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THE CANADIAN THRESHERMAN -AND- FARMER



CANADA'S FARM
MACHINERY MAGAZINE

WINNIPEG



CANADA

FEBRUARY - 1910

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E.H. Heath COMPANY LIMITED Publishers

Chase

JOHN DEERE ENGINE GANGS

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

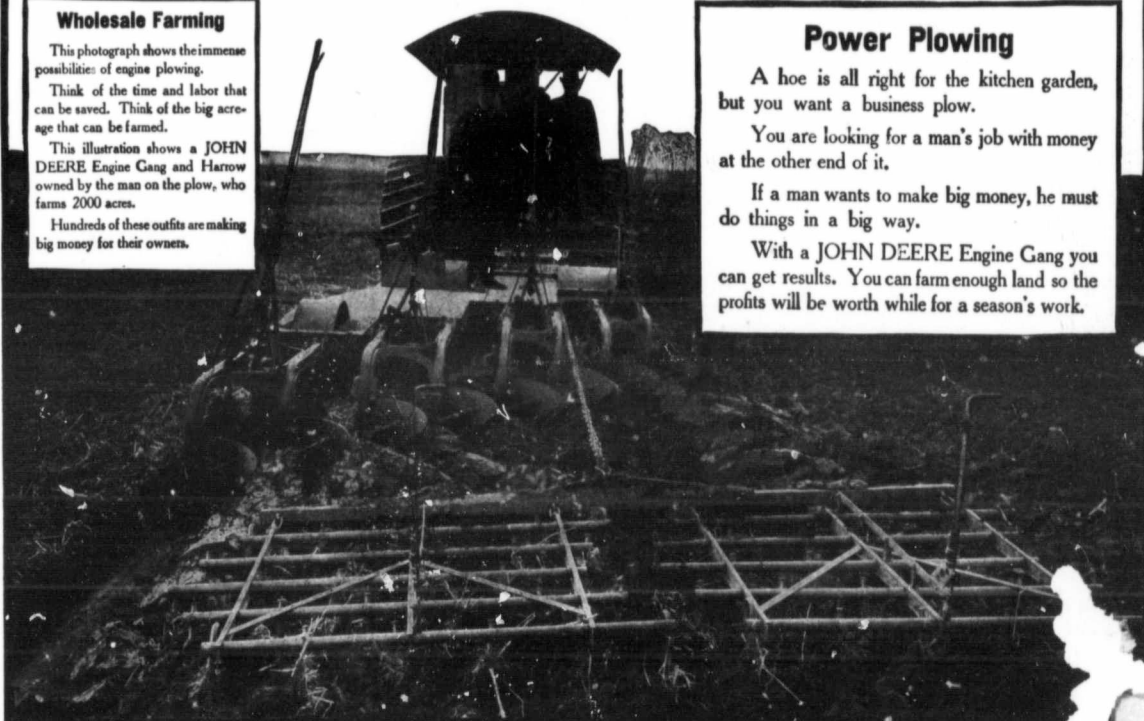
Wholesale Farming

This photograph shows the immense possibilities of engine plowing.

Think of the time and labor that can be saved. Think of the big acreage that can be farmed.

This illustration shows a JOHN DEERE Engine Gang and Harrow owned by the man on the plow, who farms 2000 acres.

Hundreds of these outfits are making big money for their owners.



Power Plowing

A hoe is all right for the kitchen garden, but you want a business plow.

You are looking for a man's job with money at the other end of it.

If a man wants to make big money, he must do things in a big way.

With a JOHN DEERE Engine Gang you can get results. You can farm enough land so the profits will be worth while for a season's work.

Big Plows for a Big Country

Why turn a Single Furrow and then go over the ground again with a Harrow, when you can turn from 4 to 14 Furrows and Harrow 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

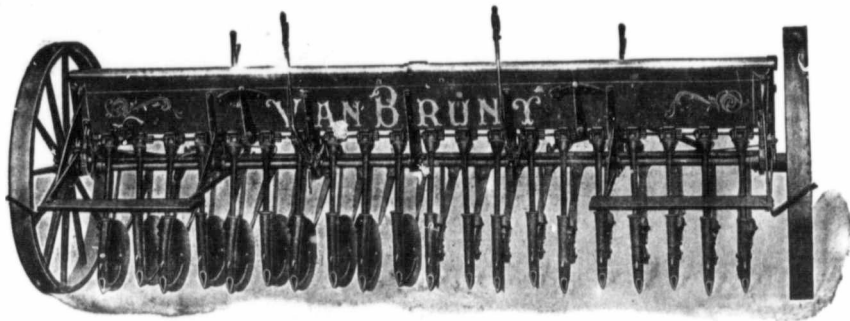
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VAN BRUNT DRILLS



Made in 12, 14, 16, 17, 18, 20, 22 and 24 Single, Double Disc and Shoe Interchangeable.

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 to cheapen it), runs the entire length of machine. Beware of drill with stub axle and with pitch and gather in wheels. Pitch and gather on wagon wheels is all right as they are on a thimble skin. The axle on a drill is one size, therefore axles must be set so wheels will run on a plumb spoke, otherwise the gather in the wheel tends toward heavy draft and to the wearing out of axle bearings. **Frame** is built of heavy angle steel and is thoroughly braced, the **Corners** are **Solid** and reinforced to prevent the slightest springing or rocking. Wheels with long hubs "chilled," set well under end of frame and are dust proof. 3-inch tire on 12, 14, 16 and 17, and 4-inch tire on 18, 20, 22 and 24 sizes.

Gear Drive (not chain), no lost motion, never wear out or lother. Both wheels are drive wheels. **Tilting Levers**. The operator can change the angle of Disc or shoe while machine is in motion. The Tilting Lever is as great a necessity to a **Grain Drill** as a **Mower**. An exclusive feature of the Van Brunt Drill.

Cannot Clog That is entirely true of Van Brunt Single Disc Drills. In any kind of soil where a team can travel, the Van Brunt will follow and do a first-class job of seeding. Gum'no, mud, or trash have no terrors. The Single Disc Drill became a successful machine when the Van Brunt Patent Disc Furrow Opener and closed Grain Boot were introduced. Do not be deceived by the statement of competitors that theirs 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 CATALOG.

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WINNIPEG BONSPEIL VISITORS

We extend a most cordial invitation to everyone interested in Farm Machinery (DEALERS or USERS) when in attendance at the Winnipeg Bonspeil to make our NEW OFFICES AND REPOSITORY their headquarters while in the city.

LIGHT DRAFT JOHN DEERE GANG PLOW

HOW TO SELECT A PLOW--THE RULE OF FOUR

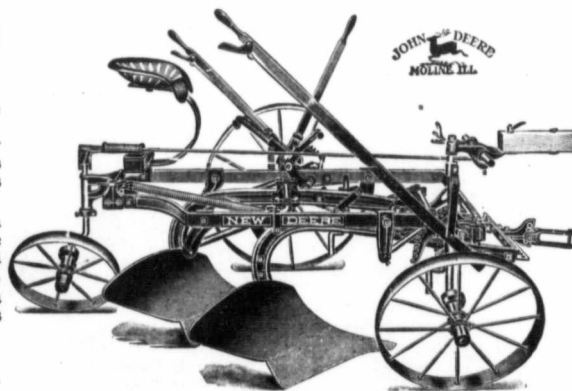
Plow quality does not improve with age.

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.

Write for Literature, Prices and Terms.

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. Horse-flesh 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.

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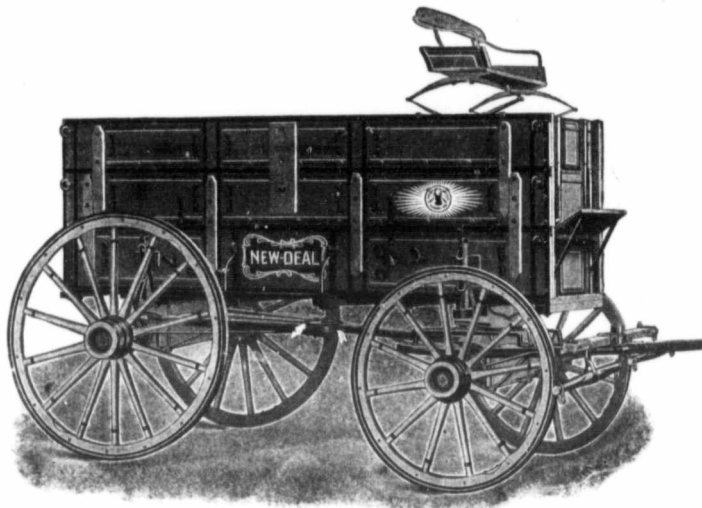
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NEW DEAL WAGON

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; ball 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.
- Neck yoke 48 in. long (not 42 in.)
- Has trussed tongue, cannot break or warp.
- Has channel iron reach really indestructible.
- Is extra well painted, striped and finished
- Possesses a great many distinctive features of merit.

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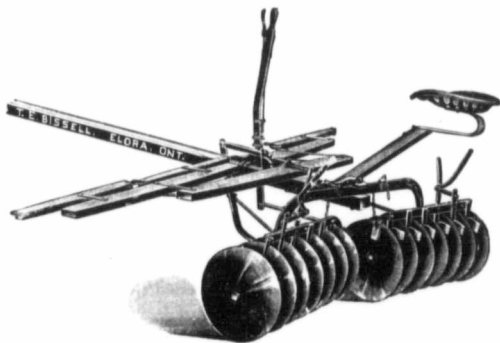
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Genuine Bissell Disc Harrow



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 FRONT 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. Composed 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 COMPANY LIMITED

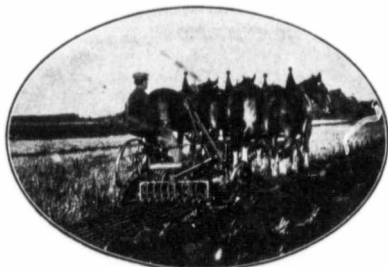
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HERE IS
**THE ONE IMPLEMENT
THAT EVERY FARMER WANTS**

You cannot afford to be without it. Why should you go on harrowing the same old way when you can make harrowing one and the same job with plowing. Why trudge along over plowed ground day after day, wearing out your life and shoe leather when there is no excuse for doing it? Why put off harrowing until the ground gets dry and dusty when you can just as well harrow when the soil is fresh turned and moist and do the work so much better? There is only one side to the question. You ought to ride to harrow, harrow where

there is no dust to stifle, harrow when you can do the best job and save yourself and your teams all the extra time and labor of harrowing by using the

E. M. KRAMER ROTARY HARROW ATTACHMENT

No matter what make of sulky or gang plow you have, the Kramer Rotary Attachment is the only implement which gives you a complete seed bed at one operation. Others pack and roll the surface. The Kramer pulverizes to the full depth of the furrow and prevents evaporation of moisture by creating a dust mulch instead of a hard surface on the top of the ground.

There's no tramping over the plowed and harrowed ground by the horses.

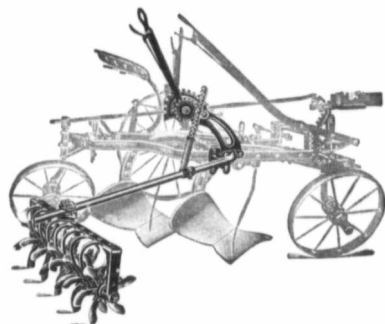
50,000 FARMERS ARE USING IT -- GET IN LINE. There will be 50,000 more users before the end of another year. It's too good a thing for you not to get the benefit of it.

Be sure the Attachment you get is the Kramer, not a roller or packer but a soil pulverizer, superior to any other in design, in work, in construction, in length of service.

If your dealer does not handle the Kramer Attachment, write us.

THE KRAMER CO., Manufacturers, PAXTON, ILL.

Exclusive Selling Agents for Manitoba, Saskatchewan and Alberta:



JOHN DEERE PLOW CO. LTD.

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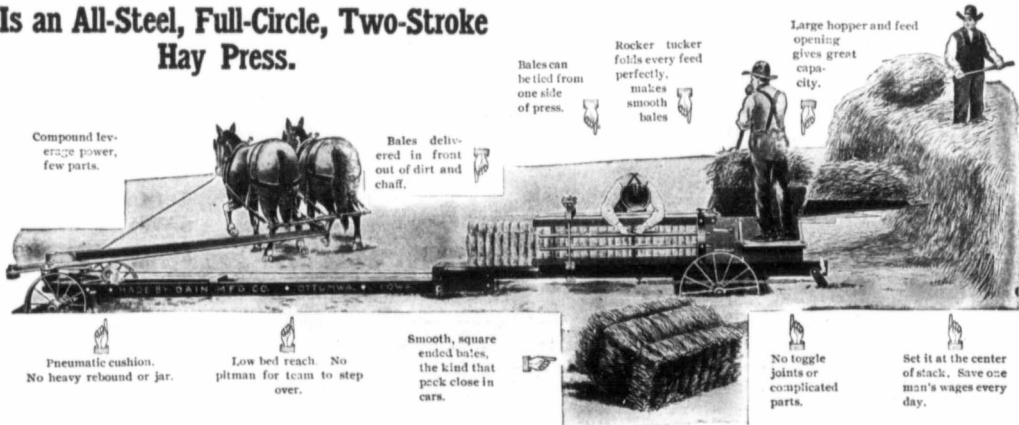
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THE
DAIN PULL POWER HAY PRESS

Is an All-Steel, Full-Circle, Two-Stroke Hay Press.



Compound leverage power, few parts.

Bales delivered in front out of dirt and chaff.

Bales can be tied from one side of press.

Rocker tucker folds every feed perfectly, makes smooth bales.

Large hopper and feed opening gives great capacity.

Pneumatic cushion. No heavy rebound or jar.

Low bed reach. No pitman for team to step over.

Smooth, square ended bales, the kind that peck close in cars.

No toggle joints or complicated parts.

Set it at the center of stack. Save one man's wages every day.

The smoothest running, lightest draft, fastest baling Hay Press made. No toggle joints or other complicated contrivances to quickly wear out, break, or waste power.

Write For Catalogue.

When you buy a Hay Press you want a durable, dependable Press that has labor-saving, money-making features. When you buy a DAIN Pull Power Press you get all these features, you get the latest, up-to-date, best Press made.

JOHN DEERE PLOW CO. LTD.

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S. & M. Threshing Outfit owned and operated by Messrs. Robertson Bros. & Kerr, Lawson, Sask.

S. & M.

(COMBINATION)

ENGINES



30 H. Power S. & M. Traction of Donald McInnes Macdonald Man., operating a 10-bottom Gang.

FOR

THRESHING ↔ PLOWING

"The Survival of the Fittest" is exemplified in the present high classification of Sawyer & Massey Engines. Some years ago the Sawyer & Massey Co. announced their determination to build a Combination Engine or, in other words, an Engine that would do both Plowing and Threshing and do the Plowing with as satisfactory results as Threshing had been done for years by their celebrated Tractions. They were met with a storm of adverse criticism.

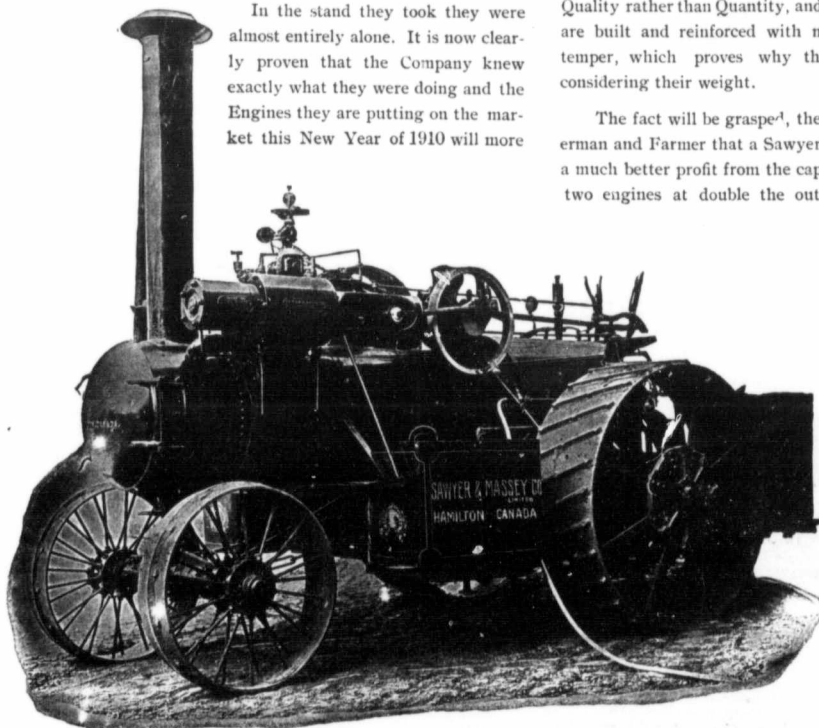
In the stand they took they were almost entirely alone. It is now clearly proven that the Company knew exactly what they were doing and the Engines they are putting on the market this New Year of 1910 will more

than confirm what has been demonstrated during the past Season. Hundreds of Testimonials are produced from well satisfied customers.

