to dance with her."

"Why don't you ask her?" responded his companion.

"How?"

"Why, by signs, of course."

So he crossed the hall, and, placing himself in front of the girl, pointed with his index finger to her, then to himself, and then whirled the finger round and round to indicate dancing. The girl smilingly nodded an assent.

Finding that her dancing was as perfect as her figure, he went through the same operation a little later in the evening. Again she nodded assent. As they were waiting for the music to start, another gentleman approached the girl and asked for the next dance.

"I am sorry," she replied in the sweetest of tones, nodding toward her silent partner, "but I have this dance with the dummy."

A near-sighted Methodist preacher was holding a revival in the mountains of North Carolina. A moonshiner, a tall, lanky specimen with large bare feet, approached the mourner's bench and knelt down in prayer. "My brother," said the preacher, "I am so glad you have come to give your heart to God," and then seeing the man's feet behind him, he added, "and that you have brought your two little boys with you."

During the progress of a big "protracted meeting," for which the South is famous, an ardent sister of the church, who usually came in an old-fashioned buckboard drawn by the family horse, was late for a particularly important service, and was being severely censured by the pastor.

Explaining the reason for being late, the good sister said that the horse had taken fright at a passing train and bolted, and that the wreck of the rig had prevented her from being on time.

"My dear sister, such little things should not make you late for divine services. You should trust in the Lord."

"Well, brother," she replied, and there was a look of calm peacefulness on her face, "I did trust in the Lord till the belly-band busted, and then I had to jump."

A Western Pennsylvania tax collector, though afflicted with stuttering, is an old gentleman of uniformly good temper, which apparently no combination of circumstances can ruffle. One morning he was asked into the "settin'-room" by the lady answering his knock, and was immediately beset by a barking dog.

"Don't mind Tip," said the lady, "he's only fooling—he won't bite you."

"He w-w-wo-won't, w-w-wo-won't he," said the old gentleman triumphantly, "h-h-he's b-b-bi-biting me n-now."

On a voyage across the ocean an Irishman died and was about to be buried at sea. His friend Mike was the chief mourner at the burial service, at the conclusion of which those in charge wrapped the body in canvas preparatory to dropping it overboard. It is customary to place a heavy shot with a body to insure its immediate sinking, but in this instance, nothing else being available, a large lump of coal was substituted. Mike's cup of sorrow overflowed at this, and he tearfully exclaimed, "Oh, Pat, I knew you'd never get to heaven, but, begorry, I didn't think you'd have to furnish your own fuel."

Josh—"Hezekiah, what in ther thunderation are ye plowin' in ther middle o' ther winter fer?"

Hezekiah—"Can't fool me two seasons hand-runnin', Josh. I reccomember how dry it was last summer, so I'm plowin' this snow inter ther ground afore it melts."

Physician—"Have you any aches or pains this morning?"

Patient—"Yes, doctor; it hurts me to breathe—in fact, the only trouble now seems to be with my breath."

Physician—"All right. I'll give you something that will soon stop that."

"John, I believe the new girl has stolen the whisk-broom; I left it on the dining-room table last night."

"I guess the joke's on me, Mary; it was not quite light when I got up this morning and I thought you had left a shredded-wheat biscuit out for my breakfast."

A little boy was given too much underdone pie for his supper and was soon roaring lustily.

His mother's visitor was visibly disturbed.

"If he was my cihld," she said, "he'd get a good, sound spanking."

"He deserves it," the mother admitted, "but I don't believe in spanking him on a full stomach."

"Neither do I," said the visitor, "but I'd turn him over."

In Western Kansas a teacher in a primary grade was instructing her class in the composition of sentences. After a talk of several minutes she wrote two sentences on the blackboard, one syntactically wrong and the other a misstatement of fact. The sentences were: "The hen has three legs" and "Who done it?"

"Willie," said the teacher to one of the youngsters, "go to the board and show where the fauld lies in those two sentences."

Willie slowly approached the board, evidently studying hard on the tangle. Then to his teacher's consternation he took the crayon and wrote: "The hen never done it. God done it."

A traveller in the dining car of a railroad had ordered fried eggs for breakfast.

"Can't give yo' fried aigs, boss," the negro waiter informed him, "lessen yo' want to wait till we stops."

"Why, how is that?"

"Well, de cook, he says de road's so rough dat ebery time he tries to fry aigs dey scramble."

Two young ladies boarded a crowded street car on Monroe Street and were obliged to stand. One of them, to steady herself, took hold of what she supposed was her friend's hand. They had stood thus for some time when, on looking down, she discovered that she was holding a man's hand. Greatly embarrassed, she exclaimed:

"Oh! I've got the wrong hand!"

Whereupon the man, with a smile, stretched forth his other hand, saying: "Here is the other one, madam."

Judge—"You are a freeholder?"

Talesman—"Yes, sir, I am."

"Married or single?"

"Married three years last June."

"Have you formed or expressed any opinion?"

"Not for three years, your honor."

the soft layer inside and the two layers of hard, crucible steel on the outside. This process gives a uniform thickness of hard wearing surface, which takes a high temper evenly and perfectly, and the soft centre gives toughness and enough elacticity to prevent breaking like glass. It is well to note that the crucible steel used on the outside of this grade of soft centre is a very refined product and differs materially in quality from the open hearth stock used to produce the other grade of soft centre steel, as will be explained.

The other method is to take a soft, open hearth steel and carbonize it on the outside. This process can be likened to dipping a piece of bread in molasses. The soft, open hearth plate is virtually soaked in carbon so the outside portions will take a high temper, leaving the inside portion soft, and very low in carbon. Two defects in this process will suggest themselves to you. First, the quality of stock used as the foundation. Open hearth steel used in this process is not so refined as crucible, but contains many of the impurities of the ore from which it is made. The plate cannot always be carbonized to uniform depth, hence the hard wearing surface is not even and reliable.

The highest grade plow bottoms are made from the soft centre steel last described. The outside plates are uniform in thickness, fine in texture, and so hard they will take the highest polish, enabling the plow to scour in difficult soils and under varying conditions which are encountered during the season in the great corn and wheat belt. Briefly, this describes something of the form and make-up of the back-bone and the heart of a plow.

Now consider the share, without which the best plow would be useless. They say a stream cannot rise higher than its source. It is hard to understand how a plow is really much better from a working standpoint, than the—

SHARE.

The share is a vital part of a plow, although frequently very little attention is given this important member. The country is flooded with cheap, spurious shares. There are several institutions manufacturing shares and selling them for use on good plows of standard make. These spurious shares usually are branded or stenciled with the name of the plow on which they are to be used, or with the name of the manufacturer of the plow. The farmer buys such shares thinking they are genuine and made by the same manufacturer whose name is on his favorite plow.

It is not desirable to describe in detail how each manufacturer makes shares for his plows, but here are a few things you can take for granted. Spurious shares are made to sell for a less price than the genuine and are from light stock, inferior in quality, workmanship and finish. They are rarely upset and thickened at places of greatest wear and they do not have an extra layer of hardened steel at the point and shin. They are not of uniform temper or size and will not fit or wear well. Generally, the landside is made of iron in place of steel, and is not inseparably attached to the share. Actual tests have shown that frequently a blow of only 215 pounds would separate the landside from a bogus share, while it took repeated blows of 504 pounds to injure the lap weld on the highest grade shares.

We have had a glance at the backbone, the heart and the teeth of a plow. In every truth, "beauty is only skin deep." Let us raise the curtain on the next act noticing some of the corns, carbuncles and imperfections of the body or—

FRAME.

It would astonish you to know how many frames on Sulky and Gang plows are made from soft steel stock, running as low as 10 to 12 points carbon. There is a better or medium grade of plows having frames made of 30 to 40 points carbon stock, while the strictly high grade frames run from 50 to 60 points carbon.

All that has been said about beam stock applies with almost equal force to frames. Soft frames, under hard usage, are likely to spring and "set." The defect may not be detected for some time, but the nice running qualities of the plow are much impaired.

Frames of high carbon steel like the best plow beams, will spring back to shape when forced out of line under heavy strain. They have the strength and elacticity, not only to give proper service in the matter of wear, but they are stiff enough to maintain all the adjustments of the plows themselves.

The importance of a frame stiff enough to maintain all adjustments of the plow can be impressed on the mind. Just try to do a good job of whittling with a knife blade loose in the handle.

In the human body the parts most subject to rheumatism are the joints. On a plow, look well to the—

CASTINGS.

When breakage occurs on a plow, it is nearly always a casting and not a steel part. This is especially true where gray iron castings are used to any extent in plow construction. The best plows, to-day, are practically without gray iron in their make

up. They are all steel and malleable.

Even malleable iron—good and tough as it is—has many weaknesses not common to steel. These weaknesses are due largely to lack of uniformity in quality and to the difficulties of manufacture. Malleable iron, to be of the best quality, must be designed so that all its parts are of uniform thickness. If one part is materially heavier than the rest, there is likely to be cracks and holes on the inside of the thickened portions, and these defects are not always visible to the eye, as the outside of the casting will anneal and appear perfect. Owing to these invisible defects and the fact that even the best malleable is not so uniform in quality and strength as high grade steel, the tendency of manufacturers to-day is to build as near as possible an—

ALL STEEL PLOW.

At first thought this proposition seems as simple as it is natural. The reverse, however, is true, Steel parts present manufacturing problems which the uninitiated never imagine.

Castings are a foundry proposition and when patterns are once made, they are a mere matter of tonnage so much per pound; but every bend, twist, turn or hole in a steel part means special machinery and men to operate the same. Castings require nothing but molds. Steel parts require drops, punches, drills, bul'dosers, jigs, templates and special machinery. Every process must be superintended by an operative. All these things add materially to the expense of equipment and to overhead charges and explain why the process of eliminating malleable and castings in plow making is not more rapid.

Now we are rid of a big mass of dry fodder, let's do—

A SPECTACULAR STUNT.

The modern frame, foot lift sulky plow with share is composed of 525 pieces that require 2800 separate distinct operations in the making and assembling. These parts pass through the hands of 600 different men. How's that for a curtain raiser? All this handling by such an army of such high priced labor, and the equipment necessary to produce 2800 operations to form these 525 parts, adds less than 2 cents a pound to the raw material. In other words, the retail price of the finished product only averages about 2 cents a pound more than the manufacturer pays for the raw material out of which the implement is made. And yet people want—

CHEAPER IMPLEMENTS.

Listen to this: During the past five years the advance in

price of raw material has been rapid and constant; still, the selling price of implements has remained about the same. The increased cost of material and labor has been absorbed by the manufacturer. High speed, labor saving machines and improved methods of manufacture, increasing the output with the same overhead expense, have made this possible. But, in assuming these burdens, there is a line which beyond the manufacturer cannot go without cheapening the quality of his goods, and right here is a problem for—

AGRICULTURAL ENGINEERS.