The chief objections raised at the outset were that an Engine suitable for Plowing would be entirely too heavy for Threshing purposes. Sawyer & Massey Co., however, clearly foresaw that this apparent difficulty could be avoided by the introduction of Quality rather than Quantity, and are seeing to it that their Engines are built and reinforced with material of a superior grade and temper, which proves why they are so powerful and durable considering their weight.

The fact will be grasped, therefore, by the intelligent Thresherman and Farmer that a Sawyer & Massey Engine stands to earn a much better profit from the capital invested, than the buying of two engines at double the outlay to accomplish the same results,

If a man would avoid the risk of delays and breakdowns he should place his order with the firm who build their goods not only to wear but to win.



Get in touch with the SAWYER & MASSEY people, the people who build the "Great West" Separator also, and you will be on sure footing.

YOURS FOR VALUE

Sawyer & Massey Co. Limited.

HAMILTON, Ont.

WINNIPEG, Man.

A MAGAZINE
FORTHE FARM
AND HOME

THE CANADIAN THRESHERMAN AND FARMER

Vol. XV.

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No. 2.



Farm Machinery -- Its Development

By E. F. W.



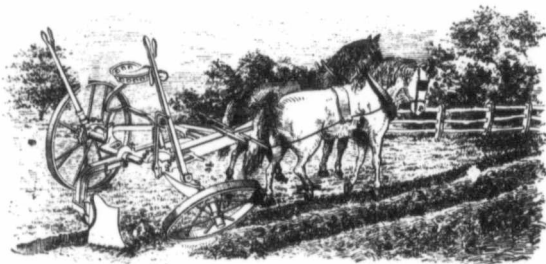
THERE is no more vital question at the present time to the farmer than that of his farm implements. It represents by far the greater part of the initial expenditure of every farmer in so far as equipment is concerned. We are living to-day in an age of farm machinery and it is absolutely necessary, if a man who tills the soil is to do so at a profit that he have a complete and up to date equipment. It is a thing that is worthy of very careful study and in farm machinery, as in everything else, the proper way to begin such a study is to begin with its history and its development. In this article I have tried to describe as briefly as possible the stages through which the greater part of farm machinery has passed in its rather uncertain but unsuccessful career and as the plow is the father of all farm implements we will begin with a discussion of that implement first.

PLOWS.

From the earliest times the "crooked stick" has been used to prepare the ground for the raising of agricultural crops; it is still

used in many parts of the world. Even in England a plow, properly so called, was unknown until the eighteenth century, and England was probably indebted to Flanders for the introduction of a wooden affair very much of the modern shape.

The first cast-iron plow, probably an English invention, was patented about 1785. An American cast-iron plow was made in 1797. Its inventors spent upward of \$30,000 in perfecting and introducing it, then abandoned the business in despair because the farmers of that day had in some mysterious manner acquired the idea that cast-iron plows "poisoned" the land, injured the fertility and "promoted the growth of rocks!" Even earlier than the date named, Thomas Jefferson, the third President of the United States, in a communication to the French Institute attempted to solve the mathematical problem of the true surface of the moldboard and to lay down intelligible and practical rules for its formation. Jefferson had several plows made



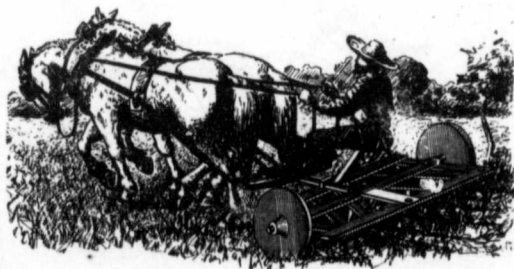
An Early Wheel Plow, 1584



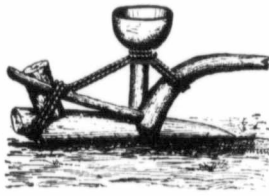
The Primitive Hand Harrow

in 1793 and put them into use on his estates in Virginia. But it was twenty years later that the foundation for the modern plow was laid by an American named Wood. This plow also was of interchangeable parts—the share, shin, moldboard and landslide being so made as to be common to any plow. Sharing the fate of so many inventors, Mr. Wood, in spite of the sales that were regarded as extraordinary—for example, in New York City in 1817, 1,500; and in 1819, 3,600—not only did not profit by his improvement, but actually lost a large amount of money, and

many years afterwards the New York State Legislature appropriated \$2,000 for the benefit of his heir. Wood, whose patents were dated 1814 and 1819, did more than any other man to replace the cumbersome contrivances then in use throughout the United States—as indeed, they also were in England—and a lighter, cheaper and more effective implement was the result; from that time improvements in these implements have been constantly made, all tending to increase the durability, efficiency and adaptability to the varied conditions of soil. Some of the notable steps in the progress toward perfection have been the invention of the chilled plow by James Oliver, the use of steel in point and moldboard, the new varieties of steel invented for this purpose, and the introduction of sulky or riding and gang plows. Perhaps the most noteworthy evolution of the implement in recent years has been the use of discs that penetrate the earth as they revolve in contact with it. The first practical patent in this line seems to have been dated



A Cultivator Patented in 1846



An Assyrian Seeder, B.C. 504

about 1876. The invention of the famous lock coultter also dates from 1822.

The necessity of breaking up enormous tracts of virgin soil in the new countries, which in the course of the past century or two have been settled and ultimately formed into what is now the Agricultural Section of North America, has naturally led to the development here of innumerable forms and varieties of plowing implements; the United States Patent Office in 1902 reported that up to that date 11,825 patents had been granted in this line of industry. As illustrating conditions in this country three-quarters of a century ago, the enthusiasm of Daniel Webster, the great statesman, may be quoted. He had constructed an enormous plow and wrote as follows about it:

"When I have hold of the handles of my big plow with four pair of cattle to pull it through and hear the roots cracking and see the stumps all go under the furrow out of sight, and observe the clean, mellowed surface of the plowed land, I feel more enthusiasm over my achievement than comes from my encounters in public life at Washington."

The advantage of the modern plow may be illustrated by the estimate that by its use labor equivalent to that of one horse in three is saved.

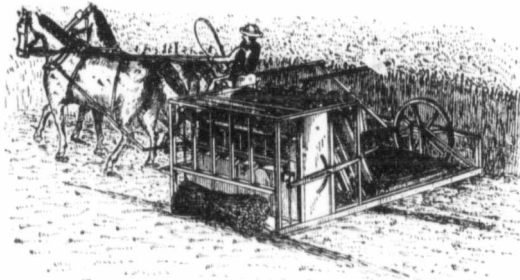
HARROWS.

After plowing comes harrowing; that is, the pulverization of the soil. The common drag harrow, is in essence, little more than an improvement used to drag over the plowed land. The original triangular form with teeth inserted gave place to the middle or oblong Roman harrow which came down to the middle of the nineteenth century almost unchanged. Iron and steel were substituted for wooden teeth, and afterward the harrow was made more flexible with hinges. Then came steel lever sectional harrows with adjustable teeth which could be set by the lever at any angle required. The spring tooth harrow, patented in 1869, nearly revolutionized the whole industry. The disc harrow, whose perfection in this country dates only from 1877, is really a very ancient type, and there are said to be early records of its use by the Japanese. A simple form of this harrow was patented as early

as 1847; but what is the well-nigh universal use of disc harrows is really a development of the past eighteen years.

SEEDERS AND DRILLS.

Down to the middle of the nineteenth century seed was commonly dropped or sown by hand, although historians assert that a sort of drill plow was used in Assyria as early as 680 B.C., and the Chinese lay claim to a similar implement 3,000 or 4,000 years ago. The invention of the machine which was the forerunner of the modern drill is rightly attributed to Jethro Tull, an Englishman, who has been called the "author of the horse-hoeing industry," and whose apparatus was produced about 1730. These machines were used to a considerable extent in England, but never found general acceptance in this country, the attitude toward them being well illustrated by the remarks of Rev. Jared Eliot, of Connecticut, in his "First Essay on Field Husbandry," published in 1754.



A Harvester Patented in 1833

"Mr. Tull's wheat drill is a wonderful invention, but it being the first invented of that kind, no wonder if it be intricate, as indeed it is, and consists of more wheels and parts than there is really any need of. This I was very sensible of all along, but knew not how to mend it. Therefore I applied myself to the Reverend Mr. Clapp, president of Yale College, and desired him for the regard he had for the public and to me that he would apply his mathematical learning and mechanical genius in that affair; which he did to so good purpose that this new modelled drill can be made for the fourth part of what Mr. Tull's cost."

In spite of the "mathematical learning and mechanical genius" of the president of Yale College, drills were not brought into general use until comparatively recent times. A writer in a letter dated 1786 spoke of a drill plow which he said his correspondent would find equal to "his most sanguine expectations." This writer had himself sowed oats with it successfully, but it seems to have been simply a barrel

attached to the plow, with holes in the bottom the proper size and distance apart.

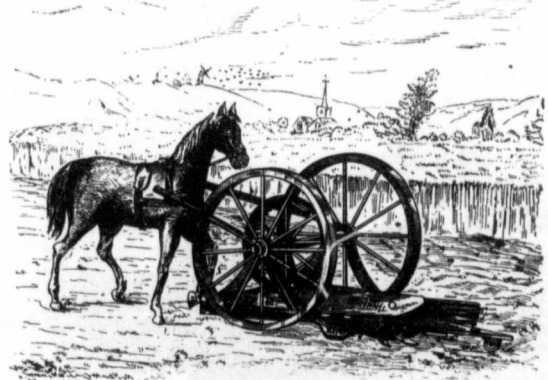
The first American patent on seeding machines was granted in 1799. Several others were issued during the early part of the nineteenth century, and in 1840 a device for regulating the feeding cavities and the amount delivered was patented. Other patents for side drills and force-feed drills followed, the first patent on the latter dating from 1851. The most remarkable development in the evolution of the modern grain drill has occurred within the past quarter of a century. The substitution of force-feed for gravity-feed was an important step, becoming the practical, everyday implement between 1876 and 1880. The shoe drill, patented in 1893, has largely succeeded the common hoe drill, and the disc feature has been applied to the drill in the West and the broadcast seeder attachment to the disc harrow.

Wheat, rye, oats, and barley are sown by the modern drill in equi-distant rows and by shutting

bottoms of little furrows, the ground crumbles down against the plant, which is not so readily heaved out by the winter's frost." Moreover, the use of the drill is quite an important preliminary to the introduction of the reaper and the harvester; and one of the difficulties which the manufacturers of the latter machines have to overcome in some of the more backward countries of the world is the antique method employed in sowing wheat. In such countries it has proved far easier to sell a reaper which could not be used than a drill which would have to be used before the reaper.

CULTIVATORS.

Jethro Tull, above referred to as the originator in England of the horse hoe system of cultivation, sowed corn in rows and cultivated between the rows. He invented the horse drill and the horse hoe or cultivator. His system, however, was not a complete success for a long time, and cultivating with the ordinary hoe was the general practice until fields of corn began to be of considerable size. Then came the single-shovel corn cultivators, drawn by one horse, which were usually produced by the village blacksmith, who a little later added another shovel. A United States patent for a hilling cultivator was granted in 1830. In 1835 came the first straddle row cultivator, which was not perfected for almost twenty years. A patent for a wheel riding cultivator was issued in 1846, and from about that time dates the enormous expansion in the manufacture of these implements, of which there is an almost endless variety—hand and horse, single and double, walking and riding, shovel bladed spring-tooth, disc, etc. Cultivators for specific purposes are now constructed for cultivating beets, spinach, sugar, cane, cotton, potatoes and several other plants. The first disc cultivator dates from 1878. Among recent improvements and novelties in this line may be mentioned a



A Reaper Patented in 1798

riding cultivator having an arched axle to pass over the rows of growing crops and cultivate on both sides of a row at the same time.

SCYTHES.

Joseph Jenks was the first founder who worked in brass and iron on the American continent, and has been called the Tubal Cain of New England. On May 6, 1646, he was granted by the Legislature of Massachusetts a patent for fourteen years for the "making of scythes and other edged tools with a new invented saw mill that things may be afforded cheaper than formerly." In 1655 he was accorded another patent for the improvement in the manufacture of scythes "for the more speedy cutting of grass for seven years." His improvement consisted in greater length and thinness to the blade, and in welding a bar of iron on the back to strengthen it, as in the modern scythe. This was regarded as a marked improvement upon the old form of English scythe, a clumsy instrument, short and thick. No radical change, say authorities, has since been made in the form of this implement.

The grain cradle, too, owed its invention to the genius of the early colonists; but the cradle, like the scythe, was destined to almost entire extinction by the advent of mechanical means of harvesting, which came about in the course of time.

MOWING AND REAPING MACHINES

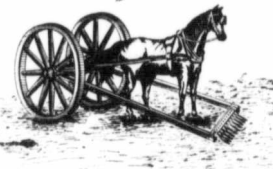
Machinery for mowing and reaping was originally of the same class; that is, the early reapers were generally of the sort known as combined—they both reaped and mowed. There has probably been no more bitter and more acrimonious controversy over any kind of invention than that which for fifty years filled columns published both in England and America on the subject of the reaping machine. Not only have English authorities flatly charged that American inventions were stolen bodily from an English machine, but fierce quarrels ensued among several American claimants to this invention, which, indeed have proceeded almost up to the present day, at least in the form of a good deal of ill feeling or

until the combination of several of the principal manufacturers of this class of machines into one great company. To the unbiased student there seems to have been little enough basis for any charges that have been bandied back and forth.

The idea of reaping grain by a machine to be drawn or pushed by a horse is an ancient one and appears in the writing of Pliny the Elder, who was born, A.D. 23. In 1785 an Englishman proposed a mechanical reaper. In 1790 a book published in England described another machine of this class, and in the same year the first English patent was granted. Another British patent was issued in 1800, others in 1803, 1806 and 1807. All of these machines were complicated; but in 1882 Henry Ogle, a schoolmaster of England, invented a machine of comparative simplicity and first used a reciprocating cutter. This machine was successfully tried, but its inventor wrote of it; "Some working people tried to kill Brown (the maker of the machine) if he persevered any further in it, and it has never been more tried." However, it is to Rev. Patrick Bell, of Scotland, that English authorities give credit for the invention of the modern reaping machine. It is undoubtedly true that this machine marked the advent of successful reaping by machinery. Bell's machine was invented in 1826, and two years later was in successful operation, receiving a premium of 50 pounds awarded by the Highland Agricultural Society. For one reason or another this reaper, after considerable numbers had been made, was gradually lost sight of, and seems to have been

entirely forgotten by the agriculturists of Great Britain until 1851, when the advent of certain Americans at the Great Exposition at the Crystal Palace stirred the British authorities to remember that they too had a reaping machine, as will soon appear.

The American invention of the reaper is contested by two claimants. Apparatus for cutting grain and grass was patented in the United States in 1803—the first mention in our records of mowing or reaping machinery—but it was not until many years later that successful machinery was made and marketed. Obed Hussey of Ohio, obtained a patent December 31, 1833, on a machine for cutting grain. In July of that year a public trial had been held before local agricultural societies, and in the following year machines were introduced into neighboring states



A Harvester Patented in 1831

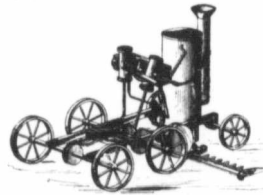
to-day there are less than fifteen manufacturers of similar machines in the United States is largely due to the financial shrewdness and business acumen of this great company.

It would appear that there was a general awakening to the importance of harvesting machinery on the part of inventors in various parts of the world at about this same period. A reaping machine was invented in Odessa in 1831; one in Vienna in 1839; one in Australia in 1845.