You gentlemen are also skilled in farm mechanics. You have opportunities for study, comparison and observation which are denied the farmer. You know that the skill of the workman can be judged quite accurately by the tools he uses—and that the profits in agriculture during all the history of the world, have borne a close relation to the improvement in tillage implements.

Your skill and co-operation counts for much in advancing the material interests of farmers the best mechanical equipment throught the intelligent use of the market affords.

Agricultural Colleges, Experiment Stations and Agricultural Engineers are doing a great work. Their practical demonstrations have shown the commercial value of drainage, properly constructed buildings, rotation of crops and scientific methods of conserving and even restoring the fertility of farm lands.

For this labor every intelligent man should be profoundly grateful, but we look to you for another service. Help us to teach the importance of still better tillage implements to the end that the fruits of man's labor on the farm may be doubled.

We are pleased to announce that the Parsons Band Cutter and Self Feeder Company and the Parsons Hawkeye Manufacturing Company of Newton, Iowa, have been succeeded by the Maytag Company.

The officers of the new concern are F. L. Maytag, president; T. G. Bryant, vice-uresident; T. A. Moler, secretary; E. H. Maytag, treasurer and general manager. None of these gentlemen need any introduction in the manufacturing field, where by their energetic efforts they have had unqualified success

The company is capitalized for one million dollars, seven hundred fifty thousand being common stock and two hundred fifty thousand six per cent preferred.

Besides manufacturing self feeders they will handle corn and hay handling machinery extensively.

The Winnipeg Motor Contest, 1910

The Winnipeg Motor Contest for 1910 promises to be by all odds much larger than any that have been held previously. It is an old law that everything improves with age, and this, of course holds good as regards Motor Contests as well as anything else.

M. J. RODNEY
President, Winnipeg Wholesale Implement Association, 1910

The rules have been changed somewhat for 1910, although the general policy is largely the same. It has been suggested that on the Board of Judges, especially when it comes to the plowing test, that some of the Western farmers, who have had experience along this line be secured as judges. This we believe would be a very good proposition providing farmers could be secured who have had sufficient experience along the line of traction cultivation.

Rumor has it that the Contest this year will be held under the auspices of the American Society of Agricultural Engineers, but insofar as we know, it is only rumor heralded by those who have nothing more to do than talk.

On the matter of Motor Contests, we have as yet to hear from many farmers in Western Canada regarding them. We do not know whether the farmers consider them merely as an advertisement, or as a good thing to demonstrate just what the traction engine will do. We should like to hear from a number of farmers along this line, for when you get right down to brass tacks they are the ones that are really interested.

The Contest this year promises to be a great deal more of a contest than any that has been held herctofore, particularly so when it comes to the plowing fete. We give below the rules and regulations as they have finally been decided upon.

The following rules and conditions will be strictly adhered to.

1. The entries shall be classified as follows by the judges:—

(a) Internal Combustion Engines 20 brake h.p. and under.

(b) Internal Combustion Engines 21 to 30 brake h.p.

(c) Internal Combustion Engines 30 brake h.p.

J. M. REID
1st Vice President, Winnipeg Wholesale Implement Association, 1910

(d) Steam engines 45 brake h. p. and under.

(e) Steam engines 60 brake h. p. and under.

(f) Steam engines over 60 brake h.p.

Prizes shall consist of
First Prize—Gold Medal
Second Prize—Silver Medal
Third Prize—Bronze Medal

2. All entries must be made on or before June 1st, 1910. Entries must be made on the attached form with all the data filled in accurately, and must be accompanied by entry fee of $25.00 for each engine entered. Only one engine allowed in each class by each contestant.

3. The fuel used during any test shall be that supplied by the Exhibition Association, and will be of uniform grade for all contestants. The cost of fuel, will however, be given carful consideration in judging the economy of the various engines in the contest.

4. Each competitor must have sufficient staff for the care of and running of his motor.

5. All motors entered for competition must be on the grounds not later than July 11th, 1910.

6. Each motor will be allotted an official number, which shall be displayed during the competition.

7. Each motor shall be allotted a certain space on the grounds where the motor shall be exhibited at all times, except when being tested. Only those motors taking part in the tests will be allowed on this space.

8. The tests will comprise brake test, plowing test, and such other tests as the judges deem essential.

9. The ploughs, belts, chains, water tanks and such other things as may be required during the test must be supplied by the contestants.

10. The judges may test the engines in any order that may seem to them desirable. The contestant will be given one hour's notice when to be ready for test.

R. J. McKENZIE
2nd Vice-President, Winnipeg Wholesale Implement Association, 1910

11. Each contestant must supply a recording dynamometer and sufficint charts for two hours' reading for all the tests of his engine.

The following are points upon which the awards will be made. (May be changed at discretion of Judges.)

Brake Test	150.
Hauling Test	100.
Ploughing Test	200.
Design and Construction	50.
	500.

Goold, Shapley and Muir open Winnipeg Branch

Goold, Shapley and Muir, of Brantford, Ont., have opened up a Western branch with Mr. D. J. Taylor, who for some time has been manager of the Cockshutt Plow Co. at Regina, in charge.

Mr. Taylor has been connected with the Cockshutt Plow Co. since 1893 and since 1906 has been manager of their Regina branch. He has been in the implement business since 1886 when he joined the staff of David Maxwell & Co. In 1890 he joined the Patterson Bros. Co., as general agent, remaining in their employ until he secured a position with the Cockshutt Co. with whom he has since remained.

The products of Goold, Shapley and Muir has heretofore been largely handled by the Cockshutt Plow Co. in the West, but from now on the Company will handle their own business. They manufacture a line of gasoline engines, stationary, portable and traction, and also a well-known line of windmills.

Ontario Wind Engine and Pump Co. open Branch at Calgary.

The Ontario Wind Engine and Pump Co. have recently established a branch at Calgary and have placed Mr. L. P. Winslow in charge.

T. W. LEARIE
Secretary Treasurer, Winnipeg Wholesale Implement Association, 1910

In December, 1891, Mr. Winslow accepted an opportunity to enter the employ of the United States Wind Engine and Pump Co., of Batavia, Ill., which is one of the largest of its kind in the United States.

Mr. Winslow's success in this line of business is evidenced by his rapid advancement in the sales department and in 1895 he was placed in charge of both foreign and Western sales departments of the above concern. He became master of the business, becoming thoroughly familiar with every detail, both in the shop and in the office.

In 1905 Mr. Winslow decided to accept a position as sales manager of the Ontario Wind Engine and Pump Co. at Toronto. The growth of this Company's business in the Northwest led them to send him to Alberta in the fall of 1909 in order to further extend their trade in that province and British Columbia.

With the idea of securing a more permanent foot-hold in the province of Alberta, Mr. S. H. Chapman, President of the Company, visited the company about December first and purchased a large site on Eleventh Avenue, where an extensive story and basement warehouse will be erected during the summer of 1910. In the mean time the Company have leased the warehouse formerly occupied by the Frost and Wood Co. where a full stock of goods will be carried.

Since coming to Calgary last September Mr. Winslow has thoroughly covered the province and with his ability to judge things as they are, he has every confidence of large increase of trade will be the result. Mr. Winslow has moved his family to Calgary and intends making that city his permanent home.

The Schcie Extension Rim.

A notable improvement in extension rims for traction engines

J. H. TURNBULL
Representing Tarbet Station, Winnipeg Wholesale Implement Association, 1910.

has recently been invented and patented by Thorger Scheie, a Scandanavian American, who resides in the vicinity of Langenburg, Sask.

That is an old true saying "Necessity is the mother of invention,' 'which has again been proved by the invention of the extension rim.

The inventor has one of the early models 14 h.p. Case engine. He wished to do spring plowing and having a great deal of experience with traction engines and knowing well the difficulties to be overcome to enable an engine to be used for spring plowing and to go through mud holes, conceived the idea of attaching a rim of considerable lesser diameter than the drive wheel to the outside of said drive wheel by means of four groutes. He built the contrivance with 2 x 4 pine scantlings, when finished his extension looked like a minature well cribbing, as, thinking it would require a very wide rim he had it protruding 3 feet. After bolting and bracing his contrivance firmly he steamed up his engine and struck for a nearby slough. Imagine his surprise and delight when the engine went through the slough, in which there was quite a foot of water and a bottom out of which the frost had just gone, without any difficulty. He then attached a three furrow Emerson Gang and found he could go through any mud hole or soft ground and take his ploughs with him. He found that even in the softest mud hole his engine did not settle to the

I. J. HAUG
Representing Thresher Section, Winnipeg Wholesale Implement Association, 1910

attached rim, the grouters alone supporting her and lifting her up at every turn of the drive wheel. He then cut his three foot rim down to two feet and found his engine was held up equally well and a purchase secured which he little dreamed of.

All the summer of 1909 he has been using the engine with the attached rims, backing into sloughs to take water, going through old rotten manure piles and even threshing with his engine sitting in a mud hole which she easily lifted herself out when he started her up.

The principal of the Scheie Rim is entirely different from those heretofore in use. The Scheie Rim does not come into action until needed, as the drive wheel has to settle the thickness of its rim before the grouter touches the ground. Then as the engine settles the grouters take greater hold, and being far apart no difficulty is experienced by clogging. With these rims a drive wheel of greater width than fourteen to eighteen inches is not needed, as on hard ground width is not necessary, and on soft ground the rim comes into action.

Annual Meeting of Winnipeg Wholesale Implement Association

The Annual Meeting of the Winnipeg Wholesale Implement Association was held at the

MR. D. J. TAYLOR
Manager Western Branch, Gould, Shapley and Muir.

Angelus Cafe February 11, 1910. After partaking of a very excellent dinner, which renditions by the orchestra made all the more palatable, a business meeting was held at which the following officers were elected.

President—M. J. Rodney, Manager International Harvester Co; 1st Vice President—J. M. Reid, Manager Ontario Wind Engine & Pump Co; 2nd Vice President—R. J. McKenzie, Manager McLaughlin Carriage Co; Secy-Treas—Thomas Learie.

Representatives from the Thresher Section—Mr. I. J. Haug, Manager Haug Bros. and Nellermoe, and Mr. J. H. Turnbull Assistant Manager Sawyer and Massey Co.

Representatives from the Carriage Section—E. A. Mott Manager Cockshutt Plow Co. and I. C. Nelson of Stewart Nelson Co., Ltd.

Representatives from the Implement Section—C. H. Whitaker, Manager Massey-Harris Co. Ltd and H. W. Hutchinson, Manager John Deere Plow Co. Ltd.

A very satisfactory year was reported in 1909 and all appeared very optimistic for the prospects of the Association in 1910.