But the revolutionary character of the invention only came prominently to the attention of the public at the great Exhibition of Industries of All Nations in 1851, when both the McCormick and Hussey machines were exhibited and demonstrated. At this exhibition the McCormick machine received the medal, but Mr. Hussey turning up in person a few days after the first trial was given an opportunity to work his machines, and under his successful guidance they received the practically unanimous indorsement of the judges. A great deal of excitement naturally ensued, and, as one writer expresses it, "caused the forgotten experiments of half a century to be withdrawn from their limboes and exhibited to the enthusiasm of these foreigners." Anyone who wishes a demonstration of the length of which insular narrowness and jealousy can go is referred to the pages of the Encyclopedia Britannica, article "Agriculture," where one may read in connection the account of the Bell reaping machine.

Considerable numbers were made and partially used, but from various causes the invention was lost sight of until by the arrival of these American and Canadian machines and the notoriety given them by the Great Exhibition an intense interest was again excited regarding reaping machinery. * * Four specimens of it (Bell's machine) had been carried to America, and from the identity in principle between them and those now brought thence there is little doubt that the so-called American inventions are after all modifications of this Scottish machine."

To the American this seems



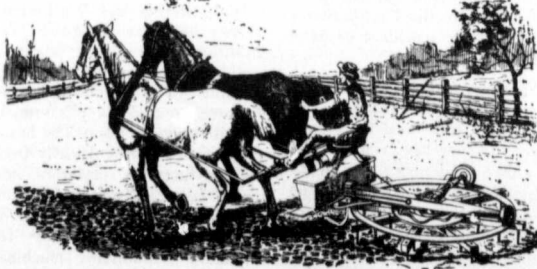
A Steam Mower Patented in 1868

and factories established at Baltimore. Some authorities claim that it was this machine which formed the model on which mowers and reapers based nearly all their subsequent designs of inventions for improvements and modifications. On the other hand, the friends of Cyrus Hall McCormick, of Virginia, claim that his reaper, although not patented until June 21, 1834, had actually been in use as early as 1831. In any advent, both machines survived and worked a revolution in the harvesting of grain throughout the world. A letter is in existence from the then Commissioner of Patents which virtually acknowledge that the granting of a patent to Mr. McCormick was a mistake, and it is a fact that, although the type of the McCormick machine was considerably changed by the time that his next United States patent in 1854 was issued, the courts held that suits brought against competitors were not well founded, and many new factories sprang up throughout the country.

The McCormick plant, meanwhile, was removed to Chicago, and through superior business ability, or for some other reason, rapidly developed into the most important in the world. At that time there were more than fifteen patented rivals in the field, and in 1857 no less than forty different machines were on the market in the United States. The fact that



The Original Hay Tedder



A Seeder Patented in 1878

a very severe indictment of the British character. As a matter of fact, it is not positively known but what one of the Bell machines was imported into the United States, and that it was in use on a gentleman's farm until his death, and it is not known that any American inventors ever had an opportunity of seeing it. However, the sting of the Britannica's observations in this regard is removed to a large extent by a further perusal of the article in question. We read: "The success of Bell's machine gave it a high place in public estimation. * * *

After a hopeful start the success of this machine has not been so decided as was at first anticipated; it was found to be too heavy in draught, too liable to derangement, and (in the first issues of it) too easily broken in some of its parts to be fitted for general use. * * * Such specimens as first got into the hands of farmers were so imperfectly constructed that they did not work satisfactorily, and this brought discredit on his invention. * * * The true explanation (that is, of what the Britannica calls 'the strange neglect of Bell's machine for twenty-five years') is that the country was not ready for such a machine, manual labor was abundant and cheap," etc.

Whatever may be thought of the competing claims for English or American priority in invention, the fact remains that it was the American and Canadian machines which were adopted by English manufacturers, and which to-day control probably nine-tenths of the world's markets for such apparatus.

It is worthy of note when "identity in principle" is spoken of that Obed Hussey himself, in writing in 1854 stated: "Bell of Scotland used scissors. His machines presented to the grain an edge of pointed blades which operated like a series of tailor's shears, and it was soon pronounced a failure."

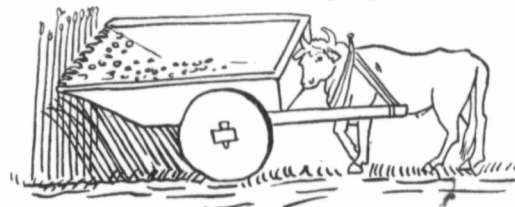
The supporters of Bell, moreover, seem always to have neglected to note the fact that certain features of his (Bell's) machine were apparently copied from the Ogle machine above referred to, such as the adjustable reel, etc.

The interest this aroused in Great Britain in harvesting

machines is illustrated by the fact that from the closing of the Crystal Palace in 1851 there were no less than twenty-eight inventions registered and English patents granted for inventions relating solely or partially to reaping or mowing machines, but none of them were of great importance.

In the summer of 1855, at a competitive trial of reapers, about 40 miles from Paris, the three machines exhibited—were from America, England and Algiers. The following was the result in a field of oats: The American machine cut an acre in 22 minutes; the English in 63 minutes; and the Algerian in 72 minutes. It was this trial which prompted the remarks in the French journal with which the present article opens.

The first distinctive mowing machine was made under patents granted in 1844. The first patent on a self rake reaper dates from 1851, and in an automatic twine binder 1875. Wire binding apparatus was patented in 1874 and a sheaf carrier in 1891. The essential features of



Early Roman Stripper.

the modern harvesters are very much the same to-day as they were forty years ago, excepting that the ordinary mowing machines and reapers in use prior to 1870 have been almost altogether superseded by the automatic self-binding machines. Harvesters are now successfully adapted to rice, maize, and sugar cane, but numerous efforts to perfect a cotton harvester or picking machine have not yet received unqualified approval.

THRESHING MACHINES.

It is to England, or rather Scotland, also that the world must look for the original invention of the threshing machine. A British patent was granted to Andrew Meikle in 1788, and this was the first successfully operated machine. In 1800 a fanning mill was added to the machine but it was still very imperfect



An Egyptian Threshing Floor.

and was stationary, being run by water power, and the grain had to be brought to it to be threshed. Various machines seem to have been used in Great Britain to some extent in the succeeding half century, but the flail continued to be the common implement down to 1830, or even later. The dearth of labor on this side of the pond and some other reasons caused the flail to be used relatively less in this country than in Europe, and a threshing machine was patented here as early as 1789, though nothing is known about this apparatus. Another machine was patented in the United States in 1802, and in 1822 two gentlemen of Vermont patented an apparatus moved by two horses which contemporary records stated

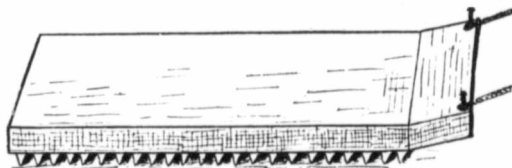
invented in 1881, a pneumatic stacker, in 1896. A valuable improvement to the engine was the adapting of the fire box to the use of straw as fuel, thus materially reducing expenses on that score.

Prof. William H. Brewer, in an article on this subject, written many years ago, said:

"A hundred years ago to cut 100 bushels of wheat required about three days' work (which could not be delegated to other power); to bind and stack it four days; to thresh and clean it five days, which with the other processes between standing grain and the merchantable product would amount to some fifteen days' actual manual (and mostly very hard) labor for each 100 bushels. A day's labor would not give more than six or seven bushels of grain through these processes." While exact data regarding modern processes were not available, Professor Brewer thought that the product per man per day would now range from 50 bushels upward.

The threshing of 10 to 12 bushels of wheat with a flail was considered a good day's work for one man, and 25 to 30 bushels a day with three horses, a man and a boy was a common result. The comparative value of the flail and the modern threshing machine was demonstrated at the Paris Exposition of 1855. Six men were set to work with flails, and in one hour threshed 36 liters of wheat. In the same time Pitt's American machine threshed 740 liters; Clayton's English machine 410; Duvoir's French machine 250, and Pinet's French machine 150. A Paris journal reporting this trial, said "This American machine literally devoured the sheaves of wheat. The eye cannot follow the work which is effected between the entrance of the sheaves and the end of the operation. It is one of the greatest results, which it is possible to attain."

In California and Washington where the grain is ready for threshing as soon as it is cut, a combined thresher and harvesting machine of the header type, mounted on a single platform, is in quite common use. The heads of grain are carried directly from the harvester by elevators into the threshing machine, from which the threshed grain is delivered into bags ready for shipment. Similar machines



A Greek Thresher.

At first horses were the universal power applied, but gradually the modern steam power thresher has been evolved, in which the bundles are fed to the machine, which cuts the bands, threshes, winnows, sieves the grain and stacks the straw. An automatic band-cutting and grain-feeding attachment was

Continued on page 81

Standardization of Farm Machinery

By A. O. Fox, Madison, Wisconsin.

Read before the American Society of Agricultural Engineers at their Third Annual Convention.

If one of us desired to install a power plant equipped with the necessary steam engines, boilers and perhaps electrical machinery and switchboard, we would only need to go to any reputable engineering firm or member of the American Association of Mechanical or Electrical Engineers to obtain complete standard specifications as to what each piece of machinery must be in its respective component parts in order to fulfil our requirements satisfactorily for the duties involved and the respective manufacturers would sell them guaranteed to conform therewith.

If we were going into the railroad business and desired to purchase T rail, our consulting engineer would immediately supply us with the exact specifications as to size, weight, and even the chemical analysis of the steel required to fill our needs, and if we desired to purchase rolling stock we would find complete specification as to standard cars, character of wheels as to size, weight, chemical composition, also the same as to axles and bearings, also the specifications for all superstructure of the cars, even to the bolts and screws, and the manufacturers would sell in conformity therewith.

If, however, we have purchased a farm and desire to equip it with machinery adapted to the character of land and the kind of business to be undertaken, to whom shall we go for counsel and where shall we find specifications of standardized agricultural imple-

ments or parts which shall enable us in any way to be certain in our selection? Who knows the standards in respect to strength, durability, efficiency, character of gears, bearings, etc? Who can give us any idea of a proven or desirable chemical analysis for any metal part of any agricultural implement excepting the manufacturer's own idea of it? Where is there a specification that will even suggest to us whether a common cast gear is adequate or that a cut gear should be used in its stead in certain places in certain kinds of agricultural machinery? Who is to tell us whether the fly-wheel grinder we are about to purchase will stand to run at the rate of speed required by the machine to do good work or whether this fly-wheel is dangerously light in hub

and spokes and liable to fly to pieces if someone inadvertently throws some frozen grain or other obstruction into the machine? Who knows whether the bearings in one line of machines, though called bronze, are made with a high percentage of lead and are, therefore soft and short-lived or



The end of the Furrow

that the bearings in another line of machine are made of high class phosphorbronze or other good materials and that babbited bearings in some machines are high class and commendable, and who particularly can tell us who has ascertained, or how to determine, how much horse power and horse flesh we would be wasting by the purchase of one kind of machine

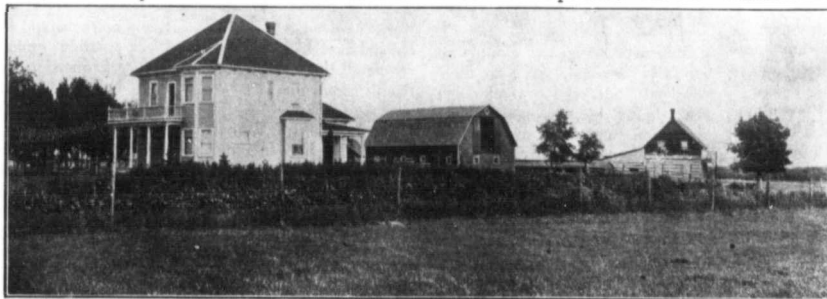
manufacturer, for himself, sometimes in the interest of the purchaser, though probably more often in the light of costs of raw material and labor. If there is anything in this world that is organized to-day it is the manufacturers' SHOP and the very essence of such organization is

low cost of production. Not infrequently does the purchasing agent of a large manufacturing corporation, in his eagerness to show low costs, buy materials which, if not standardized by some authority higher than that in his factory, may be so poor in quality as to impair seriously the wearing qualities or the efficiency of the finished product. His em-

the soil for these plants, standardizing balanced rations of animal food and balanced rations for plants, and through the aid of chemistry they are also specifying the different kinds of manure applicable to different localities, farms or fields. Why not standardized the materials of farm implements

Our remedy in undertaking to standardize and improve the general character of farm implements must, it seems to me, consist in testing in the first place by independent and reputable authorities, the publication of these tests with recommendations, not with respect of certain makes of machines, but with respect to principles of designs, character of materials, efficiency, durability, etc., and particularly in standardizing such parts as are commonly used in a large variety of machines. Having made this start and having acquainted manufacturers with our real purposes, there would ultimately work out some plan of concerted action between this association and the various manufacturers, or perhaps the associated manufacturers. There ought not to be any opposition on the part of manufacturers as soon as they become aware that the work of this association shall be based absolutely upon sound engineering, without fear or favor in respect to different makes of machinery.

The engineers should begin by standardizing methods of testing and of scaling implements and



The New

A Result of Five Years Work

The Old

or saving by the purchase of another and better design qualified to do the same work?

It would appear that while in many other lines of business standards of excellence have been made and adopted by the various Associations of Engineers or Manufacturers, yet in the agricultural implement business there seem to be no standards except those worked out by each

employer will not stop him unless restrained by forces beyond his control. Some dominating standard practise below which he dare not go for fear of losing the reputation of his concern through detection by competent engineers must prevail.

Agricultural experiment stations of State and Nation are rapidly standardizing plants for different localities, standardizing

their parts; in grading them as to degrees of excellence, and the cooperation of all state agricultural societies solicited to the end that they shall require inspections and analysis to be made under the rules of the American Society of Agricultural Engineers and that all prizes awarded by State Agricultural Societies should be made in accordance with such standard rules.

Standard forms of sales contracts under which implements are sold should likewise receive consideration by this association, regular forms of guarantee be provided and a clause should be included providing for tests in case of dispute and the manner of such tests. Conditions as to defective parts and their replacement should also be included, through conference with the vari-



3 men and 20 horses to do the work of a Gas Tractor



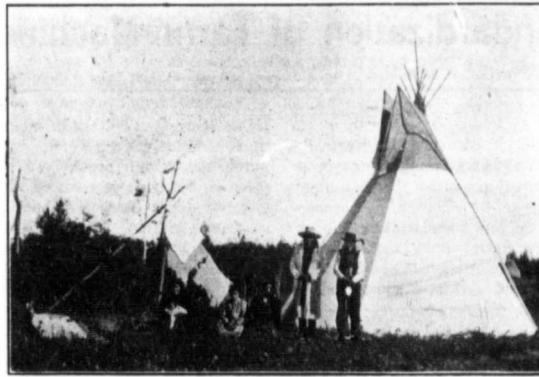
ous manufacturers, or the manufacturers' associations, accomplish finally an agreement as to satisfactory form for these various sales, contract forms, guarantees, tests, replacements, etc.

With a view of accomplishing these things I suggest for a beginning that there be inaugurated at the various agricultural experiment stations a system of design studies and tests of various machines and parts to be determined upon and to enable these determinations to be more easily made I recommend that a committee be appointed, composed in part of members of this Association and in part of Engineers to be appointed either by the Federal Department of Agriculture or by the various experiment stations. This committee to determine upon certain kinds of agricultural implements and parts which shall seem most in need of immediate attention and to prescribe as nearly as may be some plan for studying the designs and for testing certain parts under such rules as this Association shall determine; that the methods of testing be first standardized so far as possible and that the tests themselves be made more with a view of standardizing materials and parts and practises rather than for the purpose of determining that any one particular make of machine is better than another.

I would recommend beginning with the parts which can be more readily standardized, such as bolts for different uses, boxes and bearings, axles, gears, pulleys, fly-wheels, knives of feed cutters, metal wheels, wooden wheels, etc., and that you may clearly understand me in respect to this I will state more particularly what I think could be done with some of these, for instance:

BOXES AND BEARINGS.

These could readily be standardized as to the composition of bearings and their bearing surfaces with respect to certain classes of load. It is a well known fact that in babbited bearings and in copperbronze and brass bearings the use of lead is in common practise and reduces the cost of manufacturing and makes the part much easier to machine, in consequence of which manufacturers are sometimes apt to use too much lead in their bearings, making them too soft and greatly shortening their life. The ingredients of these various kinds of bearings should be specified and made absolutely standard



The Aboriginee

for different kinds of use. Roller bearings and ball bearings should also be considered. The question of compression grease cups versus plain oil holes should also be considered, as likewise the means of draining certain kinds of bearings from below in order that they may be occasionally cleaned from grit and dirt.

adoption of certain kinds of pulleys to certain uses and loads are so well understood that there should be no excuse on the part of the manufacturer for using an improper size or kind. Yet we all know from practical experience on the farm how often machines are equipped with pulleys wholly inadequate for the



A Scene on One of the Numerous Ranches in Alberta

GEARS.

Materials of gears should be carefully studied, even to their chemical analysis; break-down tests should be made, also their dimensions and style of construction should be considered. Specifications should be standardized showing particularly where cast gears would be permitted and where cut gears would be required, not only in respect to durability but in respect to efficiency, and elimination of friction loads.

PULLEYS.

The general rules of mechanical engineers in respect to the

work involved. Pulleys can easily be standardized and the lists so arranged that any farmer can readily determine the kind and size best adapted to his needs. Such information could then be published in bulletins devoted to machinery.

FLY-WHEELS.

Many accidents occur through the use of fly-wheels totally inadequate to their purposes. Fly-wheel tests should be made to determine the sizes of hubs, spokes and rims adapted to certain weights, loads and speeds and specifications should also show the kind of service which requires

webbs instead of spokes and giving some idea of the thickness of webb required to make it sufficiently strong. The laws of some of our states now regulate some of these points to some extent but it is clearly within the province of this Association to standardize fly-wheels with a view to strength and safety and in respect to the bearings which are to carry fly-wheels at maximum speed and such information should then be published in bulletins.

BOLTS.

The uses of bolts should be standardized showing where bolts of the character of carriage bolts would be required and specifying the class of uses in which the cheaper and commoner variety of bolts would be admissible.

WHEELS.

I would recommend the testing and standardizing of both metal and wood wheels for all farm implements, giving particular attention to sizes of hubs and spokes, the proper dimensions of the bearings in the hub to sustain certain loads, the preferable dimensions of rims for certain kinds of work and loads, giving particular attention to the question of design of the bearings, cups, would be recommended and where ordinary oil holes would be tolerated and possibly going somewhere into the question of roller bearings and ball bearings in their application to various kinds of wheels.

FEED CUTTERS.

I would recommend tests of these with a view of determining the horse power required for certain tonnage output per hour with a view of determining the most efficient and most durable designs, the factors of safety in each and the safety appliances in use or recommended, the determination of such questions as to whether a curved knife requires greater or less power than a straight knife in a given amount of work, which is the easiest to sharpen and maintain, the safest method of attachment of the knife for practical use, etc.

GASOLINE ENGINES.

I recommend tests of these to determine efficiency as to power development for a given amount of fuel consumption, also as to speed regulation, and then as to ruggedness and durability. Oftentimes with the purchaser speed regulation is more essential than efficiency, and again in some cases durability is the great consideration even though efficiency and speed regulation may be low.

Continued on page 50b



A Good Case of Mixed Farming Near Edmonton



Concrete Construction About the Home and on the Farm

By Mr. Edw. D. Boyer, Cement Expert of the Atlas Portland Cement Company.
Presented at the Third Annual Convention of American Society Agricultural Engineers.



TEN years ago if I had been asked to prepare a paper on Portland Cement I would not have hesitated in supplementing my remarks on the subject by an elaborate description of the method of manufacture, its composition and general character. It is not more than ten years ago when we who were engaged in its manufacture were frequently asked whether the name "Portland" indicated the fact that it had first been made or "discovered" in Portland, Maine! I venture to say that to-day there are comparatively few people, including farmers, (which latter class were at the same period supposed to know very little of anything but farming) that do not know that Portland Cement derived its name from a natural rock found in England that was supposed to be the hardest of known rocks, that the materials from which it is manufactured are clay and limestone, and which are found in nearly every State in the Union, that these two materials are chemically combined and proportioned, intimately mixed and finely ground and then burned into clinker under a high heat and the grinding of this resultant produces the Portland Cement of which I speak to-day.

Of course, 10 years ago about only 3½ million barrels were produced in the entire country while the production for this year 1909 will approximate 60 million barrels, and this phenomenal increase in production and consequent consumption reduced the price to such an extent that it was available in every community as a cheap building material. This, followed by extensive and judicious advertising, brought Portland Cement before the notice of everyone contemplating building of any character from the twenty story sky scraper in the large city to the chicken coop or hog pen on the farm.

And to this same farmer the material most emphatically appealed. He soon learned of its plastic character and his ability to mold it into any form. He, read, he experimented and he asked questions, and I say to you to-day that the farmer with the use of his few barrels here and there was a great factor in keeping the mills running last year. There were some failures but not as attributed by its competitors, the clay tile, the brick and the stone people, to the inferior

quality of the material, but always to a lack of understanding in manipulation. I believe I am to-day in a State that is a great consumer of drain tile and if I remember correctly it was in this very neighborhood that serious attacks were made on drain tile manufactured of Portland Cement. How soon and how readily this attack was traced to the agents of the clay tile interests and how soon and how readily it proved a boomerang to them! There are miles of this cement tile in successful use throughout the Western Country and I venture to predict that this tile will remain in the ground unattacked by the alkali bugaboo and without deterioration or disintegration long after the farmer who placed it there has passed away.

That there are failures in concrete and that this wonderful

water to the mass, that is not to allow it to flow off your mixing board carrying the cement with it, it is far better than to have your mass so dry that it hardly sticks together even with vigorous tamping. The Concrete Block industry has passed through all the stages that usually develop in a new material and with mistakes in manufacture and exploit has still survived and is bound to become one of the leading building industries of the country.

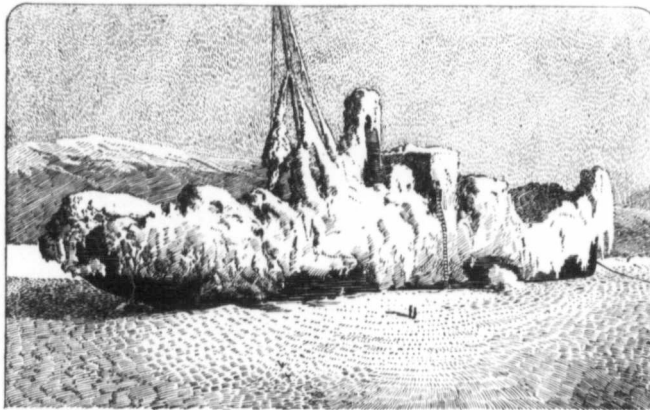
It appeals to the man of industry, and thrift, to the farmer first, because if he is the least ambitious he can mold the blocks, himself a few at a time in his leisure moments knowing that after being cured they can be stored in any old place, even out in the weather until finally he has enough to lay up the foundations

scarcest article on the premises. The mixture was hardly wet enough to ball when pressed in the hand and I was informed that the blocks were molded in this manner and allowed to stand until the next day, when they were plentifully sprinkled. On what were supposed to be cured block, I poured a scoop shovel full of water that disappeared so rapidly in the block that the surface was dry in a few minutes after; and all because to use more water would have reduced the quantity of blocks that could be made in a given time, thus increasing their cost: Will it be surprising that the man for whom this house is being built will in a short time complain of dampness in the interior, paper coming loose from the walls, etc., and that he will tell his neighbor who contemplates building, not to use

cement, it is no good? I believe you of the West interested in block manufacture have learned this lesson and arrived at the stage where you know it is not so much the particular machine nor yet the particular brand of cement as it is that the aggregates: the sand must be of good quality, free from loam and vegetable matter, properly graded and the mixture sufficiently rich in Portland Cement all mixed with enough water to properly assist in crystallization. And on the subject of waterproofing a block or anything else made of Cement Concrete I believe a richer mixture—

that is, the use of more cement will be more effective, durable and lasting than the more expensive use of any of the many so called waterproofing compounds at present on the market. I feel sure that a rich mixture with the additional use of 10% of Hydrated Lime, that is 10 lbs. of properly hydrated lime to every 100 lbs. of Cement used, will most effectually waterproof concrete and prove considerably cheaper than the use of the waterproof compounds referred to.

The ingredients composing Portland Cement Concrete are: Portland Cement, Sand, Gravel, or Crushed Stone. Of Portland Cement there is but little to say; in the first place a farmer, or as far as that is concerned, very few users of Portland Cement, has no facilities for testing his material. He must depend upon his dealer or better still on the repu-



This is Not an Iceberg, but a Boat Covered with I. c.

building material can be abused I will not dispute and one of the greatest evidences of this can be seen in the many unsatisfactory concrete block houses that have been built in the past five years. And all these failures can be traced to the lack of knowledge of the material that entered into their composition. How many of these blocks were made throughout the country with not enough cement in the mixture to hold the sand grains together and, most important of all, not enough water to even start the crystallization of the cement! And right here I wish to emphasize this question of the use of water in making concrete. I would almost say you cannot use too much water in mixing concrete. Of course, you can drown your cement by the too free use of it, but as long as you can confine

and walls of his own home, a building that will last for all time, will require no paint, no repair, will be cool in summer and warm in winter, a home to be proud of and to enjoy.

Much has been written and said on the subject of concrete blocks and I would hesitate to occupy time on the subject if I did not know that even to-day there are inferior blocks being manufactured. It is hardly two months ago that I was called to a village not 100 miles from N. Y. City on a complaint of poor quality of cement. On the front of the "factory" was this significant sign, "Manufacturer of Waterproof Concrete Blocks." Blocks were being manufactured when I arrived, the mixture being probably correct, one to five for the base and 1-1 for the face of the block, but water was the

tation of the brand he proposes to use.

The quality of the aggregates and particularly of the sand and gravel I wish to seriously bring to your attention and dwell upon. The fact that sand and gravel are found all over the country and on most every farm or at least in such close proximity that teaming to the work is the only cost, has made of concrete the ideal cheap building material, and of this sand I wish to say again that first of all it must be clean. However, the fact that the sand you wish to use is not clean does not prevent its use. Water is also cheap and plentiful, in this glorious country of ours, and to wash thoroughly and flood your sand with it is no difficult job, nor does it cost anything. Loam, vegetable matter, clay and most impurities can be removed in this way. Of course, your sand must be hard; a shaley sand is no good. Always remember that a concrete is no harder than the aggregates of which it is composed and therefore avoid the use of shades of any character, of brick bats, and of soft sand stones. Sand too should be well graded from coarse to fine. Remember that a theoretically perfect concrete has every grain of the aggregate covered with cement so that the crystallization material can occur uniformly and effectively. Every void is supposed to be filled, the smaller grains fitting into the larger, and the nearer your concrete reaches this condition the better it will be. You can use all fine sand, yes, but you will readily understand that it will require more cement and therefore cost more money. And again you can understand how much more carefully the materials must be mixed to accomplish the required result of having each particle of the aggregate covered with the cement if you use a fine sand than if you use a well graded one.

This subject of mixing is also important. The mixing of the sand and cement, then the addition of the crushed stone or gravel and finally the water, all tossed about on the board or in the box until you have one homogeneous mass must be carefully conducted. Tools for work are always on the farm and one of the best is the ordinary garden rake.

The uses of concrete about the farm are so many and so varied that I can hardly do more than touch them separately. To the farmer whose property has been run down, whose board-walks are rotten and whose door steps are

down and many of the posts rotted and useless, whose cistern leaks and floor is decayed, whose silo is not air or frost tight, whose hog troughs have been chewed by the hogs until they scarcely hold the mash, whose horse mangers are in the same condition and stalls kicked to splinters, whose water troughs leak water faster than it can be pumped in, whose chicken nests are filled with vermin and finally whose barns have become weather beaten and are falling into decay, this material emphatically appeals. It is like Lydia Pinkham's Discovery or Duffy's Malt Whiskey—it is a cure-all—but unlike the medicines referred to, the cure is not temporary but permanent. I cannot go into details as to method of restoring each of the above and anyway the literature distributed by the Cement Companies which is free for the asking goes into detail in this regard. I want however to tell you of an experience of my own and others concerning the laying of cement walks. Three years ago



A Prince Albert Logging Scene.

I built in front of my property in Pennsylvania a side-walk of concrete made four inches thick of one part of Portland Cement and three parts of sand, laying same directly on the hard soil departing from the "dig out below the frost line fill with cinder or ash and place concrete on top" plan. The walk is in excellent condition withstanding perfectly the exigencies of our climate which in winter varies from below zero to 20, and 30, Fahr. a most trying climate for any sort of cement work. Since then in my neighborhood there have been laid miles of this character of walk, the cost of the finished work ranging from ten to twelve cents a square foot.

I am frequently asked whether frost will effect concrete and again this point appeals to the farmer from the fact that the winter months are his idle months, with time to devote to the making of fence posts, for instance, and it is therefore im-

portant that he should know that frost does affect concrete, but only before it has set. If there is any way to protect the concrete after being placed, for a few days or till after it has hard set, there is absolutely no danger. And here again the farmer has the best protector for concrete and it's right in his manure yard. A covering of manure over concrete will thoroughly protect it from the frost. Care must be taken that the aggregates are free from ice particles, the water if possible and the aggregates heated to about 80° Fahr. and the concrete promptly placed and covered as above. A point I wish to make right here is that only sufficient quantity of mortar should be mixed at a time as can be used at once, as a mortar that has become set or even partially set is absolutely worthless and should be discarded. Fence posts can be molded in a warm building a few at a time during leisure moments, and after a week can be placed in the open without fear of disintegration

cement which will assist in making same water tight. Painting of neat cement on surfaces exposed to the atmosphere and elements is not advisable, as the cement is very apt to check and eventually scale off, it not seriously damaging the work, but making it at least unsightly.

The Cement Silo has proven an undoubted success. It is a larger undertaking than the walks and fence posts, but it really only means larger forms when the cast style is selected, which, if proper, reinforced, is in my judgement the most satisfactory. That they can be successfully and satisfactorily built of concrete block, there is no doubt, but my remarks on the quality of the block for the house applies equally as well for the silo. The acids in the ensilage will have no effect on the concrete, nor will the concrete affect the ensilage. Troughs, and water tanks, should be reinforced with wire to prevent the work from cracking, light fence wire which is usually about the farm or wire rods being ample for this purpose. In case of open drinking troughs in which water is liable to freeze during the winter it is well to build them slightly wider at the top than at the bottom.

And now a few words about what is becoming familiarly known as Stucco on Metal Lath, as this is what the farmer is liable to want more than any other, since this form can rejuvenate the old buildings and make them look like new. Stucco is a character of concrete work that requires some experience in applying and though it is simply the plastering of a Cement Mortar on any of the

various styles of metal lath, yet it should be done by a mason who is familiar with the knack of applying it. The metal laths are cheap and anyone can nail them to the exterior of the building the two coat work required is so thin that little material is required so that the renewal of the outside of buildings will not cost in most localities more than that of weather-boarding or shingles.

And best of all and what I have not before mentioned are the fireproof qualities of this material. Again this should especially appeal to the farmer whose isolated location usually leaves him without fire fighting apparatus. Concrete is fireproof absolutely, as was proven in the great San Francisco Earthquake and Fire where concrete was the only building material that in any way withstood the ravages of the flame. There are also several instances where fires in houses throughout the country gutted the house even to burn



PROOF—NOT TALK

Read this Record of the

COCKSHUTT ENGINE GANG

IN our Engine Gang plow advertisements, we've been telling you for nearly four years not to invest your money in costly experiments, but to buy what you know is successful. We told you that the Cockshutt Engine Gang was the **only practical Engine Gang plow** in Canada, and here's the proof.

We have sold over 800 Cockshutt Outfits in **Western Canada** alone and we have yet to hear from a single farmer who wasn't delighted with his purchase. At the Brandon Agricultural Motor Competition last July, four Gold Medal winners used Cockshutt Engine Gangs for stubble work. At the Winnipeg Agricultural Motor Competition last July, two Gold Medal winners used Cockshutt Engine Gangs for breaking. Spectators at both exhibitions said the work done by our plows was absolutely the finest they had ever seen.

The only Engine Gang ever bought by the Dominion Experimental Farm at Brandon, bears the name "Cockshutt."