Mr. A. R. Woodmansee, of Woonsocket, N.D. is at present in

MR. L. P. WINSLOW
Manager Calgary Branch, Ontario Wind Engine and Pump Co.

Winnipeg with the American Abell Engine and Thresher Co. manufacturing a mechanical stoker for straw burning engines. This is a most up to date and complete article and should prove of inestimable benefit and helpfulness to those who operate straw burning engines. Anyone interested can see a sample on exhibition at the ware rooms of the American Abell Engine and Thresher Co., Winnipeg.

Mr. E. A. Mott, Manager Cockshutt Plow Co., has just returned from a trip south.

Mr. H. W. Hutchinson, of the John Deere Plow Co., is at present on a somewhat extended trip to Long Beach, Florida.

Mr. E. C. Stinson, Manager American Abell Engine & Thresher Co., Winnepeg, has just returned from a flying trip to Minneapolis.

Course in Gas Engineering

Continued from page 47

2. Uncertainty of the moment of ignition on account of variable compression.

3. Blowing by or leakage at the piston rings, and consequent reduction in the amount of compression.

4. Short life and consequent annoyance in replacing worn out or broken tubes.

5. The uncertainty of timing the ignition and the bother of starting the engine on account of having to heat the tube.

Prof. Hutton in his book on "The Gas Engine" places himself on record with regard to the hot tube as follows:—

"The time of ignition with the hot tube will depend upon:—

"1. The length of the tube.

"2. The size or volume of the passage leading to the tube.

"3. The amount or degree of compression of the mixture by the piston.

"4. The temperature of the tube; the hotter the tube the earlier the ignition, the cooler the tube the later.

"5. The fact whether it was hotter near the open or the closed end; if heated near the open end the earlier the ignition.

"6. The temperature of the mixing and ignition chambers.

"7. The temperature of the jacket water outlet.

"8. The speed of the engine.

"9. The quality of the fuel and air admitted.

"10. The pressure of the intake or suction stroke.

"11. The governing action and the system of governing.

"12. Leakage: at piston, at exhaust, past valves.

"13. The state of the surfaces of the tube outside and in.

"14. The location of the tube with respect to receiving and acting on new or fresh mixtures, or mixtures containing burnt gases."

Ignition by contact with a hot surface in the combustion chamber is illustrated in figure 3. This set of diagrams shows the series of operations which was placed in the Hornsby-Akroyd oil engine. Before starting the engine chamber C is brought to a temperature to that of very nearly red heat and this temperature is afterwards maintained by the combustion within the cylinder. During the suction stroke of the engine a jet if forced into C by means of a pump and striking the hot surface of the chamber, it is transformed into vapor. The cylinder of the engine, when the piston is at the end of the suction stroke, contains pure air while the chamber C is filled with oil vapor and the products of combustion left from the last cycle.

In the figure the oil is represented by small circles and the air

by crosses while the products of combustion are shown by small squares.

In diagram D the piston has compressed the air, driving it into C and as soon as the contents of the chamber is of an explosive nature, it takes fire from the heated surface of C. In diagram D the piston is started on the forward stroke, expanding the products of combustion.

Another plan of ignition with a highly heated surface is to drive the charge through a grate built of thin strips of platinum. The grate is brought to the proper temperature by means of an exterior flame before the engine is started and thereafter the grate recieves sufficient heat from the burning gases to ignite the following charge.

This method is useless in hit-and-miss types of engines because a few idle strokes will allow the grate to cool below the temperature that is necessary for that of ignition. Thin rods and even small bolts have been employed in much the same manner as the platinum grate.

This, we believe, covers in a general way the various devices that have been used for the ignition of the charge within the cylinder by contact with a heated surface. Next month we shall take up Method No. 3, viz. by the spark of an electric charge. This is most important and most widely used of all the various methods and is withal the most successful.

Wanted it Settled.

The undertaker who relates the following incident is in position to sympathize with the doctor who is needlessly called out on a long night ride.

I was called up on the farmer's telephone line one night and a voice said:

"Mr. Day, can you come up to Silas Brown's house right away?" Before I could express the customary condolence the phone was hung up. It was an eight-mile drive to Si's house. I put my outfit in my wagon and put my horse into a jog trot.

When I got there I found the house all lit up. Silas and half a dozen neighbors were sitting in front of a big, open fireplace cracking nuts and drinking cider.

"Who has passed away?" I asked.

"Nobody. Whole durn family lively as crickets," said Si. "But we've been argyin'. Jim Blount says you mix your embalming fluid yourself and I say you buy it ready made. We want you to settle it. Jim can't hear over the telephone and he wouldn't take my word if I talked to you."

ABOUT OURSELVES

IN these columns from month to month we shall attempt to give to our Readers a brief digest of what we consider the strongest features of the issue in question, notices of New Departments, etc., etc. In short it will be a handy place to turn to when you wish to know what you may expect from future numbers of "THE CANADIAN THRESHERMAN AND FARMER.

THE farmers and threshermen of Western Canada will find in every Post Office and in practically every implement shop a hanger describing our Guessing Contest.

We have gone to considerable pains during the past four or five months to tell the agricultural reading public of Canada West about our magazine, and the number we have convinced that they had something that we wanted is indeed gratifying to us. Thousands of new names have been added to our subscription list and the number who have sent in their subscriptions for two, three, five and ten years has convinced us that we have something they want, that the Canadian Thresherman and Farmer is a publication that is meeting with general approval and appreciation. However, we are not satisfied. We would like to have every farmer in Western Canada who is not a reader of our publication at the present time give his post master or implement dealer the opportunity of sending in his subscription. He has the subscription blanks and if there is anything you want to know about our publication, he stands ready to tell you.

Give us ten thousand new subscribers and we will give you a hundred page paper every month in the year. Just think of it twelve hundred pages for $1.00. It barely covers the cost of the paper that it is printed on. Do not neglect this matter, but get in line before the rush of spring work.

* * * * *

We would like to have everyone of our readers examine this issue very carefully. It contains some very good things on traction cultivation. It contains really more information on this live, up to date topic than any issue of any publication that was ever gotten out before. You as farmers in Western Canada are sooner or later going to wake up to the fact that you must use mechanical power upon your farm for the purpose of cultivating the soil and it is just such magazines as the one you are now reading that will give you some idea of what is being provided for you. You may not be interested in this particular topic at the present time, but you will be sooner or later, and a careful reading of this magazine will help you greatly to get into line.

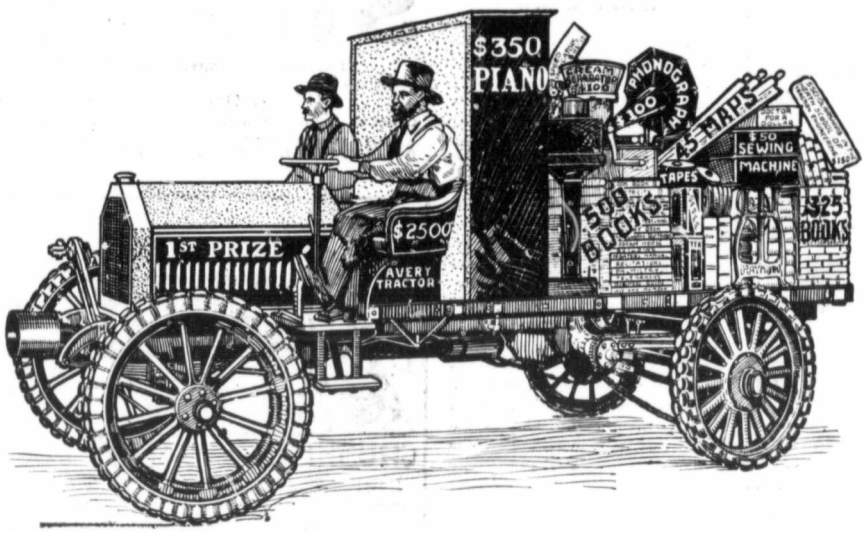
* * * * *

We want more experiences from actual farmers. We want to get into closer touch with you. We want you to feel that you have a vital interest in this publication. We want you to give us a good article on some phase of your farm experience and then watch closely for the issue in which it is published. We will pay you well for your trouble, giving you your choice of anyone of the books listed below for every article that we can use. We would like to have every farmer get the entire library. Just state the facts regarding some phase of your farm work that has interested you. We will leave the choice of a subject to you.

* * * * *

1. Standard Cyclopedia of Receipts.—By Chas W Dana.
2. McClur's American Horse, Cattle and Sheep Doctor.—By Robt. McClure, W.M.V.S.
3. Practical Telephone Hand Book and Guide to Telephone Exchange.—By I. S. Baldwin, M.E.
4. Steam Boilers, Their Construction, Care and Operation.—By C. F. Swingle, M.E.
5. The Calculation of Horse Power Made Easy.—By L. Elliot Brookes.
6. Cyclopedia of Painting.—By George D. Armstrong.
7. Correct Horseshoeing.—By J. W. Holmstram.
8. Hodgson's Low Cost Homes.—By Fred T. Hodgson.
9. Concretes, Cements, Mortars, Plasters and Stuccos.—By Fred T. Hodgson.
10. The Practical Gas and Oil Engine, Hand Book.—By L. Elliot Brookes.
11. Elementary Chemistry Self Taught.—By H. E. Roscoe.
12. Boat Building for Amateurs.—By Adrian Nelson, C.E.
13. Book-Keeping Self Taught.—By Philip C. Goodwin.
14. Felt's Parliamentary Proceedure.—By Orson B Felt.
15. Guide to Successful Auctioneering.—By Charles T Johnson.
16. Standard Perfection Poultry Book.—By C. C. Shoemaker.
17. Photography Self Taught.—By T. S. Baldwin.
18. Hodgson's Modern House Building.—By Fred T. Hodgson.
19. Irish Wit and Humor—Compiled from various sources.
20. Conundrums and Riddles—Collected and Arranged by John Roy.
21. Chas. K. Harris Complete Songster.
22. Book of Card Tricks.—By A. Reterbury.
23. Painters and Paper Hangers Manual.—By A. L. McLuse.
24. Bryants Commercial Business Guide or How to Do Business.—By C. M. Bryant, P.H.D.
25. How to make $500 yearly profit with 12 hens.—By A. Corgett.
26. Gleason's Horse Training Made Easy.—By O. H. Gleason V.S.
27. Telegraphy and How to Learn it.
28. A.B.C. Guide to Music.—By Joseph Booth.
29. Twentieth Century Cook Book.

Other Titles will be added from time to time.