The only Engine Gang ever bought by the Dominion Experimental Farm at Lethbridge bears the name "Cockshutt."

Do you know of any other Engine

Gang that can show such a splendid record? We don't.

There are more Cockshutt Engine Gangs working successfully in Canada than all other makes put together **many times over** because the Cockshutt is stronger, lasts longer and does better work than any other Engine Gang plow made in this or any other country. Here are a few of the reasons why:—

The triangular frame is made of heavy carbon steel of great strength—more than strong enough to stand the strain of the toughest Western sod. The beams are extra heavy and **straight**—don't think of buying any Engine Gang with arched beams—they are liable to Cockshutt principle—**one bottom, one** become partly **straightened** or put out of alignment under the strain of large engines. Each individual plow of the Cockshutt is hinged to the frame between wide jaws; this with heavy beams prevents plows from winging. Each plow works independently of the others on the Cockshutt principle—**one bottom, one lever**. Think what a convenience this is when you want to clear obstructions—you raise one plow

only. When one bottom is thrown out by a stone the rest of the bottoms remain undisturbed. In hard plowing you can quickly reduce the number of plows used by single bottoms instead of pairs, thus always obtaining full use of your power. In finishing up lands you can use the exact number of plows required to fill up the unplowed strip. Each plow has sufficient weight to stay with the hardest ground. **Gauge wheels run directly in front of shares, protecting plows from stones and obstructions**. They are made solid in ground. Levers are easily operated by one man standing on the roomy platform. They can be set to plow the required depth and once set never vary a fraction.

The specially tempered steel bottoms ensure boards scouring bright and clean under all conditions. Don't fail to send for our latest traction plow booklet. It shows actual scenes of Cockshutt Engine Gangs in operation with detailed description and hundreds of letters from customers. A post card to our nearest address will bring you one free. Write us today.

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The Canadian Thresherman and Farmer

CANADA'S FARM MACHINERY MAGAZINE

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E. W. HAMILTON
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TREASURER

1910



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IN another place in this issue will be found an article by Mr. A. O. Fox on the Standardization of Farm Machinery. Mr. Fox is an authority when it comes to farm machinery, having passed through the positions of a successful farmer and a successful manufacturer. He therefore, knows both sides of the proposition.

There is more to this Standardization of Farm machinery than what appears upon the surface. The farmer today who goes out to purchase an equipment of farm implements is confronted with the most mystifying proposition imaginable. He sees plows and harrows and drills and all sorts of implements in all sorts of shapes and styles and unless he has studied the subject pretty carefully he is quite likely to become very much confused when it comes to buying the proper implement.

There are no standards to which he can tie. If a farmer buys a bushel of wheat today he buys it by grade and knows just what he is getting, but when he buys a farm implement he has absolutely no idea of whether or not it conforms to any standard that he may rely upon. It is true that most of the older manufacturers have established standards for themselves and upon these standards they have built their reputation, but new implements are being put upon the market by new concerns every day and the farmer in the majority of cases is used as the experimental to determine whether or not these implements will do the work that they were designed for.

The American Society of Agricultural Engineers has started out to establish a set of standards for farm implements. It is a long and tedious task which may take years to perfect, but it is something in which the farmer is or should be vitally interested.

Beginning the latter part of January and extending well on into March the different provinces will hold a series of Winter Fairs. These Winter Fairs are becoming quite a popular thing and when combined with Fat Stock Shows furnish expositions that in a great many cases do not have to take off its hat to our Mid-summer Fairs. There is, of course, not the dash and the flaunting of colors that there is in the Summer Fair, but they come in at the time when the farmer's mind is easy, when he is troubled by few of the cares of farm work and when he is in a position to grasp things in their wider sense.

The Winter Fair at Regina, the short course at the Manitoba Agricultural College, the Manitoba Winter Fair and Fat Stock Show and the Alberta Fat Stock Show are all things that each and every farmer who is within a reasonable traveling distance should take advantage of. These Winter Fairs are gotten up for him alone and upon his attendance depends their success.

There are a great many farms in this country, but the ideal farm is yet to be. Look the different provinces over; in almost any one of these one might pick out more than one farm home, the possession of which as he thinks of it now, would make him supremely happy, and yet there are better things in store for the farmers of Western Canada than any yet know.

What will these farms be like when we reach them? These farms will have good comfortable buildings for man and beast. They will be equipped with all modern improvements for the enjoyment of those who occupy them and for the performance of the work to be done in them. They will have good fences, meadows and pastures free from weeds and bearing the best possible crops. They will yield a fair rate of profit on the money invested in them; but none of these things, nor all of them, will make them ideal farms. Money will not give us the best farm, neither will extended acreage or great crops. What then will the ideal farm be?

The ideal farm will have all we have described above and more. It will be a farm on which every creature is happy because he, she or it is doing the very best possible; not merely the best as a money getter, not alone because every thing heart could wish for is at hand, but because there is peace in the soul. That is what makes any man successful in the highest sense of the word and nothing else will. To feel that one is filling just the right place in life, that he is a true and faithful citizen, but his boys and girls are coming up to be men

and women respected and loved, that he is making the most of himself and his family and lifting at the wheel of the life above him: this makes the ideal farmer and his home cannot help being the ideal farm.

This farm is going to be with us some day. It is on its way now, and The Canadian Thresherman and Farmer hopes to help bring that ideal state of things to pass. It should be the ambition of every farmer to hasten its coming and in the hastening remember the big farmer is not necessarily the one who owns a big farm, but the one who thinks big thoughts, plans big things and does them.

One of the worst things the farmers of this country have to contend with is weeds. In both our January and February issues we have given quite a lengthy discussion of farm weeds and we trust that our readers will read these articles carefully. They were prepared under the direction of Government Experts and they contain a great deal of information regarding weeds and their extermination.

It seems to be almost impossible at the present time to get pure seed. No matter how careful the farmer is about buying, pay as high a price as he will, he will find that after he has sown the seeds and it has come up, he has scattered his farm over a little more thickly with foul stuff that is fit for no animal to eat, and which will make his future farm operations so much the harder.

Most of the provinces have laws of one sort or another governing weeds, but who ever heard of these laws being rigidly enforced? The nearest we ever come to it is when once a year or so the brush and stuff are cut along the side of the road. What a bit of nonsense that is, when upon looking over the fence we see acres and acres of weeds going to seed.

But what can we do to put a stop to this imposition of seed business to the farmers of this country. In the first place, it ought to be a serious offence for any man or firm to send out seed which has weed seed in it. This is no reflection upon the various seed concerns doing business in this country as they themselves are often fooled. All seed houses should be compelled to put in machinery of the best approved pattern to take the foul stuff out of the seed they handle. This can be done, for some houses are already putting upon the market seed that is practically clean and free from adulteration. With such a law in effect there should be a severe penalty for such a firm that sends out unclean seed and no farmer should buy seed from a seed house unless on an absolute guarantee to the effect that if the seed contains adulteration the seed house or farmer, which furnishes it for him, should pay for the damages occasioned by the weeds that grow of these seeds on his farm and then farmers ought to be ready, and most of them would be ready, to pay well for the sake of procuring seed free from weeds.

One thing which has kept the dealers in impure seed in business is from the fact that so many farmers have been short-sighted enough to think they are saving money by buying cheap seed. That is the most foolish and costly thing that he can do. The best is always not only the cheapest, but it is the only thing worth paying money for.

The farmers have it in their power of bringing about all these changes. Why not enter on a campaign to do it.

What is the farmer's most valuable asset? Money, no; the farm, no; stock, tools, timber, family, no. These are all good and valuable but the most valuable asset the farmer has is his health. That gone, he is done. His days of usefulness are over, so a word of advice is offered today when the farmers of this country are coming face to face with the real hard work of the season.

Don't be in a hurry, work hard, make things move, but don't wear yourself out by hurrying. Dry axels are bad on wagons, mowers and on all kinds of machines; not less so on human bodies chafed with haste.

Then keep from worrying. Worry is worse than hurry. It puts grit in the bearings of the machinery and cuts the steel of life out without giving any return. If you must worry put it off till tomorrow and do your worrying then.

OUR GUARANTEE.

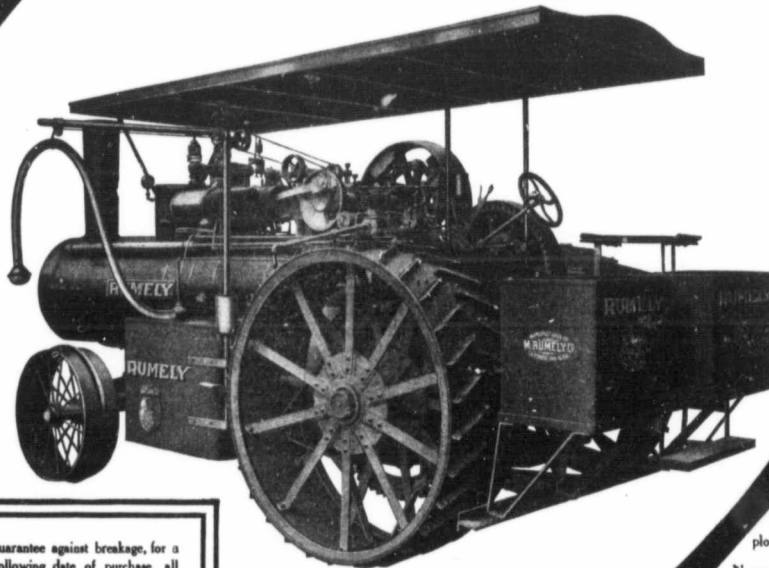
No advertisement is allowed in our columns until we are satisfied that the advertiser is absolutely reliable, and that any subscriber can safely do business with him. If any subscriber is defrauded, E. H. Heath Co., Ltd., will make good the loss resulting therefrom, if the event takes place within 30 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."

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LAND ROLLERS

By H. B. Bonebright, Professor of Farm Mechanics, Colorado Agricultural College



HISTORY.

THE data on the early history of land rollers is rather meagre, but it is probable that crude forms of rollers were used before the domesticated animals were made use of as a means of motive power. The crude forms, which were made of round logs and pieces of stone, are found in use to-day. In Scotland, I am informed, large pieces of granite are worked into the form of a roller. The gudgeons are made of short pieces of iron rod, leaded into drill holes in the end of the stone roller. In case the roller is thought to be too heavy, plank staves are fastened about the roller, thus making the bearing surface larger in proportion to the total weight of the roller. It is nothing uncommon to see a land roller made of an old log. The log may be nearly straight and round, thus making a fair form of smooth roller. But it often happens that the log has several bumps, and knots on its surface. These together with bends in the tree from which the roller is made add greatly to the jerkiness of draft, and detract somewhat from the effectiveness of the roller.

The frames for these crude rollers were made in most part of wood, and in many cases showed more thought on the part of the designer than do the frames of some of our modern rollers. In case long rollers were needed the frames and rollers were built in sections so fastened together, as to allow each section to adapt itself to the unevenness of the ground.

In Volume 1, of Rural Affairs, published in 1873, is given a careful description of Crosskill's Clod Crusher. This machine was tested by the Royal Agricultural Society of Ireland sometime prior to 1873. It was pronounced a great success as a clod crusher. It was six feet in width and was built of twenty-four teathed iron wheels, revolving upon a single shaft. It corresponded closely to one of our modern corrugated rollers with this exception; the modern roller presents an edge in place of teeth to the clods. In the same book, we find a description of a drag roller. In this machine the round part of the roller does not roll. It is drawn by a tongue which is attached by lugs to the front of the roller. As the tongue is hinged to the lugs, the hitch adjusts itself to the line of

draft, thus removing the neck weight.

In many of the old rollers, the inventors took care to eliminate neck weight and to provide flexibility enough in the frames to allow the rollers to adjust themselves to very uneven ground.

THE USE OF ROLLERS.

The early ideas in regard to the use of land rollers were based almost altogether on experience and not upon scientific knowledge of the principles involved. It was known that a roller would crush clods and in some cases it might help seeds to germinate. Its detrimental effects when unwisely used were scarcely understood at all. For this reason its use was often a source of loss rather than gain to the farmer. Consequently the roller was looked upon by many as a machine which was sure to bring only bad results to the user.

Of course such ideas arise from narrow experience and in many cases from a total ignorance of the soil and climatic conditions which should govern the use of the roller. To state exactly how, when, and where to use the land roller is an utter impossibility unless all the factors governing its use are known and thereby understood. These factors are many and they must all be taken into consideration if the best results are to be realized.

In the first place, if large clods are numerous in the fields they should be reduced to a finer condition. The roller will in all probably do this, but it should be remembered that there are methods other than rolling which will very effectually reduce the clods; the float or planker will rasp down the clods, but as the weight is small in proportion to the surface of ground covered, it is not likely to compact the soil nearly so much as a roller of sufficient weight to break the clods. A disk harrow or smoothing harrow may often be made to do the work in a more satisfactory manner than the roller, provided the soil does not need compacting.

But, on the other hand, if it is desired to compact the sub-surface and surface soil to any considerable extent, the roller is the only implement that will do the work easily and do it to just the desired degree. In connection with this statement it might be well to say that the proper loading of the roller is something that seldom receives enough thought or attention.

The compacting effect of the

roller is often completely overlooked by the farmer who wishes to crush a few unsightly clods. The compacted soil may often times do more harm than the clods could possibly do.

Owing to the fact that the particles of earth are brought into closer proximity to each other capillary action goes on more rapidly in the compacted soil. The moisture in the sub-surface soil is brought to the surface more rapidly and consequently the seeds in the dry surface layers—if these layers chance to be dry—receive more moisture than they would had the ground not been rolled. This is one of the best results which may be secured by the use of the roller. However, the moisture rises rapidly to the surface and is evaporated by the passing currents of air. If one wishes to bring the moisture to within a short distance of the surface of the ground and hold it there, all that is necessary is to roll the field with a properly weighted roller and then harrow the ground with a smoothing harrow. This prevents rapid loss of moisture by evaporation.

The farmer who would use a roller to the best advantage must also understand the puddling effect of rolling wet ground. As this effect varies so widely in different kinds of soil, only a thorough knowledge of the science of soils and the exercise of very good judgment can possibly enable the user of a roller to perform the work at the right time and in the right manner, unless, of course, the ground is always so dry that it will not puddle.

To go into all the details of how and when and where to use a land roller would take altogether too much time and only a man of world wide experience in the tillage of all kinds of soils under all conditions could possibly describe all the uses and misuses of the roller.

To go into a detailed description of all the different types of land rollers would also be a long and perhaps rather uninteresting task. The simplest form of roller, the drag roller, is not true to the name, in that it is simply dragged over the land and does not roll at all.

Where heavy rollers of small diameter are desired, the stone roller will no doubt prove satisfactory. The rollers which are made from hard wood logs are also fairly heavy when their diameters are considered. They are often made in short sections,

so connected that these sections may adapt themselves to the unevenness of the ground. In the construction of the good land roller this point of flexibility is of great importance and should never be overlooked. The log rollers are often built too long for good service, even on the artificially leveled fields of the irrigated sections. The same is true of the log rollers which are made by bolting plank staves to iron wheels. One often sees a roller which is built up by bolting eight or ten foot planks to some old mower wheels. The light construction of such a roller, together with its length, its large diameter, and its lack of flexibility makes a machine of very doubtful value. The necessary weight may be added, but when the total surface covered by the roller is considered, it is readily seen that the load necessary to accomplish much compacting will have to be great.

A roller built of reinforced concrete or cement is easily made and carries a considerable amount of weight within the roller itself. These rollers are easy to make and give as good satisfaction as a smooth roller could reasonably be expected to give, providing, of course, the length of the roller is not so great as to allow the low places to be passed over without being rolled.

A very good corrugated roller may also be made of cement, if a little time and thought is given to the matter. I built a six foot, corrugated, cement roller, which has been in use for the last season upon the Colorado Agricultural College Farm. It is built of fifteen cement wheels about nineteen inches in diameter and four and three-fourths inches thick. Although the roller was moved over hard, rough roads, bridges, and railroad crossings before the wheels were sixty days old, there has been no wheels broken or chipped sufficiently to require replacing.

An eight foot cast-iron corrugated roller used in the same manner has required the replacement of wheels each year it has been on the farm. It is unnecessary to discuss the different forms of commercial rollers other than to say that most of the smooth rollers are made of cast iron or of sheet steel. In case of the steel rollers, most of the weight must be placed upon the frame and carried by the axles.