$4572.50 FREE $4572.50

TWO THOUSAND PRIZES

To those guessing nearest to the number of kernels in 8 lbs. 8 and $\frac{7}{16}$ oz. of No. 2 Northern Wheat

Read this carefully

To put in an estimate on this Big Wheat Guessing Contest, all you have to do is to subscribe for "The Canadian Thresherman and Farmer." The subscription price is $1.00 a year.

Ending May 31st, 1910, "The Canadian Thresherman and Farmer" will carry on a Guessing Contest open to everyone in Canada, except residents of Winnipeg. 8 lbs. 8 and seven-sixteenths ounces of No. 2 Northern Wheat have been obtained, placed in a vessel and sealed up, to remain there until the Contest closes, when it will be taken out and counted by a Board of three judges, none of whom are in any way connected with "The Canadian Thresherman and Farmer." Everybody who sends in a year's subscription to "The Canadian Thresherman and Farmer," either new or renewal, is entitled to a guess.

The bottle was taken to the Dominion Weights and Measures Department at Winnipeg, was filled right to the top with No. 2 Northern Wheat and was found to contain exactly 8 lbs. 8 and seven-sixteenths ounces of wheat. It was then sealed right there in the presence of two witnesses. It was photographed and taken to the National Trust Company, and will remain in their vaults until the Contest closes May 31st.

257,885 was the number of kernels counted in 15 lbs. of No. 1 Northern Wheat in our Contest which ended July first last. 82,495 was the number of kernels counted in 5 lbs of No. 1 Northern Wheat in the Nor' West Farmer Contest closed recently. 869,762 as the number of kernels counted in a bushel of wheat in 1905 in a Wheat Guessing Contest in the United States. With these facts to work from you should have no difficulty in arriving at an estimate that will win a prize; or better still, obtain a few ounces of No. 2 Northern Wheat and count them and form an estimate from that.

Guess early and increase your chance of winning one of these valuable prizes, for you will understand, it is the first ones who guess nearest that get the prizes. Remember, you may win a prize for every estimate you send in. Ask us to send you sample copies and extra subscription blanks to assist you in forming a club.

You May Get More Estimates Thus:

2 years' subscription and			$2 gives you	3	estimates
3	"	"	"	$3	"	"	5	"
4	"	"	"	$4	"	"	7	"
5	"	"	"	$5	"	"	9	"
6	"	"	"	$6	"	"	11	"
7	"	"	"	$7	"	"	13	"
8	"	"	"	$8	"	"	15	"
9	"	"	"	$9	"	"	17	"
10	"	"	"	$10	"	"	20	"

Or, Better Still, Get your Neighbours to

Club with you, the subscriptions to cover one year. These subscriptions and estimates must be received in one envelope, so that we may credit them properly.

5 persons sending			$5 get	10	estimates and each have
6	"	"	$6	"	12	"	"	1 year's subs.
7	"	"	$7	"	14	"	"	"
8	"	"	$8	"	16	"	"	"
9	"	"	$9	"	18	"	"	"
10	"	"	$10	"	30	"	"	"

In Sending Subscriptions mail direct to E. H. HEATH Co., LTD., Winnipeg, Canada. Cut out the accompanying subscription blank, fill in the name, address and send in with the necessary amount to cover the number of years subscribed for. Send money by registered letter, express money order or postal money order. All checks must include exchange. In sending in a number of names write the additional names and addresses plainly on a separate sheet of paper.

List of Prizes

1st	—Avery Farm Tractor	$2500.00
2nd	—Mendelssohn Piano	350.00
3rd	—Edison Triumph Phonograph with repeating attachment and complete with 75 records	100.00
4th	—Magnet Cream Separator	100.00
5th	—Raymond Sewing Machine	50.00
6-10	—Scholarships in The Heath School of Traction Engineering (by correspondence), $30.00	150.00
11-55	—Large Colored School Wall Map of Dominion of Canada, and Map of World on reverse side, $5.00	225.00
56-130	—Tabor Stop Motion Speed Indicators, $1.50	112.50
131-175	—Doctor for a Dollar Pocket Medicine Cases, $1.00	45.00
176-500	—Your choice of a number of Books, each worth $1.00	325.50
501-900	—25 ft. Linenol Measuring Tapes, metal case, brass barrel .50	200.00
901-1400	—Your choice of a number of Books, each worth .50	250.00
1401-1500	—Your choice of one pound Gold Standard Tea or Coffee, .40	40.00
1501-2000	—Farmer's Rapid Calculator and Veterinary Handbook, .25	125.00
2000	—Total prize distribution	$4572.50

E. H. Heath Co. Ltd.

SUBSCRIPTION BLANK. C.T.

E. H. HEATH COMPANY LTD.
WINNIPEG, CANADA

Date .....

Gentlemen — Please find enclosed ..... *for* ..... *years' subscription to "The Canadian Thresherman and Farmer" to be sent to*

.....

.....

Subscription sent in by ..... *Address* .....

My estimate as to the number of kernels in 8 lbs. 8 $\frac{7}{16}$ oz. of No. 2 Northern Wheat is

1..... 2..... 3..... 4..... 5.....

Winnipeg Canada

Tractioning the Soil

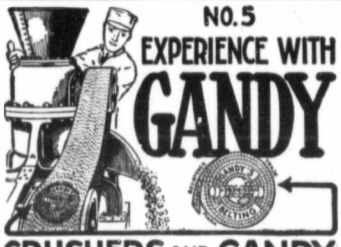
Continued from page 11

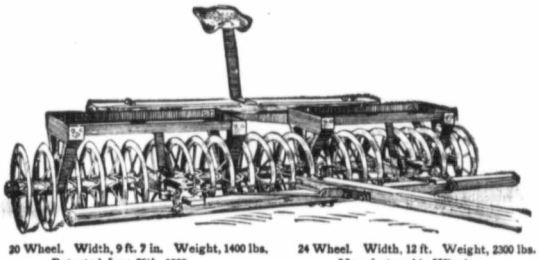
warrants. In this connection one writer says, "The beauty of an engine is that one can plow, disc and harrow all at once. In this way the ground is pulverized thoroughly when it is fresh turned. In this way the ground does not clod up. If you are doing spring plowing when the ground is especially apt to clod up, it is much nicer to plow, disc and harrow a good wide strip all at once when your power is on the uniform footing of unplowed ground than it is to plow from three to five acres a day with your gang plows, then make your horses plod over that soft ground to disc, then plod over it a second time to harrow it. This is the work that kills horses. In the spring they are soft and tender and short winded. To make them do the very heaviest and hardest work on the farm when they are in the poorest condition is little short of absolute cruelty.

But there is still another side to this point. You are putting in spring grain. If you are a good farmer you want to disc your ground at least once before you seed it, whether with a drill or with a broadcast seeder. If you are using horses you go out and disc that ground as soon as you can. Very often that spell of good weather lasts just long enough for you to get your discing done, then comes a bad spell for a week or so. Your ground is ready but your seed is still in the bins. If it were in the ground it would be growing just as those weeds are, or faster. Had you had an engine you could have seeded at the same time you were discing. When that bad spell came you would have had every acre seeded that was disced and your seed would be in the ground doing business instead of in the bins doing nothing.

Being able to do it in this way will add five or ten bushels an acre to your crop, and having it in early will let you harvest it before the frost or rust gets hold of it. Even more, it often means getting in a crop or not getting it in. Remember last spring and tell yourself whether this is not true. Many small grain fields were unseeded because they were not seeded before that rainy, snowy spell came. What is more, you cannot only do the work when it will do the most good to do it, but you can do it in the shortest time with the least help; or putting it in another way, you can do more of it in the same time with less help.

When the first good weather comes in the spring you can go out and work day and night. You can get in at least twenty hours a day in the fields without stopping even a half hour or hour to





rest horses. This one thing alone will oftentimes save a crop. The man who is depending on horses must have a double supply to work day and night so that he may work double shifts. A 25 h.p. engine is really equal to 50 horses, and right here we can consider the matter of cost. Where can you get fifty big, strong, young, work horses with the necessary equipment to go with them for from Three to Four thousand Dollars? Certainly not in the Canadian Northwest, and, again, the cost of doctoring and shoeing these horses and repairing their harness will far more than pay for the repairs of that engine for the same length of time."

Another writer along this line says, "With the opening of all the huge wheat fields in the Northwest, the new settlers have laid violent hands on the labor saving traction engine used by their neighbors and are calling them their own. It is no uncommon thing today for a farmer with a gasoline traction engine of even 15 h.p. to tackle single handed a ten acre field, plow it, disc it and harrow it all in one day at a cost of from 50c to 75c per acre. Under the old way with men and horses it is estimated it would have taken ten men and twenty horses to have done the same amount of work in the same time and the cost alone would have been $1.00 per acre.

The time will come when at harvest this same farmer will take the same engine and draw two or more harvesters, thus eliminating the old-fashioned "three-horse-and-a-man" outfit of a few years ago. Later in the season when it comes to threshing he can attach his engine to a thresher and thresh from 1500 to 3000 bushels of wheat in a day. Finally he attaches his tractor to a number of wagons and hauls his produce to the nearest elevator or railway station. When he returns from the elevator after having delivered his last load his season's work is done. He started out with his engine and he finished with his engine. Throughout it all his tractor needed the attendance of only one man. Between seasons his engine needs no rest. It saws his wood pumps his water, runs his feed grinder, turns his cream separator and does a hundred odd jobs which on the more primitive farms make the lot hard of the man who tills the soil.

Given a few more years of education and experience and the busy engine works will have drowned out the cry of the west for men to save the crops. It will neutralize the hejira of young men drifting to the cities and will add another step toward increasing the production and lessening the price of the food supply of the world.

As regards the gas tractor, that which is true in one locality is practically true in another, the only difference being in the price of fuel and this fact probably as much as any other will bring about the general use of the gas traction engine.

It is also true that the use of the gas traction engine at the present time is somewhat of a fad, the farmer in very few cases having no definite knowledge of its real practicability. The farm papers have opened their columns wide to a discussion of this form of mechanical power and the manufacturers of machines now upon the market have heralded far and wide the advantages to be gained from cultivating the soil with a gas traction engine.

I am of the opinion and I state it frankly, that these same manufacturers know very little about the real proposition of tractioning the soil with a gas tractor. It is true that they have put their machines through some pretty thorough tests, but when it comes to real, practical, every-day work, year in and year out, as compared with the steam engine, I doubt if very few of them could give any real comparative statement that would be an authority.ity.

The purchaser of a gasoline traction engine today is left very largely to himself, in so far as his field of operation is concerned. There is very little experience back of the thing to which he can turn and his success or failure is his own.

To me it seems that there is a crying need for education along this line. Time is too short and our agricultural products are becoming too valuable to permit the farmer to stumble blindly into such a vital proposition as tractioning the soil. It seems to me that there is a crying need here on the part of the farmers for the manufacture of gas traction engines to put in experimental farms of his own, or if this would not be practicable to arrange with some farm owners to cultivate their land with a gas traction engine, the manufacturer supplying all the help necessary to operate the engine and charging the farmer a reasonable price for the work done.

I am a firm believer in newspaper space, but I also believe that any manufacturer who would carry out such a scheme as this would get an amount of effective advertising that could not be gotten in any other way. At the same time it would enable the manufacturer to secure an accurate record of costs, so that he could go to the prospective purchaser of a gas traction engine for soil cultivation purposes with data that would be based upon actual work done and not upon

data secured from the testing floor.

The records as they are procured from the farmers at the present time as they have carried on traction cultivation, amount to very little. During the past three or four years I have gone over hundreds of these records from people who have done traction plowing in Canada and there is such a gross amount of inconsistency in the reports that they are really not what they seem.

The average traction engine owner does not know how to get at costs. He does not know just what to include with the result that we find a variation all the way from 75c up to $5.00 per acre, conditions being practically the same.

I have here three records, one for steam and two for gasoline. They are fairly representative in so far as records go.

OUTFIT No. 1 USING GASOLINE.

One barrel kerosene, 42 gal, at 26c	$11.00
Lubricating oil and gasoline for starting	1.00
Labor, engineer and steersman	6.00
Board for above	1.00
Repairs	2.00
Depreciation (Life estimated at eight sixty-day years)	6.50
Interest on cost $3,400	
Interest on cost $3,400 at 7% per annum divided into sixty working days	4.00
Total	$31.50

Daily expense $31.50 divided by average day's work of 22¼ acres, makes the cost per acre of $1.40 for plowing and harrowing.

OUTFIT No. 2 USING GASOLINE.

40 gallons coal oil	$10.36
2 gallons gasoline	60
Other oils	50
Interest and wear on engine	2.00
Engineer	4.00
Plowman	2.00
Total	$19.46

This makes the cost of summer fallowing $1.39 per acre.

OUTFIT No. 3 USING STEAM.

2 tons of Galt Coal	$ 9.30
Engineer	3.50
One man to steer engine	2.50
Man and team to haul water	4.50
Man and team to haul coal	4.50
Man to cook	1.15
Wear on engine and plows	5.00
Interest on investment	1.20
Oil and sundries	1.50
Board for five men at 75c per day	3.75
Total	$36.90

42¼ acres of plowing at $3.50 per acre—$148.75 less $36.90, leaves $111.85 net.

The cost of plowing per acre was 87c with a fraction.

There are many side issues in this traction cultivation proposition that are likely to become

evident within a short time, and principally among these I might mention the tendency towards skilled labor upon the farm.

The man who farmed thirty or forty years ago used only the crudest implements. He tickled the earth, so to speak, with a hoe and his seeds grew and flourished; but today it is different. The man who owns and operates a farm at the present time is or should be pretty much of a skilled mechanic. He operates complex machinery every day that requires accurate and careful adjustment in order that it may do its work properly.

The gasoline traction engine is going to bring about this proposition of skilled labor more than any other one thing. The hired man of the future must be something more than a bundle of brute strength. He must be able to use his head as well as his hands. He will be required to run a traction engine and all of the machinery driven by it, and not only will he be required to run it, but he will be required to do it economically.

The farmer of the future will get down to a system of costs where every gallon of gasoline or of kerosene used must represent so much work, the same as it does in our large manufacturing establishments of today.

There is another thought that comes to me along this line, and do not think me visionary when I express it, and that is that skilled labor always has a common bond of relationship. At the present time there is no such thing as the "Hired Man's Union." There is no walking delegate that goes from farm to farm and dictates to the employer how many hours he shall work his men or how much per hour he shall pay them. But given skilled labor, and this same labor will band itself together into a Union, so to speak, that will control in a measure the farm labor situation.

There will not only be a regulation of hours, but there will be a regulation of wages, and when that time comes the farm and the manufacturing establishment will be placed upon the same basis, in so far as the cost of production is concerned.

Tractioning the soil is but the beginning. The farmer has only begun to realize what it means to him. He sees that it is something more than a passing fad. In the old settled portions of the country he sees in it comfort, larger crops through an increased acreage and a diversion from grinding toil. In the virgin portions of the country the land owner sees in the traction engine something that will turn $10.00 an acre land into $20.00 an acre land within a year's time. He sees in it something that during the first year of his on the homestead a power that will turn over

a sufficient number of acres to not only yield him a living, but a profit.

It is indeed the dawn of a new era.

There is one other thought that I should like to mention with regard to this traction cultivation proposition and that is the application of the traction engine to intensive agriculture.

The tendency of the man who buys and operates a traction engine is going to do as much work in a single day as he can possibly get done. Thirty, forty, fifty acres per day is the guiding star, with the result that quality of work is often sacrificed for quantity.

Our agricultural experiment stations have spent millions of dollars during the past few years to show the farmer that intensive agriculture was the kind for him, the kind that would yield a maximum of returns with a minimum of labor.

It is just possible that the traction engine, unless it is carefully watched, will begin to counteract the result of these years of teaching on the part of our trained agriculturists. In so far as I know, our experiment stations have given very little attention to this proposition of tractioning the soil. They have allowed the manufacturer and the farmer to work out the problem alone, and I doubt whether any of the various experiment stations today could give much very valuable information regarding the proposition.

It is coming, this tractioning the soil, just as sure as we live in an age of progress, and we do not want to lock the barn door after the horse is stolen.

It seems to me that it is a problem for the agricultural engineer, for the farmer and the manufacturer. It is not the mere working out of a corollary for the thearem remains yet to be demonstrated. To become a traction cultivation specialist would be indeed a laudible ambition on the part of some of our agricultural college students of today. Who will be the first to take it up.

And the Lord drove Adam from Paradise
Because of his little worth,
And Adam wandered with hopeless eyes
Till toil gave his soul new birth,
And taught him to plow and to sow and to reap
Till he wrested his bread from the earth.

There was no soul to teach him how.
He learned his craft alone.
A crooked stick was all his plow;
Broadcast his seed was sown;
But he viewed with pride his half tilled fields,
And he laughed for joy as he reaped the yield.

Conducted for the benefit of Dealers, Threshermen and Farmers who have anything to sell or exchange. Three cents a word for each insertion.

WANTED—One good Hart-Parr plowing engine. State price and terms.—JOS. PANTEL, Somerset, Man.

SOUTH AFRICAN SCRIP FOR SALE.—Cash and terms with good acceptable security to farmers in Alberta and Saskatchewan.—Address A. D. MABRY, Saskatoon, Sask.

ONE R. R. FIREMAN can learn locomotive firing for $20.00 cash. Write to G. S. GUDMUNDSON, Frances, Man.

VALUABLE.—Farm for sale at a bargain if bought at once. All necessary buildings new, excellent location. Creek at stable, eighty acres under cultivation, rest pasture, good fences, near Regina, Saskatchewan. For further particulars, write A. K., c. o. M. W. KAPELL, Pilot Butte, Sask.

FOR SALE.—South-African Scrip. Two years' terms to farmers with acceptable security. —ROMERIL-FOWLIE & CO., Prince Albert, Sask.

FOR SALE.—One Avery Steam Plow, 1906 make, with 6n breaker and stubble bottoms and steam lift complete, at Elm Creek, Manitoba. For further information address—WALTER M. GRIMES, Nokomis, Ill., U. S. A.

WANTED—Second-hand Cockshutt engine gang plow, 8 or 10 furrows. Quote lowest price, F. O. B., railway., JAS. W. MITCHELL, Arrow River, Man.

Widower will exchange Heintzman upright piano, style Classic, for horses, cattle or farm stock, or part trade and terms. Only one year in use; was $500.00, now $300.00.—Box 3079, Winnipeg.

WANTED.—One reliable man in each locality with rig, or capable of handling horses, on salary or commission, to introduce and advertise our Royal Purple Stock and Poultry Specifics, to the trade and direct, post up large bills, 7 feet wide and 9 feet high, tack up tin signs, and generally look after the introduction and advertising of our goods. Apply at once. W. J. Jenkins Mfg. Co. London, Ont., Canada. 35-5

FOR SALE OR EXCHANGE—80 acres of land in Minnesota. Would be willing to sell for cash or exchange for a 45 H. P. Hart-Parr Gas Traction Engine.—J. F. CROSBY, Hanlan, Sask.

FOR SALE.—One dozen of our hardy, improved Bush cherries prepaid to any address in Manitoba, Alberta or Saskatchewan for two dollars. Perfectly hardy. Good canning fruit. Catalog free. BUCHANAN NURSERY CO., St. Charles, Man.

Our ten dollar hardy fruit collection is just the thing for those who wish to plant fruits and do not know what varieties to select. Only the very best varieties for this country supplied. BUCHANAN NURSERY CO., St. Charles, Man.—Catalogue free.

ENGINEER wants position on a plowing engine or a stationary for the season of 1910. Have had two years' experience am also a graduate of the Heath School of Engineering. Can furnish references. Chas. McMain, Summerberry, Sask.

WANTED—Position as assistant engineer on ploughing outfit for the coming season. Am experienced in steam ploughing, can do repair work and also handle blacksmith's tools. Can furnish best of references as a fireman and assistant engineer. When writing please give name of engine. G. A. Webster Cailmount, Sask.

YOUNG MAN used to gasoline engines wants positon on gasoline tractor this summer, state make of engine and wages to Box 3079 Canadian Thresherman and Farmer, Winnipeg.

KNOW THE LAW.

It will only cost you One Dollar. A lawyer will charge you five for advice on one question My "Legal Compendium" is full of legal information, and is pronounced by 20,000 people and by press and legal experts to be the best law book of its kind ever published. One dollar to any address. J. R. Long, J. P., Mortlach, Sask.

FOR SALE—One Gould Balance valve for 22 or 25 H. P. Gaar-Scott engine. J. Reynolds, Yellow Grass, Sask.

ENGINEER—Wants position on plowing outfit coming season in Manitoba, Saskatchewan, or Alberta, Saskatchewan certificate. Strictly temperate. Do own repairing. References furnished. —Edward Winchester, Melita, Man.

Traveller Wanted.—Energetic, experienced Traveller wanted to sell Threshing Machinery in Manitoba and Saskatchewan. Address, Box 3079, Winnipeg.

WANTED—Position as Engineer on steam plowing outfit the coming season in Manitoba or Saskatchewan, or Traction Engine work of any kind. R. H. HARGEST, McLeau, Sask.

FIREMAN—First class Fireman wants position on a plowing outfit when plowing begins. I am a graduate of the Heath School of Traction Engineering and I know how to fire properly and save coal. Wages, $2.50 for firing or $3.50 for firing and handling plows both. Write at once stating make of engine and when plowing begins to K. K. SIEMENS, Rosenfeld, Man.—box 63.