There are numerous forms of corrugated rollers upon the market. They are somewhat more

Continued on page 54

Two Times Tiger Talks

Warranties

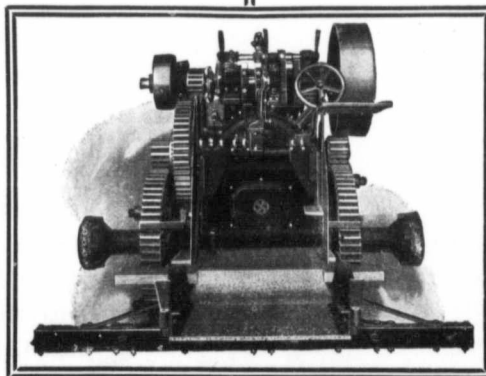
The only plowing engine to buy, is one that is on the job every minute. Profitable plowing depends on this. When your engine is not turning a wheel, your investment is lying idle, and so are you and your help, but the expense keeps going on. The plowing season is short, and time is money at compound interest, that multiplies so fast that the much advertised generosity of some manufacturers to furnish you a new shaft or gear for a broken one **delivered at the factory**, is like offering you a stone when you are famishing for bread. Such warranties generally read, "broken during the usual use of the engine." Read one and see. Does your contract tell you what the "usual use" of your engine is? Such a question might well be a subject of enquiry from mechanical engineers.

An engine that is not built to stand "usual use" is not much of an engine. We have been asked to replace an occasional broken gear or shaft; so has every other big plowing engine factory. Without a single exception we have found that they were broked by **unusual** use, but we didn't allow the engine to lie idle, awaiting the receipt of the broken part at the factory and proofs of "usual use." We could not afford to stake our reputation and discommode our customer for the price of a shaft or a gear.

The truth is, that all big business plowing engines are subjected to unusual stress, and safety with the manufacturer, as well as the buyer, depends more upon safe construction, than upon high sounding warranties. Let us tell you about the safe construction in the

Gaar-Scott "Big Forty" Double-Cylinder Plowing Engine.

Study every part of its matchless gearing, compare it with others, ask the men who run these engines if their confidence in us, our machinery and our usual warranty has been misplaced; then if you want an unusual warranty, tell us the kind you want, and you will find our warranty good, and its fulfillment better.



Write for our Special Plowing Engine Circular and our Big 75th Anniversary Catalog, just off the Press.

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Gearing

The massive traction gearing in the Gaar-Scott "Big Forty" double compound cylinder engine is 5 and 6 in. face semi-steel, and supplied with oilers. The crankshaft and countershaft pinions are full steel. All are amply strong for the most severe traction stress likely to be put upon them in heavy duty work.

The large crankshaft runs in four heavy self-oiling journals, one of which is on the strong arm that steadies the clutch end of the shaft and runs from a bracket stud on the side of the boiler. With these ample and long bearings, the shaft can not spring, twist nor vibrate. The clutch being on the other end of the shaft from the band wheel, divides the strain and the weight between the journals. The engine has double-driven, rear-mounted gearing.

The countershaft runs in three large self-oiling journals. The lower halves of these journals form a continuous bearing cast solid with two heavy tie brackets that are bolted to 3/4 in. steel plates and braces running from the steel platform channel bars. This tie bracket is sustained independently of the firebox shell and does not put any strain upon it.

The countershaft is extra heavy and its strength proportionate to the remainder of the massive gearing. It is reinforced at the gearing end to 6 in. in diameter by an extra wide hub on the bevel gear that runs under the entire width of the 10 in. outer journal.

The rear axle is continuous, and encased and secured in a

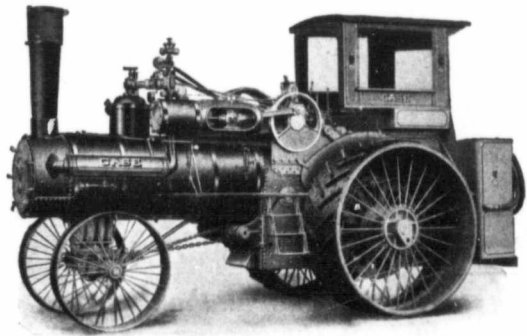
heavy sheath casting or housing. This is much the strongest mounting of any rear mounted engine, and as the axle is stationary and not subject to the twisting vibrating strains of rotary axles there is no danger of its being sprung.

The illustration shows the two drive wheel hubs on the axle.

Ask us about the other features of this big

Turf Turning Tiger Tractor

After All - It



"CASE" PLOWING

The "CASE" policy is and always accomplish the Object For Which gy of coal into draw-bar pull. The and economical. The "CASE" Has plowing? If so get a "CASE" engine.

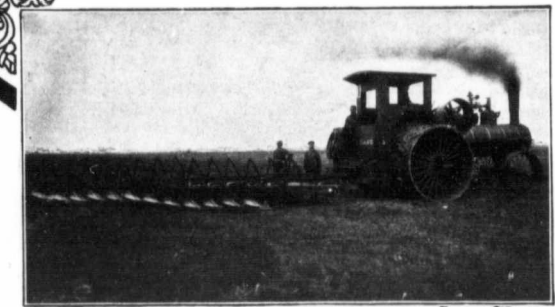
J.I. CASE THRESHING MACHINE CO. INCORPORATED
RACINE, WIS. U.S.A.

TORONTO

WINNIPEG

Is The Pull.

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.

ENGINE IS ECONOMICAL AND IS BUILT TO PULL -

has been to design and construct the machine that will most efficient. It Is Built." And after all, a plowing engine is built to convert the energy of coal into draw-bar pull. The most successful plowing engine that does it most efficiently is the most successful. Are you interested in extensive and least expensive Catalog will be sent upon request. Agencies every-where.

J.I. CASE THRESHING MACHINE CO. INCORPORATED
WIS · U · S · A ·

REGINA

CALGARY

Chicago ENGR CO

GASOLINE TRACTION ENGINES

A DEPARTMENT FOR THE USER

WE want every owner of a gas tractor in Western Canada to give us his experience. The owners of gas tractors to-day are in a sense pioneers. They are working out the data and compiling a record of work done that both manufacturer and farmer alike the world over are watching with intense interest. Don't keep what you know under your hat, but let us have a story of your gas tractor work. We will reward every such story with a copy of "Plain Gas Engine Sense," one of the best handbooks we know of on the gasoline engine. Don't neglect this matter but let us have your experience at once. —(Editor.

The Gas Traction Engine.

The development of the gasoline engine has been very rapid during the past ten years. The farmer has always been somewhat timid, and slow to take hold of this type of engine. He has had reasons for this timidity, in that so many of the first engines proved unsuccessful. The manufacturer is now making them simpler and to-day's greatest demand for the gasoline engine, in all forms, comes from the farmer. First, he called for the stationary engine, next he wanted this made into a portable type, and at present some of them are calling for the traction. This demand calls for an engine with which all classes of farm work can be done. It must be able to move from place to place and at the same time pull a heavy load behind it.

The gasoline traction engine is gaining favor among power users, in many cases, over that of steam, on account of the advantages they possess. The steam engine has always been successful and must be placed in a class by itself. The gasoline traction is new, but we have every reason to believe it to be the coming engine for the farmer.

In the first place, there is no danger of fire, or explosions. It can be safely used around buildings and stacks in windy as well as in calm weather.

The average farmer is intelligent and progressive enough to be able to learn to successfully run it. In fact, anyone with intelligence enough to run a steam engine can handle the gasoline engine. Some think that the necessary education to successfully operate a gasoline engine is of high order and cannot be easily obtained. This is not the case. Good "horse sense" put into practice is all that is necessary.

The expense for operating a gasoline traction is from one-fourth to one-half less than that

of the steam traction of the same horse power. It is a self contained engine and it is not necessary to haul fuel or water to it. One filling of gasoline or kerosene is sufficient for the day's run. One man can operate the engine.

This type of engine is always ready for work, very little time is necessary to get it ready to begin work, and when it is stopped all expenses stop.

The gasoline engine, like the steam engine, uses at least one-half of its power to propel itself over the ground. More than

stituted to do the work on many of our western farms. These not only do the work of plowing, harrowing, seeding, harvesting, etc., but are also used in many instances for hauling the grain to market. In many places they have been very successfully used in the construction and maintenance of our public roads.

It must be understood that there are very few companies who now manufacture successful gasoline traction engines. Those who are doing good work are yet far from perfect, and it is true that the gasoline traction of the future must be able to go far beyond the present day steam traction engine.

Steam plowing has been successful to a certain extent, but it is hampered by many difficulties which can be overcome by the successful gasoline traction engine of the future. Water and fuel hauling can be dispensed with, less labor will thus be required to run it. It often happens that where traction engine plowing is most desirable, fuel is high priced and the water is unfit for boiler use and may have to be hauled too far. There are no long stops for the purpose of taking on fuel and water. Another very important advantage in favor of the gasoline traction is that it is of light construction, it does not need wide traction wheels and, for this reason is easier to handle and does not pack the ground so much. The heavy engine often packs moist ground enough to seriously injure the following crop results. In order to get the best pulverization, which insures best crop results, it is absolutely necessary to plow when the ground contains moisture. It is true that the engine of excessive weight does not injure dry ground by packing it, but ground in this condition does not pulverize well, more power is required to handle it, and the following crops will

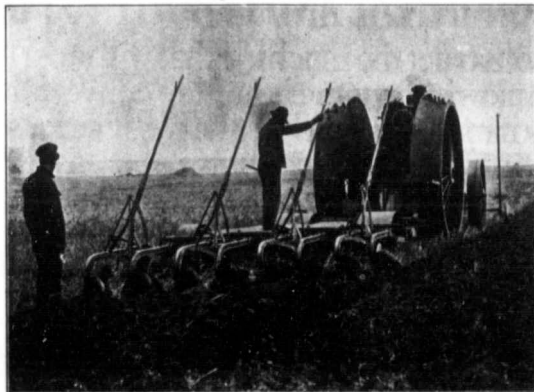


A Joy-McVicker 50 H.P. Gas Tractor doing a nice plowing Stunt

The average amount of gasoline used when working under a load should not exceed one gallon for each brake horse power for a ten hour run. Kerosene is often used in place of gasoline, yet it causes more trouble. It is less expensive per gallon but more of it is used. Four gallons of gasoline will go about as far as five of kerosene. The price of the gasoline ranges from seven to nine cents per gallon higher. Distillate is used extensively in

one-half of this power is used on soft or plowed ground.

It is a well know fact that in heavy pulling a horse can pull four or five times its continuous pulling power, but this is not true with the gasoline traction engine, because it has very little reserve power. The steam engine, on the other hand has considerable reserve power and often pulls twice as much as its rated pulling power for short distances.



A Gas Traction Engine pulling John Deere plows in heavy gumbo

some sections for fuel in this class of engine, but the distillate usually produced in the central part of the United States is too heavy and does not vaporize readily.

At the present time farm labor is scarce, unreliable and high priced. Horses are also high in price and it costs a great deal to keep them. For these reasons, the traction engine has been sub-

Plowing an acre of land means that it is necessary to turn eight miles of ordinary furrow. To plow a square mile requires 5,200 miles of furrow. To plow a tract five miles square requires a furrow which would reach around the earth at the equator.

With the advent of the twentieth century, the farmer, educated to the labor-saving value of the self-binder, alive to the commercial gain of the threshing machine, grown rich by the advance of harvesting methods, has turned his attention to newer, cheaper and better ways of preparing his seed beds. Animal power, which has served man so faithfully during the generations which are past, is being superseded by a more modern, more efficient and less arduous mechanical power.

Inventive genius and gas engine experts have centered their ability and efforts on this all-important problem—the result has been several types of steam and gasoline tractors designed to furnish greater service in a shorter time than animal power. Of these mechanical powers, one has demonstrated to the agricultural world by actual work in the field that it most closely approaches the ideal mechanical farm power. That power is the International Gasoline Tractor.

These engines are made in three sizes: 12, 15 and 20-horse-power, water cooled by means of a plunger type circulating pump, gear drive, 25-gallon gasoline tank, 58-gallon water tank—enough to last for an entire day's work; drive wheel from 56 to 70 inches. Perfectly adapted for farm work, such as plowing, hauling, threshing, shredding, grinding grain, sawing wood, and other general work, the International Tractor is well-nigh indispensable on many farms. There is big profit for the man who has one of these Tractors working for him during the busy seasons. Call on the local dealer or write the International Harvester Company of America at the nearest branch house, or address us direct for catalogues and further information.

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

INTERNATIONAL HARVESTER COMPANY OF AMERICA

(INCORPORATED)

C H I C A G O U S A

LOWING LOWER

Gas Engine Experience Department

UNDER this heading we shall publish regularly the experiences of our readers with gas engines, stationary, portable or traction, as a matter of mutual help. We want you to give us your experience. Tell us your troubles, no matter how small, and we shall be pleased to get you right. We have made arrangements whereby your questions will be referred to a staff of experts, and the answers to your questions can thus be relied upon. What we want principally is your experience with a gasoline engine. It is only in this way that we can build up this department making it mutually valuable to yourself, your neighbor, and to this magazine.

A Good Experience.

With regard to my experience with a gasoline engine, would say that, first I own a partnership in a single cylinder 20 h.p. Famous Engine manufactured by the International Harvester Company.

With regard to my experience with running same, will say when we got the engine I knew just enough to start and stop it; that is, if it started without any trouble and I knew how to test for spark.

I had about six hours work around one when plowing, but had also some experience with a steam engine, which helped me out greatly.

We use our engine for plowing, threshing, crushing and sawing. For plowing we used a two or three bottom John Deere High Lift gang plow and find that they do very nice work.

For plowing we use more gasoline because we have the engine speeded up. We plowed about 120 acres, 100 of which was plowed with two gangs and used about 340 gallons of gasoline, which is 2½ gallons per acre. But we found that using three gangs cost considerable less for fuel. We travel a mile in about thirty minutes.

For threshing we use a Buffalo-Pitts 30 x 50 separator with feeder, blower and high bagger.

For crushing we drive a 12 inch Fleury Rapid Easy grinder which is only play for it and sawing is no harder than running empty.

For threshing, an ordinary barrel of gasoline, from 40 to 45 gallons, will run a day and a half. A few troubles we have had and the remedy:—

1st—Hard to start because of weak batteries and therefore not sufficient spark.

Remedy—Get a new battery.

2nd—Because of dirty ignition points.

Remedy—Clean the points.

3rd—Because on a large engine it is hard to get them going fast enough by hand to take them past the compression; therefore, they back fire.

To remedy this my brother has invented a rig for our make of engine which makes it impossible for it to fire before it gets past dead centre.

Regarding the time of firing charge in a gasoline engine, would say this is one of the most important things for the operator to understand because if it

ignites too soon the engine works against itself and if it ignites too late the charge has to expand too much before it does any good. The time of firing depends upon the speed of the engine. If the engine is running fast the time must be sooner because the piston travels faster and there must be time allowed for the charge to ignite. If the engine is running slow the time must be little later as it is hard on the cylinder head and there is a great waste of power.

Regarding cooling I find that it is best not to have too much water in the supply tank and replenish it oftener.

Yours truly
Harvey W. Halstead.

Feeds Engine Very Handy.

Red Deer, Alta

With regard to my experience with a gasoline engine would say that I own a stationary, a Stickney, 10 h.p.

For sawing wood and chopping oats and all light work I use one gallon of gasoline per hour. For threshing, grinding and heavy pulling 1½ gallons per hour. The gasoline costs us here 38c. per gallon by the barrel.

My engine leaks at the spark plug and I cannot seem to get good results with the batteries. I also use an auto sparker and would like very much if you can tell me anything about running the engine with it.

Also I would like to know just how to regulate the engine as the fractional part of an inch interferes with the spark.

I would be pleased to have any information at all about running a gasoline engine.

Yours truly,
F. B. Fisher.

Made His Own Portable.

Rosemont, P O., Sask.

With regard to operating a gasoline engine, would say that about the year 1901 I purchased a Fairbanks-Morse 6 h.p. stationary gasoline engine. I used it three years as a stationary and then bought a Moline truck to mount it on, using two 6 inch beams as a base. I got a hardware man in Wetaskiwin to make a cooling tank. I gave him the dimensions and had the tank made large enough to hold 80 gallons of water.