BROTHER—Accidentally discovered root that will cure both tobacco have and indigestion. Gladly send particulars. H. STOKES, Mohawk, Florida,

FOR SALE

One 30 H. P. Geiser Plow Engine. One ten bottom Cockshutt Plow. This outfit has only been in operation for one season. A snap. Good reasons for selling.—JESSE CROSBY, Warren, Man.

FOR SALE

One No. 2 Austin Well Drill Outfit with ¾ inch cable 350 feet long, weight 5,500. One 6 horse power upright Fairbank and Morse engine, with Wizard Magnet attached loaded on low truck. All in first class order. Address DUDSBURY, Box 188.

FOR SALE

20 H. P. J. I. Case Simple Traction Engine run 75 days. J. I. Case 32 x 54 separator with feeder and blower, weighing bagger, 150 ft. 8 in. drive belt, 1 steel tank, and 1 wood tank and caboose. Easy terms of payment. Reference, Harrison Bros. Holmfield. Apply to Hendry Blackwell, Jr., Holmfield, Man.

FOR SALE

At bargains. Second-hand engines and separators or complete outfits. Thoroughly rebuilt and repainted. Good as new. A long list to select from. Write us your wants or come and see us.—AMERICAN-ABELL ENGINE AND THRESHER CO., LTD., WINNIPEG, CANADA.

FOR SALE OR EXCHANGE FOR LAND

Good second-hand Portable Steam Engine, 26 h.p. double cylinder, separator and plows. Terms and price would be made most interesting to thresherman. ELVIN YOUNG, Mapleton, Minn. Apply to MANITOBA BRIDGE AND IRON WORKS, Winnipeg, Man.

FOR SALE

One 25 h. p. direct flue Simple, heavy gear traction engine.

One 21 h. p. Compound, return flue traction engine.

One 18 h. p. Simple, return flue traction engine, and one 25 h. p. Compound, return flue traction engine.

Also several others of our own and other makes

We also have several rebuilt separators of our own and other makes.

GAAR-SCOTT & CO., WINNIPEG

FOR SALE

SECOND-HAND AND REBUILT MACHINERY.

Two 25 H. P. Simple J. I. Case engines.
One 15 H. P. Simple J. I. Case engine.
One 15 H. P. Compound J. I. Case engine.
One 32 x 54 Wood Case separator.
One 28 x 50 steel Case separator, with wind stacker, self feeder and weigher.

J. I. CASE THRESHING MACHINE CO., Calgary, Alberta

BARGAINS

1—32 H. P. Reeves Rebuilt Cross Compound.
1 Rebuilt American-Abell Advance 20 H. P.
1 Minneapolis Separator 42 x 72. Rebuilt. With all attachments.
1 J. I. Case Steel Separator, complete with all attachments. 42 x 62. Run forty days.
1 Advance 36 x 60 Separator, Battle Creek with Hawkeye Fosston Wind Stacker.

HAUG BROS. & NELLERMOE Co. Ltd. WINNIPEG.

FOR SALE

Two Rebuilt Threshing Outfits:

22 H. P. Port Huron Compound Traction Engine No. 5057, equipped with steel gearing and all plowing attachment,

36 x 60 Port Huron Rusher Separator No. 6569, with all attachments,

Price F.O.B. Winnipeg, Man., for full outfit ..... $2,800.00.

21 H.P. Port Huron Compound Traction Engine No. 5203, steel gearing, all plowing attachments,

36 x 60 Port Huron Rusher Separator No. 6680, with all attachments,

Price F.O.B. Winnipeg, Man., for full outfit ..... $2,300.00.

These outfits have been thoroughly rebuilt, painted and varnished, and ready for immediate shipment.

We guarantee them the same as we do new machinery. Write

CANADIAN PORT HURON CO., LTD., WINNIPEG, MAN.

FOR SALE

New Cockshutt 8 Furrow Engine Gang plough. For particulars apply to PURVIS BROS, Holland, Manitoba.

FOR SALE

Two four bottom Moline engine gangs with breaker bottoms and extra shares, price, $160.—J. Hansford, Fairlight, Sask.

FOR SALE

1—12 H. P. Compounded (Case) portable engine No. 11374.
1—15 H. P. Compounded (Case) portable engine No. 13426.
1—15 H. P. Simple (Case) portable engine No 15833
1—15 H. P. " " traction " " 13281
1—15 H. P. compounded " " " " 9872
1—20 H. P. Simple " " " " 13261
1—25 H. P. " " " " with 36-inch drive wheels No. 17579.
1—32 H. P. " " " " 19000
1—22 H. P. Compounded (Advance) traction engine.
1—18H. P. John Abell portable engine.
1—16 H. P. Stevens & Burns portable engine.

For the price, terms, and conditions of any of the above engines, write us. Our rebuilt engines are bargains.

J. I. CASE, THRESHING MACHINE CO., Winnipeg, Man.

BARGAINS

Give these bargains your attention.

Four Case Portable Engines at $1,500; two Minneapolis Tractions, 6000, 18 and 20 H. P.; one Advance Traction 6000

1 Case 20 H. P. Traction Engine $800.00

Several good Separators to suit the above engines. See our farmers Pet separator.

All our engines fitted with Gould Balance valves.

Write us about them.

THE GEO. WHITE & SONS CO., LTD. BRANDON, MAN.

FOR SALE

One 15 H.P. Case Traction Engine, with or without 28 x 50 separator. For sale or exchange with a Gasoline Traction Engine.—WILLIAM BRAYSHAY, Kelloe P. O., Man.

FOR SALE

One 36 x 56 Great West Separator, with feeder and wind stacker. This separator has been run for 20 days last fall and is practically as good as new. Address: A. FORATH, Raymore, Sask., G. T. P. R.

$100

will buy a second-hand Contractor's Tank for

Case 25 H. P. Traction Engine

old style, will fit 20 H. P. engine, new style. Only used a few days.

Good as new

Apply to J. T. Taylor

775 Corydon Ave. Winnipeg

REBUILT MACHINERY ON HAND AT BRANDON.

1-34 H. P. C. C. Hy Northwest Traction engine.
2-28 H. P. C. C. Hy Northwest Traction engine.
2-25 H. P. Northwest Traction engines.
1-25 H. P. New Giant Traction engine.
2-20 H. P. New Giant Traction Engines.
2-18 H. P. New Giant Traction engines.
2-21 H. P. Port Huron Traction Engines.
1-20 H. P. Sawyer & Massey Traction engine.
1-20 H. P. J. I. Case Traction engine.
1-25 H. P. J. I. Case Traction engine.
1-17 H. P. Sawyer & Massey Portable engine.
3-size 7| 40x64 Northwest Separators with N. W. Feeder, Windstacker and Dakota Perfection Weigher.
1—size 6 36x56 Northwest Separator with Parsons Feeder, N. W. Windstacker, and Dakota Perfection Weigher.
1-size 3½ 32x52 Northwest Separator with N. W. Windstacker, Parsons feeder and Dakota Perfection Weigher.
1-36x60 Sawyer & Massey Separator with attachments just as it stands. (not rebuilt).
1-36x60 Port Huron Separator with all attachments just as it stands (Not rebuilt).
1-36x58 Case Separator with all attachments, just as it stands. (Notrebuilt).

All the above engines and separators, except last three mentioned Separators, are or will be thoroughly rebuilt and repanted and warranted to be in first class shape and working order, and will be sold cheap.

Write for particulars.

NORTHWEST THRESHER COMPANY Brandon, Manitoba.

FOR SALE

One American Advance Separator, 36 x 56, with all latest attachments. One 15 inch Vessott Grinder: One 2 wheeled Engine Tender: 2 4furrow John Deere Engine Gangs. The above property for sale cheap. F. W. Hunter, Stonewall, Man.

Tractioning the Soil

Continued from page 95

And Adam perished—as all men must;
But his sons still plowed the soil
Till the slow kine under the yoke were thrust
To lighten and aid men's toil;
And the oxen's strength made the furrows deep
And the field were richer for men to reap.
Men plowed and gathered. Men lived and died.
But the ox plow held full sway,
Till the swifter strength of the horse was tried,
And the plodding ox gave way.
And the plaintive wails of the farmer ceased
As his fields grew broad and his crops increased.

Then came to the plowing a giant power,
Invisible, hot as fire.
And the task of days was but an hour
To this servant that would not tire.
And the labor of old is a by-gone dream
For the fields are plowed by Giant Steam or Gasoline.

Estimate of Power

Those who incline to place a low estimate upon their powers should remember, first of all, that they cannot judge correctly. No one knows himself sufficiently well to presume or to despair; and there is as much presumption in declaring that we can do nothing as in boasting that we can do everything. The truth is, that we are, happily, not called upon to make any such analysis or decision at all. Certain duties appeal to us as ours, and we should take them up, humbly and modestly, it is true without arrogance or boast, yet firmly and cheerfully, in the confidence that, if they belong to us, we shall acquire the requisite ability to perform them. One thing is certain—if we do not try, we shall never accomplish; and whether it is the schoolboy with a difficult problem to solve, or the guilty man with a character to retrieve, if discouraging thoughts of self are allowed to play palsy effort, failure must certainly ensue.

Dictionary Girls

A disagreeable girl — Annie Mosity.

A sweet girl—Carrie Mel.

A very pleasant girl—Jenny Rosity.

A smooth girl—Amelia Ration

A seedy girl—Cora Ander.

A clear case of girl—E. Lucy Date.

A geometrical girl—Polly Gon. Not orthodox—Hetty Rodoxy.

One of the best girls—Ella Gant.

A flower girl—Rhoda Dendron.

A musical girl—Sarah Nade.

A profound girl — Mettie Physics.

A star girl—Meta Oric.

A clinging girl—Jessie Mine.

A nervous girl—Hester Ical.

A muscular girl — Callie Sthenic.

WESTERN CANADIAN IMPLEMENT DIRECTORY

EXPLANATION.—First find the Implement Wanted and the Number opposite will be the Number of the Concern, in the first column, that handles it.

A—ALBERTA PORT HURON CO., Calgary, Alta.
1—AMERICAN-ABELL ENGINE & THRESHER CO., Winnipeg, Regina, Calgary and Edmonton,
2—AMERICAN SEEDING MACHINE CO., Winnipeg.
3—BAILEY SUPPLY CO., Winnipeg.
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5—BELL ROBT., ENGINE & THRESHER CO., Winnipeg.
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7—BRANDON PUMP & WINDMILL WORKS. Brandon.
8—BRANDON & ROBERTSON, Brandon,
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24—EMPIRE CREAM SEPARATOR CO., Winnipeg,
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25½—GAS TRACTION CO., Winnipeg,
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42—McLAUGHLIN CARRIAGE CO., Winnipeg.
43—McRAE, ALEX., Winnipeg.
44—MELOTTE CREAM SEPARATOR CO., Winnipeg.
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47—NORTHWEST THRESHER CO., Brandon.
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60—STEELE-BRIGGS SEED CO., Winnipeg.
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63—SYLVESTER MFG. CO., Brandon.
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68—WATEROUS ENGINE WORKS, Winnipeg.
69—WATSON, JNO, MFG. CO., Winnipeg.
70—WHITE, GEO. & SONS, Brandon.
71—WINNIPEG RUBBER CO., Winnipeg.

BUGGIES AND CUTTERS.

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Barrie Buggies and Cutters 61
Baynes Carriages 43
Brockville Buggies and Cutters 21
Dominion Carriages (Transfer Agents) 69
Gray Buggies and Cutters 27
Greer Buggies 62
Heney Buggies 11
McLaughlin Buggies and Cutters 42
Munro-McIntosh Buggies and Cutters 11
Reindeer Buggies 21
Tudhope Buggies and Cutters 64

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Blue Bell 33
Champion 64
Dairy Maid 33
De Laval 22
Empire 24
Magnet 33
Massey-Harris 39
Melotte 44
National 33
Sharpies 59

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Climax Stiff Tooth Cultivator 19
Cockshutt Cultivator 19
Deere No. 2 Cultivator 21
Deering Cultivator 33
Elk (2 horse) Cultivator 21
Fleury's Cultivator 21
Frost & Wood Scuffler 19
Hilborn Stump Puller 64
K. A. (2 horse) Cultivator 21
Massey-Harris Corn Cultivator 39
McCormick Cultivator 33
Paris Scuffler 49
Sylvester Cultivator 64
Verity Cultivator 39

DISC AND DRAG HARROWS.

Ajax Drag 21
Bissell Disc 21
Boss Drag 56-62-69
Canadian Moline Boss Drag 11
Canton Disc 33
Case, J. I., Disc and Drag 29
Cyclone Wheel Disc 21
Cockshutt Disc and Drag 19
Cockshutt Lever and Clip 19
Deere Disc and Drag 21
Deere King Boss Drag 21
Deere Steel Boss 21
Deering Disc Harrow 33
Defiance Jr. Disc 62
Economy Disc 11
Emerson Disc and Drag 64
Evans Disc 2
Fleury's Steel Channel Drag 21
Fleury's Clipped Drag 21
Fleury's Disc 21
Fuller & Johnson 61
Grand Detour Drag and Disc 69
Hoosier Wheel Disc 2
International Diamond and Lever 33
Massey-Harris Disc and Drag 39
McCormick Disc 33
Moline Flexible Drag and Lever 11
Paris Disc and Drag 49
Scotch Diamond Drag 19
Superior Wheel Disc 2
Universal Drag 21
Universal Tongue Trucks for Disc Harrows 21
Watson Drag 69
Wilkinson Drag and Disc 61
Windsor Disc 19

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Cockshutt Feed Cutter 19
Cockshutt Pulper 19
Fleury's Feed Cutter 21
Geiser Feed Cutter and Grinder 9
Massey-Harris Feed Cutter 39
Paris Feed Cutter 49
Watson's Feed Cutter 69
Watson's Root Pulper 69
Wilkinson's Feed Cutter 61

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Cyclone 9-29
Daisy 9
Diamond 64
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Gould, Stapley & Muir 19
Manitoba 37
Maple Leaf 44
Ontario 48
Scientific 69
Stover Ideal 15-11
Thoms 49
Vessot 33
Victor 69
Watson's Ideal 69

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Cyphers' Incubator 69
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Maxwell 64
Planet Jr. Garden Tools 41-55

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Gade 9
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Geiser 9
Hart-Parr (Traction) 18-30
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Vel (Traction) 62a
Joy McVicker (Traction) ..... A
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Otto 9
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Stickney 48
Stover 15-14
Sylvester 63
Waterous 68
Waterloo Boy 51

GRAIN CLEANERS, FANNING MILLS AND PICKLERS.

Acme Pickler 6-21
Beeman Pickler 4
Chatham Fanning Mill 27
Fooston Fanning Mill 21-31
Helgeson's Smut Machine 31
Hero Fanning Mill 32
Hero Pickler 32
Jumbo Grain Cleaner 4
Superior Fanning Mill 29
Webber Grain Cleaner 11
Wonder Fanning Mill 19

HARVESTING MACHINES.

Champion 31
Deering 3
Frost and Wood 19
Massey-Harris 39
Massey-Harris Corn Harvester 39
McCormick 33

HAY LOADERS, HAY PRESSES, HAY TOOLS, MOWERS, RAKES, SWEEP RAKES, HAY STACKERS, ETC.

Bradley Hay Press 43
Buffalo Hay Press 54
Canton Hay Press 33
Champion Hay Rake 33
Champion Mower 33
Champion Side Delivery Rake 23
Dain Hay Loader and Stacker 21
Dain Hay Press 21
Dain Side Delivery Rake 21
Deere Hay Loader 21
Deering Hay Stacker 33
Deering Sweep and Hay Rake 33
Deering Mower 33
Frost & Wood Mower 19
Frost & Wood Champion Hay Tedder 19
Frost & Wood Champion Hay Loader 19
International Hay Stacker 33
International Sweep Rake 33
International Hay Press 33
Jenkins' Sweep Rake 11
Keystone Hay Loader 33
Keystone Side Delivery Rake 33
Louden Hay Tools 34
Massey-Harris Mower 39
Massey-Harris Sweep Rake 39
Massey-Harris Hay Tedder and Loader 39
Massey-Harris Side Delivery Rake 39
McCormick Hay Stacker 33
McCormick Mower 33
McCormick Sweep and Hay Rake 33
Rock Island Hay Loader 62
Success Hay Loader 11
Tiger Steel Rake 19

HORSE POWERS AND JACKS, SAWMILLS, WOOD SAWS AND TREAD POWERS.

Brandon Wood Saws 6
Caters Wood Saws and Jacks 7
Cockshutt Horse Powers 19
Enterprise Saw Mills 19
Fairbank's Wood Saws 10
Fleury's Horse Powers and Jacks 21
Fleury's Wood Saws and Tread Powers 21
Gaar-Scott Saw Mills 26
Geiser Saw Mills and Horse Powers 9
Goold, Shapley & Muir Wood Saws 19
Horse Powers, Tread Powers, Bevel Jacks 78

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Canton Land Roller 33
Canton Packer 33
Campbell Sub-Surface Packer 69
Cockshutt Land Roller 19
Cockshutt Pulverizer 19
Wilkinson Land Roller 61
Dale Land Roller 63
Deere Land Roller 21
Fleury's Pulverizer 21
Hilton Sub Surface Packer 62
Hamilton Pulverizer 27½
Hilborn Land Roller 64
Hilborn Pulverizer 64
Moline Paralizer Pulverizer 11
Verity Land Roller 39
Verity Pulverizer 39
Watson's Flexible Pulverizer 69
Watson's Land Roller 69

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Clover-Leaf 33
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Great Western 61
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Massey-Harris 39
National 11
Success 21

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Case, J. I. Engine Gang 29
Canton Mogul Engine Gang 33
Cockshutt 19
Cockshutt Engine Gang 19
Deere 21
Deere Engine Gang 21
Emerson 64
Emerson Engine Gang 61
Geiser Engine Gang 9
Grand Detour 69
Maw Hancock Disc 61
Moline 11
Moline Engine Gang 11
New Eclipse 61
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Rock Island 60
Verity 39
Wilkinson 21

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Acme 51
Carberry 15
Cyclone 21
Gopher 29
North Star 29
Taggart 9
Wizard 39

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Aspinwall Potato Planters and Sprayers 19
Aspinwall Sorters and Cutters 19
Canton Potato Diggers and Beet Tools 33
Deere Potato Diggers and Beet Tools 21
Dowden Potato Harvester 21
Egan Potato Sprayer 43
Evans Potato Planter 2
Eureka Potato Planter 21
Hallock Potato Digger 43
Hoover Potato Digger 61
Iron Age Potato Planter 61
Iron Age Potato Digger and Sprayer 61-55
Moline Knocker Potato Digger 11
Splittstoser Sprayer 21

RIDING ATTACHMENTS, HARROW CARTS, WHEELBARROWS AND HAND CARTS.

Cockshutt Wheelbarrow 19
Cockshutt Harrow Cart 19
Deere Harrow Cart 21
Eclipse High Harrow Cart 29
Emerson Harrow Cart 64
Fleury's Wheelbarrow 21
Fuller & Johnson Harrow Cart 61
Kramer Rotary Harrow, Man. 21, Alta. & Sask 64
Naylor Harrow Attachment 29
Paris Wheelbarrow 49
P. & O. Harrow Cart 33
P. & O. Hand Cart 33
Racine Rotary Harrow 29
Success Harrow Cart 11
Verity Wheelbarrow 39
Watson's Wheelbarrow 69
Wilkinson 61

ROAD SCRAPERS AND ROAD MACHINES

Cockshutt Scrapers 19
Good Loads Machinery 68
Indiana Road Machines 64
Russell Elevating Grader 32
Standard Reversible Grader 21
Toronto Pressed Steel Scrapers 61
Sawyer & Massey Reversible Grader 58

SEEDING MACHINES.

Cockshutt 19
Deering 33
Frost & Wood Champion 19
Hoosier 2
Imperial 59
Kentucky 2
Massey-Harris 39
McCormick 33
Monitor 11
Superior 2
Sylvester 63
Tiger 61
Van Brunt 21

THRESHING MACHINERY, SELF-FEEDERS, WIND STACKERS AND ATTACHMENTS.

Advance 1
American-Abell 1
Aultman & Taylor 33
Avery 28
Belle City Thresher 33
Bell, Robt 5
Brandon Feeder 8
Brandon Cornell Engine 6
Buffalo Pitts 33
Cascaden 34
Case, J. I. 17
Dakota Weigher (ask any Thresher Co.) .....
Fooston Wind Stacker 31
Gaar-Scott 26
Geiser 9
Goodison 35-68
Hay Loye Feeder 18-51
Hartley Weigher 46-58-67
Minneapolis 26
Monarch Feeder 31
Nichols & Shepard 46
Northwest 47
Parsons' Feeder 18-51
Peoria Weigher .....
Perfection Weigher (ask any Thresher Co.) .....
Port Huron A-12
Reeves 74
Rich Feeder 69
Rumely 57
Ruth Feeder 18-51
Sawyer & Massey 58
Sylvester Auto-Thresher 63
Waterloo 67
Waterous 68
Whiteford Justice Measure 65
White, Geo. & Sons 70
Whitewings Feeder 51

THRESHERS' SUPPLIES.