I have no photo of this engine as it is now, but it looks as up-to-date as any of the usual portable gasoline engines, excepting



THE FLOUR CITY TRACTOR

Twice winner of the Gold Medal at the Winnipeg Contests in 1908 and 1909

The FLOUR CITY is a four-cylinder, four-cycle engine of the most modern design and construction.

Multiple Cylinder Engines admits of light construction. Large diameter drive wheels insure greater tractive power. It is 5,000 pounds lighter than any other tractor of same horse power. It will not pack the ground so hard when working in the field. It will pass over low or sloughy places where others dare not venture.

If you are interested in a general Farm Engine look up the "Flour City." It contains more good points than all other tractors combined.

CATALOG SENT ON APPLICATION

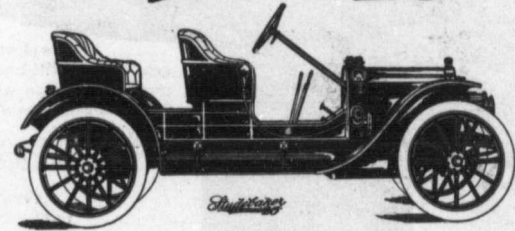


BUILT IN TWO SIZES—30 AND 40 H. P.

KINNARD-HAINES CO. 5984th AVENUE N. MINNEAPOLIS, MINN.

The Ontario Wind Engine and Pump Co. Ltd. WINNIPEG Dominion Sales Agents TORONTO

Studebaker "20" FLANDERS



Studebaker

Specifications

Motor 4 cylinder, 20 horsepower; transmission selective sliding gear; wheels 32 inches; wheel base, 100 inches.

Equipment

Tubular horn; 3 oil lamps; 2 gas lamps and generator, Splittdorf magneto.

Price, L. C. B. Winnipeg

Runabout

Rear Seat Extra

\$1250

WRITE FOR CATALOGUE

The Mooney Automobile Co.

253 Main Street

Phone 6320

Winnipeg



that I have made a covering for the top which is 8 feet by 5 1/2 inches; so that it is a little ahead of those shown to-day.

When we first ran it as a portable we used a dry battery but that gave out after about a year's time. We then used a wet battery for a time, but that required much care when moving from place to place. My son then rigged up a hot tube, making a shield for same out of an old naptha tin. He also made a muffler out of a six inch stove pipe with an arrangement on the inside for helping to make it noiseless.

So far we have found the hot tube by far the cheapest and strongest running and the engine consumes less gasoline for a day's running.

When using engine for grinding feed, running a Maple Leaf grinder, 10 inch plates, 1000 revolutions per minute, it uses just about one gallon of gasoline per hour grinding from 1000 to 1300 pounds of mixed feed.

We also use the engine for running a thirty inch circular saw for cutting fire wood and it will go through a piece of 10 inch green wood like cutting soap, there being no perceptible check on the engine.

My son and myself generally have four or five days work each year cutting wood for neighbors and it keeps two men busy bringing wood to the saw.

We always run a small threshing machine, 26 inch cylinder, with straw carrier, tailings elevator and bagger. We did not do much this year as hired help was too high. When threshing out of the stock we require three bundle teams and two teams to haul grain. If over a half a mile

to the bin, it takes one man to look after the sacks, two men on the straw and one band cutter. My son and myself take turns at feeding. When threshing out of the stack it requires two men on the stack, two on the straw, one to attend to the bags and one band cutter and with this help we can thresh over 120 bushels of oats per hour by bag measure. We usually fill a two bushel bag in 55 to 60 seconds and with wheat a two bushel bag in two minutes, and clean it well. I have no photo of the engine threshing as we are all generally too busy to take snap-shots.

The cost of gasoline up here is nearly 29c. per gallon wholesale. Some years ago when we could only obtain gasoline from Winnipeg, we ran short and tried to use coal oil. We started up on gasoline and when warmed and running nicely we switched on to the coal oil, but there was not much of a saving in it. We used more coal-oil and it did not work quite so strong and was not so clean. Had we converted the coal oil into gas it would have been about as strong as the gasoline.

I have had no experience with gasoline tractors and I would like some information on them. I hope to get a gasoline traction engine with which to do my plowing, or most of it, and for running a small threshing machine with band cutters, self-feeder, straw blower and high wagon loader. With my present outfit I can put grain into a portable bin and thresh about 800 bushels of oats per day and employ four men, three of ourselves and one hired man.

I forgot to mention that we

Continued on page 51

Send Your Name

and learn all about the

IVEL Agricultural Motor

Every Farmer Should Have One

The Ivel Agricultural Motor is capable of hauling a 2, 3 or 4-furrow plough. It can also haul a cultivator, two reapers and binders, two mowing machines, or in fact any agricultural implement used for the cultivation of the land. Any existing agricultural machine can be attached to the Ivel Agricultural Motor.

For stationary work, such as driving a threshing machine, grinding mill, dynamo, etc., a pulley is fitted, which is coupled direct to the engine.

Will turn in less space than a wagon, and will travel where heavy tractors cannot go.

The machine complete weighs 3600 pounds, and as this weight is distributed over the three wide wheels the machine hardly makes any impression on the land. Just write us your name on a postal and we will send you our latest catalogue and prices.

JAS. STUART ELECTRIC CO. Ltd.

322 Smith Street Dept. T. Winnipeg, Canada

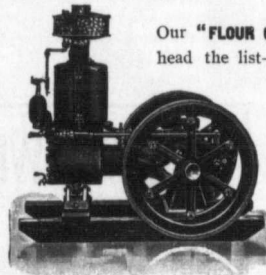
A Train Load of STICKNEY GASOLINE ENGINES

Stationary and Portable

we have just ordered for the balance of our Winter Trade

That is the best evidence we can give you that the **Stickney** is the Farmers Engine. Runs equally well at the North Pole or the Equator.

The very engine you should have. Write for our Elegant New Catalogue No. 60, giving 59 reasons why "THE STICKNEY" is the best.



Our "FLOUR CITY" line of GASOLINE TRACTORS head the list—twice the Gold Medal winner.

You should investigate the 1910 Model before buying.

Our new Catalogue tells all about it.

Ontario Wind Engine & Pump Co.

WINNIPEG LIMITED REGINA CALGARY

Family Group Photos a Specialty

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STEELE & CO., LTD.

MAIN ST. AND BANNATYNE AVE.

WINNIPEG

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 nature that the gas engine owner may easily adapt them to his daily engine work.

LESSON IV.

Gas Engine Cooling.

IN preceding lessons considerable space was devoted to the proper mixtures of fuel and air necessary to obtain the best results. In this connection here is an interesting little experiment anyone can try with the ordinary four-stroke cycle engine. Start the engine in the usual way and after it gets running nicely close the fuel valve a little at a time quite slowly until explosions begin to occur in the muffler. Now throttle the air supply by holding a piece of cardboard or a piece of board on the other end of the air pipe, thus reducing the air supply, and note the effect.

The explosions will cease in the muffler and the engine will work nicely because the supply of air has been cut down to make the correct mixture with the fuel admitted. By working carefully the fuel valve and air pipe may both be closed and yet the explosions will occur regularly and be all right but will not have much force because only a small amount of fuel is taken into the cylinder at each charge.

If when the amount of fuel is cut down so low, the air pipe were left with the full opening, the mixture would be so lean that it would not ignite at all and the engine would stop. When an engine runs on a weak or small charge as just explained it will of course not develop much power. This little experiment not only illustrates the effects of fuel and air mixtures, but illustrates also a means for governing a gas engine which is made use of in many engines, as will be more fully explained in a subsequent lesson.

The cylinder of a gas engine is made of a close grained cast iron and when well designed the walls are of practically uniform thickness throughout. This is necessary on account of the intense heat, which would cause unequal expansion and dangerous strains if the metal varied much in thickness. The cylinder is bored as smooth as possible and in the best constructions it is ground to a perfectly smooth finish. Some manufacturers claim that they grind the cylinder slightly tapering, making them two or three thousandths of an inch smaller at the head end than at the crank end. Then when the engine is in operation the greater heat at the head end causes greater expansion and the cylinder sides be-

come exactly parallel. Such refinements in construction are practiced only on the higher priced machines such as automobile engines and the like. Ordinary gasoline engines cylinders are merely bored out as true as possible on a boring machine.

It has been proven by experiments that there should be no pockets or chambers on the side of the combustion chamber in

der, causing an abnormally high pressure for an instant which strains the entire engine without in any way increasing its power.

The truth of this assertion has been proven by taking indicator cards from an engine having no such pockets, then screwing a short piece of pipe capped on the outer end into the combustion chamber, and taking indicator cards again, the extremely high

pressure for an instant which strains the entire engine without in any way increasing its power. The truth of this assertion has been proven by taking indicator cards from an engine having no such pockets, then screwing a short piece of pipe capped on the outer end into the combustion chamber, and taking indicator cards again, the extremely high

the size of the cylinder, there is an outside casing or jacket. This casing is usually made of cast iron, although in some instances it is made of copper. When made of cast iron, it may be entirely separate from the cylinder or it may be cast with the cylinder and attached thereto at intervals in the process of casting. The space between the cylinder and this outer casting contains the cooling liquid, which may be either water or oil. Water being cheap and easy to obtain, is more commonly used than oil.

Since the temperature of combustion in a gas engine cylinder ranges between two thousand and three thousand degrees, and since cast iron melts at a temperature of about two thousand three hundred degrees it is evident that some means must be provided to carry away the excess heat. This is accomplished generally by means of circulating water or oil around the cylinder. Sometimes, however, in small sized engines ribs or spines of metal are cast on the outside of the cylinder, thus providing a large radiating surface which conducts the heat away from the cylinder to the air. Such engines are known as air cooled engines. This method works very satisfactorily with engines up to about 10 horse power, but in sizes above this the heat can not radiate rapidly enough to keep the cylinder cool.

Where either water cooling or oil cooling is resorted to there are two methods of circulating the liquid around the cylinder, either

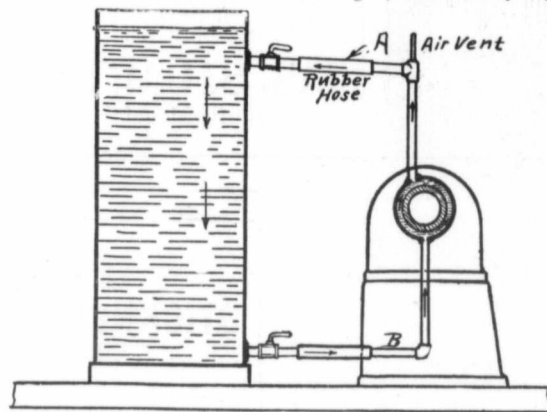


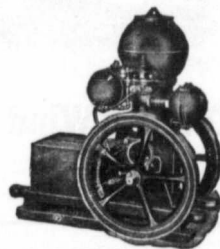
FIGURE 1

which a part of the charge may accumulate. It appears that where such is the case that the gases so trapped explode a little later than the main charge and are liable to set up waves of pressure in time of synchronism with the waves of the main explosion. These two waves of force occurring at the same time and meeting are apt to have the effect of a blow on the inside of the cylin-

der, causing an abnormally high pressure for an instant which strains the entire engine without in any way increasing its power. The truth of this assertion has been proven by taking indicator cards from an engine having no such pockets, then screwing a short piece of pipe capped on the outer end into the combustion chamber, and taking indicator cards again, the extremely high

pressure were clearly shown on the cards. This fact would seem to indicate that the inlet and exhaust valves should both open directly into the clearance space of the cylinder, or if they open into a chamber on the side of the clearance space, ignition should take place in the valve chamber.

FARM POWER IS NO LONGER A PROBLEM



7 H. P. Vertical Hopper Cooled.

is to drop us a postal for catalogue.

The Manitoba Gasoline Engine has solved it. For pumping water, gridding feed, sawing wood, chopping, or any other work where a simple, economical and reliable power is required, the Manitoba Gasoline Engine fills the bill. It is an engine made in the West to suit Western conditions and is sold under a positive guarantee to give satisfaction.

We also manufacture the famous Manitoba Power Windmill, the strongest, best regulated and most powerful mill on earth; also the Manitoba pumping windmill, grain grinders, steel saw frames and wood and iron pumps.

We are Western Canadian manufacturers building guaranteed and reliable goods for Western farmers. We should like to have you investigate our line, and the first step



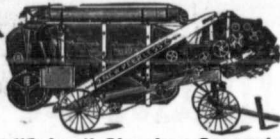
The Manitoba Windmill & Pump Co., Ltd.

BOX 307

BRANDON, MAN.

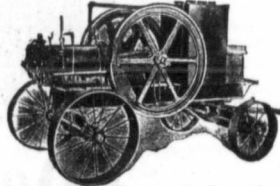
"Geiser" Celebrated Sieveless Separators and Threshing and Plowing Engines

Are the latest and most up-to-date machines on the market.



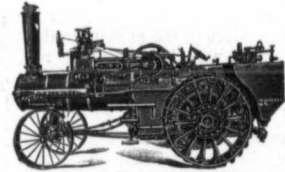
"Geiser" Sieveless Separator

The new system which has revolutionized the whole process of threshing and cleaning grain. What is known as the "Grain Plate and Roller System and Automatic blast." The simple invention eliminates the sieves or riddles and practically revolutionizes the old and antiquated method of threshing. Built in all sizes from 25x29 to 40x60. Special sizes built for Gasoline Engine Power.



"Geiser" Portable Gasoline Engine.

This Engine is specially built for threshing purposes and is the most modern on the market. LEADING FEATURES—Vertical Valves, Electric Igniter, Centrifugal Fly Ball Governor, and patent Match Starter.



"Geiser" Steam Tractor

The All Steel Plowing Engine. Double Drive. The gearing is of large dimensions, wide face made of open hearth steel and are all covered in steel cases and dust proof.

Send for illustrated catalogue. Free on request.

Burridge, Cooper Company Limited

156 Lombard Street, Winnipeg, Man.

Branch Office, 2159 Smith Street, Regina, Sask.

the gravity method or the pump method.

In the first case advantage is taken of the difference in weight between equal volumes of cold water and hot water, or of cold oil and hot oil if oil is the liquid used. For example, at a temperature of 39 degrees Fahrenheit a cubic foot of water weighs sixty-two and one-half pounds, while at 212 degrees Fahrenheit a cubic foot weighs only fifty-nine and one-half pounds. The hotter the water the less a certain volume of it weighs. If we have, then, a gas engine cylinder connected to a tank as shown in Figure 1, the water in the engine jacket will become heated, its weight will be less than an equal volume in the tank and consequently the heavier water from tank will flow in by gravity through pipe and push the lighter water out. Since the tank is of large capacity and exposed to the air, the water therein is always cooler than that in the jacket and circulation continues.

Care must be taken to see that an air vent is placed in the highest point of pipe A, otherwise a bubble of air or steam may form at that point and prevent circulation. A case of this kind recently came under the writer's notice. The vent pipe was not placed in the highest part of the pipe and the cylinder became hot enough to burn the paint. The water should be from four to six inches higher in the tank than the end of the pipe A to insure circulation. If the water falls below the pipe there will be no circulation.

In the second method a pump is used to force the water from the tank through the cylinder. A small rotary pump driven by

the engine shaft is generally used. This method insures better circulation. In many cases the water is delivered from the discharge pipe in the form of spray which falls thence into the main reservoir. By this method radiation of the heat from the water is much more rapid and a smaller quantity of water is required. It is generally conceded that the temperature of the jacket discharge water should be just below the boiling point or in the neighborhood of 180 degrees in order to obtain the best efficiency from the engine. If the jacket water is very much colder the gases in the cylinder lose their heat and consequently their expansive power too rapidly and the engine lacks power.

Oil boils at a higher temperature than water and it is not uncommon in engines cooled with oil to run with the oil in the jacket much hotter than 212 degrees. If the engine is well made this is an advantage rather than a disadvantage because the gases do not lose their heat to the jacket so rapidly, and a larger quantity of their heat is available to do work on the piston. The limit of heat in the jacket is reached when lubrication of the piston becomes difficult and it has a tendency on account of the heat to expand and stick in the cylinder.

Another method of cooling which has been proposed and which is used in an auxiliary way to some extent, is to introduce water directly into the engine cylinder. This may be accomplished in one or two ways; either by introducing it in the form of a fine mist or spray during the aspirating stroke, the compression of the mixture will turn the

The Handiest Engine Ever Built!