Bailey Supply 3
Canadian Fairbanks 10
Canadian Rubber 13
Crane & Ordway 20
Desmond Stephan 31
H. T. Helgeson 31
Thresehrs' Supplies carried in Western Canada by all the Thresher Companies.
Madison Sipp Lubricators 61
Manzel Oil Pumps 30
Mica Axle Co.—Ask any Thresher Co.
Parsons-Hawkeye Mfg. Co. 51
Penberthy Injectors and Brass Goods Handled by all Leading Jobbers and Thresher Companies.
Durham Rubber 23
John Stevens 62
Adams' Wagons and Sleighs 19
Winnipeg Rubber 71

WAGONS AND SLEICHS.

Adams Farm Trucks 19
Anderson Metal Wheel Trucks 64
Avery Wagons and Grain Tanks 28
Bain Wagons and Sleighs 39
Canadian Crescent Wagon 11
Chatham Wagon 33-64
Cockshutt Metal Wheel Trucks 19
Columbus Wagon 33
Davenport Wagon 21
Electric Steel Wheel Trucks 29
Fish Bros. (Racine) Wagons 64
Genuine T. G. Mandt Wagon 11
Grand Detour 69
Gray Light Farm Sleigh 27
Hamilton Wagon 33
Hamberg American Wagon 64-69
Metal Wheel Trucks 21
Milborn Wagon 43
New Deal Wagons and Sleighs 21
New Deal Farm Trucks 21
New Moline Wagon 21
Northern Chief Metal Wheel Trucks 21
Old Dominion Wagons and Sleighs 33
Petrolia Wagons and Sleighs 33
Rushford Wagon 61
Stone and Gravel Spreading Wagon 58
T. G. Mandt Sleighs 11
Weber Wagon 33
Wilkinson Wagons and Sleighs 61
Winona Wagon 61
Woodstock Wagons and Sleighs 19

WELL DRILLING MACHINERY.

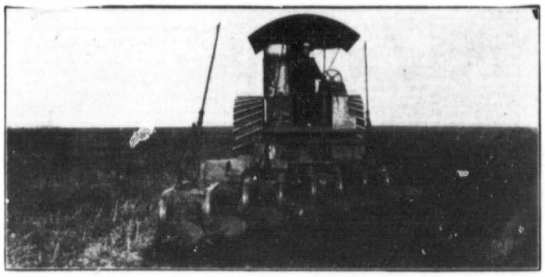
Austin 5
Brandon 6
Kelly & Tannyhill 48
Sparta 10
Standard 48

WINDMILLS, TANKS AND PUMPS.

Caters Pumps 7
Caters Star Windmill 7
Canadian Air Motor 48
Chicago Aermotor 29-7
Florence Pump 44
Gould, Shapley & Muir—Windmill Pumps 19
Hayes Pumps 35
Loudon Pumps 34
Manitoba Pumps and Windmills 37
Manitoba Tanks 37
Myers Pumps .....
Ontario Pumps 48
Reiberry Pumps 56

NAME YOUR WORK

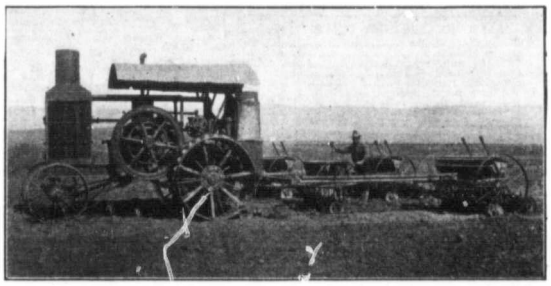
PLOWING



IS IT A QUESTION OF PLOWING? Then it is but a simple matter for the **Hart-Parr Gas Tractor** to pull its eight 14-inch plows in soil that a horse could scarcely walk over and in which a steam tractor is practically helpless, It will plow its twenty-five to thirty acres per day regardless of ground and never get sick or tired.

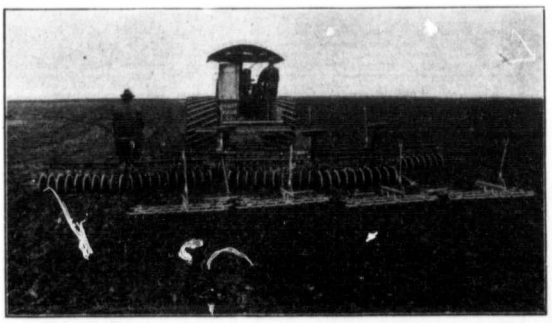
Does an early planted crop mean anything to you? If so, you can easily figure out what the **Hart-Parr** can do in your case.

SEEDING



When the ground is plowed it is a horse killing piece of work to get it **seeded** as the modern wide-cut drill is no easy load. The **Hart-Parr** will pull drills to the tune of forty or fifty acres per day and at the same time will not injure the land in passing over it any more than horses will. It will in a great many cases by doing such a large amount of work in a short space of time put much grain in the field to sprout and grow that would otherwise remain in the bin on account of a spell of wet weather that extends over a week or two in seeding time. It is the early seeded grain that invariably yields the biggest crop, a week or two in the spring often times meaning from five to ten bushels per acre when the crop is harvested.

DISCING



The **Hart-Parr** as a power for discing is limited only by the number of discs that can be attached behind it, at the same time furnishing such a tractive power as to compel the discs to pulverise thoroughly. If you are doing spring plowing when the ground is apt to clog up, place the discs behind the plows and the two jobs are done with once going over the ground, leaving the soil in the best possible condition for there is no better time to make a nice seed bed than when the ground is first plowed.

THE HORSELESS FARM is the product of the twentieth century. It is the result of a slow but steady progress of evolution in agriculture and has been brought about largely by demand on the part of the farmer for a dependable, **all-the-year-round** power that would work when work was to be done and that would not impose a heavy tax upon the result of that work by piling up a heavy charge for up-keep.

Horse power was entirely too slow for the purpose of bringing under cultivation large tracts of land and the cost of up-keep during the idle season was too heavy in proportion to the amount of work done. The **steam tractor** failed to furnish the farmer with the power desired for two reasons: first, because of its not being adapted to all kinds of work at all seasons of the year and on all conditions of ground. Second, because it occasioned too much loss of time in getting ready to start work, and took too much help to keep it going when started.

The Gas Tractor finally came in the shape of the **Hart-Parr** and while it first seemed almost impossible that there could be such a variety of uses to which it could be put and at the same time furnish a cheap and dependable power, the

Get a Hart-Parr for 1910 and you will have no horses in 1911 other than a driving team.

Hart-Parr Company

30 MAIN STREET

THE CHAPIN COMPANY, Calgary

A Hart-Parr Will Do It

experience of thousands in practically every grain raising country in the world and in all kinds of weather and soil. have demonstrated beyond the question of a doubt that no matter what the work, provided it is power, either "belt or tractive" that is wanted, the **Hart-Parr Gas Tractor** has always been able to furnish it and that at a Saving over either horses or steam.

The Hart-Parr Gas Tractor has long ago passed the experimental stage. It has been tried at practically every kind of farm work known to the farmer to-day and it vindicates itself in every case. It has been called the **"Modern Farm Horse"** because it will do any work on the farm that horses can do and this at a considerable saving over horse power. It will take the place of five men and twenty-two horses. It is oil cooled, making it a winter as well as a summer power. It burns kerosene, the cheapest known fuel for the farmer.

It is made in a wide range covering **30, 45** and **80** brake horse power, so that no matter what the size of your farm or the amount of work you have to do, there is a **Hart-Parr** engine built for your purpose.

The first step is a catalogue; the second step is to buy Hart-Parr: the third step is where you farm for profit.

Portage la Prairie

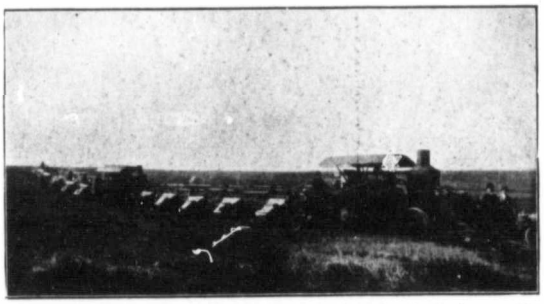
MANITOBA

Sales Agents for Alberta.

BREAKING

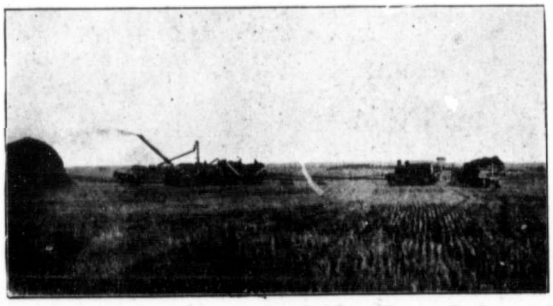
You as a farmer in Western Canada have doubtless had more or less experience with the **breaking** of raw prairie and you know what a slow, heart-rending process it is when horses are used. You who have tried it also know what it means to have your big steam tractor laid up for weeks on account of rainy weather that makes the ground so soft that your steam engine mires. No such troubles with a **Hart-Parr**; the hotter the weather the better it works and soft ground is not the "Jonah" of a **Hart-Parr** owner. It is always ready to break its fifteen to twenty acres in any kind of weather and any king of soil.

HARVESTING



Harvesting in Western Canada has ever been an anxious time for the farmer. Hot weather places a low limit upon the endurance of horseflesh and the farmer longs for the power that can be driven to its limit every hour in the day. The **Hart-Parr** is that power and with four or five 8-foot binders attached behind and travelling at a rate of 2 to 2½ miles per hour, it is but a matter of simple calculaton to see what you can do. Remember, you keep going all the time. There are no stops.

THRESHING



Power for threshing is a strong feature of the **Hart-Parr.** Twenty miles from water is no terror for the outfit that is run by a **Hart-Parr.** In the belt it develops a large amount of steady power that will drive a threshing machine to a record day's run, as is evidenced by the thousands of letters on file in our office from those who have used **Hart-Parr Gas Tractors** for threshing purposes. It is results that count with the thresherman and it is results of a profitable kind that the **Hart-Parr** always gives.

The Case Message

Carries an assurance of *peace, prosperity* and *happiness* to the Threshermen and farmers throughout the world. Write to-day for Case's message about successful threshing.

Case outfits thresh fast, thresh clean and preserve the grain perfectly — satisfy customers because Case threshed grain commands the highest market price

Leave it to Case and you'll be a winner.

If you haven't ordered your supplies, remember Case carries the biggest stock of the better kind at a saving of price. Send your order along and save money.

J.I.CASE THRESHING MACHINE CO.

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