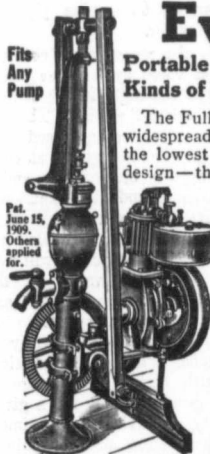
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The Farm Pump Engine will pump any ordinary well for as many hours per day as desired, at 35 strokes per minute, and on the ten-inch stroke, as follows:

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We want every reader of this paper to know what a great little engine we have built. Our catalog—gladly sent free—tells the exact facts. Send for it at once. (10)

Depth to Water or actual Lift of Water	Diameter of Pump Cylinder	Water Pumped or Delivered Per Hour
800 feet	8 inch	280 gallons
400 feet	6 inch	360 gallons
400 feet	5 1/2 inch	440 gallons
200 feet	5 inch	520 gallons
200 feet	4 1/2 inch	600 gallons
175 feet	4 inch	1140 gallons

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Please send Catalog of Farm Pump Engine to address below:

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By using one of the shorter strokes you can pump a deeper well, or raise the water a greater distance, with a given size cylinder, than that in table above. By connecting on a piece of common pipe for extra air chamber, it will throw a stream as high as the house, giving valuable fire protection. It supplies power for running any machine that is ordinarily operated by hand-power. (4)

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water into steam which will become further heated after ignition. On account of the high specific heat of water, it requires a large quantity of heat to evaporize it or raise its temperature after it is vaporized. Since this heat must be absorbed from the heat of combustion of the charge it follows, necessarily, that the temperature of the mixture in the cylinder will be materially reduced. If very much water is introduced it may absorb so much of the heat generated during compression that the gases will not be hot enough to ignite readily. Especially will this be true if the charge is somewhat lean. This accounts for the fact that a leak of water from the jacket to the cylinder makes it difficult to start the engine.

Cooling, in the method just described cannot be carried out completely. Some writers declare that it is never conducive to good economy in any case because it reduces the temperatures and pressures in certain circumstances it may be advantageous to use. In kerosene engines and in many alcohol engines provisions are made to use a water spray and the result of such use is always a smoother running engine. A heavily loaded kerosene engine will pound heavily after it has run for some time unless a large amount of jacket water or spray is especially, because it is sufficiently cooled by the fresh charge of cold gas and air, although it is customary to bring the water jacket as close around both valves as can be done conveniently.

The volume of the compression space is an important consideration in gas engine design and a knowledge of the part it performs is equally of value to the man who operates an engine. In steam engine practice it is a well recognized fact that the clearance space should be small in order to insure the best economy. What is true in this respect in the steam engine is equally true in the gas engine. The highest economy demands small compression volume. There is a practical limit beyond which high compression can not be carried, and this limit is different for every different kind of fuel used.

In a previous lesson the statement was made that there is an exact relation between heat and work. If work is done upon a gas by compressing it, it becomes heated, and if the gas afterwards expands and does work upon its piston its temperature falls. When the charge in a gas engine is compressed its temperature rises in proportion to the amount it is compressed. If compression is carried too high its temperature may reach the point at which it will ignite. The

of water is used. It seems advantageous in some types of engines, both from an economical and mechanical point of view, to use a small amount of water in the cylinder, in addition to the regulation method of cooling by means of jacket water.

Water ignition is also practiced in some cases as respects the products of combustion, by introducing it into the exhaust pipe. The effect is to absorb the heat from the gases and allow them to escape at a lower pressure, thus acting to some extent as a muffler. This practice does not of course, affect the heat in the cylinder itself.

In very large engines the piston must be cooled as well as the cylinder because the heat in the central part of a large disc of iron, which exposes relatively a small surface to the cool cylinder walls, can not part with its heat capacity rapidly enough to keep the central part at a safe working temperature. Cooling, in such cases is accomplished by circulating water under pressure within the hollow part of the piston, using either flexible connections of telescoping pipes to convey water.

It is also necessary to cool the exhaust valve by a water jacket owing to the high degree of heat of the exhaust gases. The admission valve does not need cooling if gasoline ignites at comparatively low temperature, and it has been found by experience that if it is compressed much above eight-five pounds per square inch, pre-ignition will take place. Alcohol vapor on the other hand, is less volatile and needs a higher temperature in order to burn, consequently it will stand a higher compression, and with higher compression it yields greater power for a given quantity of alcohol consumed. For this reason alcohol engines, designed primarily to use alcohol, have a smaller clearance volume than do gasoline engines. Engines designed to work under varying conditions and different fuels are usually given a clearance volume equal to from twenty to twenty-five per cent of the volume displaced by the piston. There are certain well-known laws which govern the pressure, volume and temperature of gases, which will presently be briefly alluded to. It should be understood in passing, that the three quantities, pressure, volume and temperature are inter-dependent, that is, when one changes, unless some means are taken to maintain one of them constant. The principal law connected with pressure and volume is known as "Boyle's Law." It may be stated thus: The pressure of a gas varies inversely as the volume



Deering Drills

One of the great advantages in owning a Deering drill is that the furrow openers of the single disk, double disk and shoe drills are interchangeable, consequently if you have need for any one of these styles of drills and have but one style of furrow opener you can purchase either or both of the other two styles and have a drill for all conditions of ground—hard and dry, trashy, muddy or well prepared seed bed.

The Deering drill will not sag. It is equipped with a truss rod which makes it impossible for this drill to sag, regardless of the length of time it may have been in use.

The Deering drill has a continuous axle which runs the entire length of the machine, imparting a continuous and positive action to the feed runs, whether the machine is being driven straight down the field or around sharp curves. The seed is always deposited evenly.

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Oil reaches the bearing from the inside, thus insuring a lubricant free from dirt and dust.

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The Deering spring implement line includes Disk Harrows, Smoothing Harrows and Cultivators for summer fallow purposes as well as drills. It will be well worth your while to examine these implements carefully before making a purchase.

Any Deering agent will be glad to show you these implements and explain their merits. Write the nearest branch house for catalog.

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if the temperature is kept constant, or the volume varies inversely as the pressure with the temperature constant. Stated in plainer words, it means that if a given volume of gas is compressed to one-half its volume, the pressure will be doubled. For example, if a cylinder full of air or any other gas at the pressure of the atmosphere be compressed to half a cylinder full, the pressure will be doubled provided some means is provided to keep the temperature of the gas from rising. In other words, if air at 14.7 pounds pressure is reduced to half that volume its pressure will be 14.4 pounds absolute pressure or 14.7 pounds as shown on a steam gage.

The law relating to temperature and pressure states that the pressure varies directly as the absolute temperature provided the volume is kept constant. This means that if a cylinder full of gas be heated the pressure will rise in direct proportion to the absolute temperature. Consequently, if we simply took the cylinder full of gas and heated it, or if it was an inflammable gas, if we burned it, the increase in heat would cause the pressure to increase in exact proportion to the increase in temperature.

It is upon these two laws that all theoretical calculation in regard to gas engines are worked out. Furthermore, it is upon just such considerations as these that the size of the clearance space is calculated in order to give any compression pressure which we may desire.

An example of heating due to compression is often witnessed in the case of starting a gas engine in cold weather. It may be too cold to start the first few times the engine is turned, but if it is turned rapidly a few times the cylinder may be sufficiently warmed by the compression of the gas to cause the gasoline to vaporize.

The next lesson will deal with methods of igniting the charge in gas engines.

A Reply to Mr. Killian.

Dear Editor:

Kindly allow me space in your valuable paper to mention a few things about an article written in your November number by Andrew A. Killian of Ryley, Alberta, entitled, "A blacksmith outfit on the farm." He calls it a great leak to the farmer's having to pay blacksmith bills. I don't know whether Mr. Killian is a farmer or a minister.

But as to farmer's having to pay their blacksmith bills. To my mind whether it is a leak or not, there are a great number that think the blacksmith should be the very last man to be paid.

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CAULIFLOWER	McK's Brandon Prize	.10	.30	1.00	
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	McK's Northland	.10	.25	.65	2.50
LETTUCE	McK's Red Wetherfield	.05	.20	.65	2.50
	McK's Giant Perfection	.10	.30	.75	3.25
ONION	McK's Red Globe	.10	.30	.75	3.00
	McK's Yellow Globe Danvers	.05	.20	.65	2.00
PEAS	McK's Manifold	.05	.20	.65	.35
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Now a blacksmith and a farmer with a forge and a few tools are two different things altogether. He says that a farmer can get one of the blacksmithing books which are advertised in your paper and in a short time be able to do his own work just as well as two blacksmith (that has twenty years at the trade) and very often better, because it is your own work and will take more care in doing the job. Now I quite agree with Mr. Killian about a forge on the farm to a certain extent. There are hundreds of jobs on the farm that could be done if the farmer had a forge, that is jobs that if taken to a blacksmith he would never charge anything for. For instance, straightening a rod, putting in a rivet, etc. I will admit that I follow the profession of a blacksmith and a horse shoer, which is entirely different. I have read all kinds of books on both, but not one of them ever done me any good until I had the practical experience which is the only teacher in that line of business. Now he says that if a farmer had a forge on the farm that he would be able to weld malleables and repair his binder, mower, rake, etc. Now I would like to ask Mr. Killian how many old experienced blacksmith's can weld malleable iron without the use of a certain compound to make a satisfactory job of it. He says

they could weld rake teeth, I would like to watch some of them try it, supposing they read a pile of books as high as the Tower of Babel. He says that probably the farmer thinks that he has always done it and still thinks that he should do it. Well, the farmer that thinks is the man that is getting along in the world today. If he has not had at least from two to three years experience at the business he had better trust his work with the blacksmith who has. It would not be well for the blacksmiths if they were all turned down like Mr. Killian would like to see them or perhaps he is in the business of selling those books he speaks of, or that he sells blacksmithing outfits. There is (as he calls it) a leak somewhere. I know a number of farmers that are intelligent men and have outfits on their farms and happen to be some of my best customers. Why? Because they have no experience in doing the work only that they have destroyed more good plow shares in trying to sharpen them than would pay for their time taking them to a blacksmith. Now I don't want to rub it into Mr. Killian too much, but he has taken up a question that he does not know in any way how to deal with. If he would like to know I will enlighten him, but not in this article.

He mentions sheds on a farm for machinery, that is where he is talking. He tells that in a good common sense manner, but he does not want to get in to the farmers' heads to Play Dog in the Manger, and not altogether that but work at a piece of work until they have it burned or used up in some way that it will take the blacksmith twice as long to do, as if he had got it in the first place which is saving time, work a half day yourself trying to do a job and then take it to the blacksmith after you are beat and waste another half day there, or take it to the blacksmith in the first place and get a half days work on your land.

Now farmers figure this out for yourself, and come to some reasonable conclusion with yourself. That if you burn a four dollar plow share beyond your fixing that if a blacksmith charges you three times the usual price that you will pay him and go on your way rejoicing that it was not more, and you will be rich in five years.

Dan McQuarrie
Govan, Sask.

P.S.—Mr. Killian gives them ten years

Some women have a queer way of doing things; some men of forgetting to do things.

Manitoba Winter Fair and Fat Stock Show



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Former
Vice-President



CHAS. FRASER
Brandon
Secretary



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Director



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ROBERT REID
Director



JOHN C. BARRON
Carberry
Director

The Manitoba Winter Fair and Fat Stock Show to be held at Brandon, March 5th to 11th is an institution which in an unusual degree possesses the confidence of the farmers and breeders of Western Canada. The fact that it has been promoted solely in their interests is evidently fully recognized and the Manitoba Winter Fair is a pleasing instance of the good feeling which ought to exist in every case between exhibitor and management.

The Winter Fair and Fat Stock Show is one of the best evidences of prosperity and good fellowship among the farmers that there is to be had at the present time. It provides an opportunity for good, clean, wholesome competition of the best of the farmers' products. It comes at a time when the farmers can most easily get away from their homes and farm work for a period of a few days' rest and if we are to judge by the crowds that have thronged the buildings of the Manitoba Winter Fair and Fat Stock Show during the past two years, we can but conclude that they are taking advantage of the opportunity.

From its inception, the Manitoba Winter Fair has always provided an attractive horse exhibit and each succeeding year, the ever increasing number of imported horses has made this department a more striking feature and it is now recognized as the greatest show of pure bred draft stallions in Western Canada. The Winter Fair has proved a horse market of inestimable value, a factor which importers have not been slow to recognize. The prospective buyer is however, protected fully and an award at Manitoba Winter Fair now sets the standard of value for imported horses in Western Canada.

The fat stock department is one which is worthy of particular attention by those who appreciate the significance of the warnings repeatedly given by those best

qualified to know respecting the necessity of crop rotation and soil culture. The primary object of this department is to teach the farmer by practical demonstration and lecture how best to turn out



JAS. D. MCGREGOR
Brandon, Man.
President.

a prime fat animal fit for the export and "fancy" trade and to convince him that fat stock raising is not only a profitable industry in itself but doubly so when its relation to soil nutrition is concerned.

The fat stock exhibit at the last Winter Fair was something of a revelation to those who were sceptical of the ability of Manitoba farmers to produce show fat stock and there is every reason to believe that the fair next March will again show a marked advancement.

A most interesting feature of the 1910 Show is the holding of the Manitoba Provincial Poultry Exhibition in conjunction with the Manitoba Winter Fair and Fat Stock Show. The advantages of this arrangement to poultry breeders in the West will be apparent and indications are not lacking that this exhibition of poultry will create a record for

the West which will not be easily beaten.

The prize list for the Fair is one that cannot fail to attract attention. In the horse department the Clydesdale and Percheron breeds are most liberally dealt with, the Winter Fair Association offering exceedingly handsome cash prizes which are supplemented by special prizes offered by the Canadian Clydesdale Horse Association and the Percheron Society of America.

The Shire, Agricultural, heavy draft, Hackney standard bred and Pony classes are all generously provided for and a more than usually interesting feature is provided in the competition for the "best mannered Hackney or Standard bred stallion shown on hand or line" for which prizes of \$50.00 and \$35.00 are offered.

The prizes in the cattle, sheep and swine departments are sufficient to insure spirited competition. Special mention may be made of the "Grand Championship beef steer or heifer" prize of \$100.00 which carries along with it the custody of the McGregor Challenge Shield for one year and a gold medal to the annual winner.

The Winter Fair Building at Brandon is acknowledged to be the finest of its kind in Western Canada. This building is hardly yet three years old and already it has been found necessary to build an addition 70 ft. x 120 ft. at a cost of \$13,000 in anticipation of the next fair. When this is completed the total investment in Winter Fair Building will be over \$70,000 surely a glowing tribute to the ambition of the Citizens of Brandon and farmers in the surrounding districts to make the Manitoba Winter Fair and Fat Stock Show the greatest institution of its kind in Canada, an ambition which the Winter Fair of 1910 seems destined to gratify.



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Supt. House Dept.



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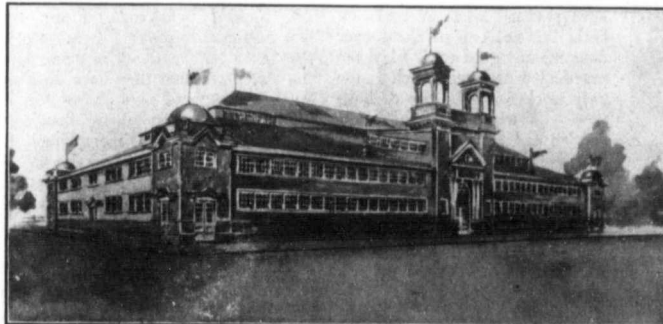


J. WISHART
Portage la Prairie
Director



GEO. ALLISON
Burnbank
Director

Winter Fair
Buildings,
Brandon.



A new part
has been
added this
year which is
not shown
on
illustration

A SUCCESSFUL PLOWING ENGINE

In building a successful Plowing Engine a manufacturer is confronted with three great problems which must be solved. They are:

First—To generate the power in the cylinder from a minimum quantity of coal and water.

Second—To transmit power from the crank-shaft to the drive wheels.

Third—In the drive wheels—to grip the earth firmly without loss by slippage or sinking into the ground.

To do big things in the cylinder—that's the vital place, the first place to look for wasted energy. RUMELY boilers are equipped with extra large and roomy fire boxes and extra wide water space on all sides of the fire box. This permits of unhindered circulation and freedom from deposit.

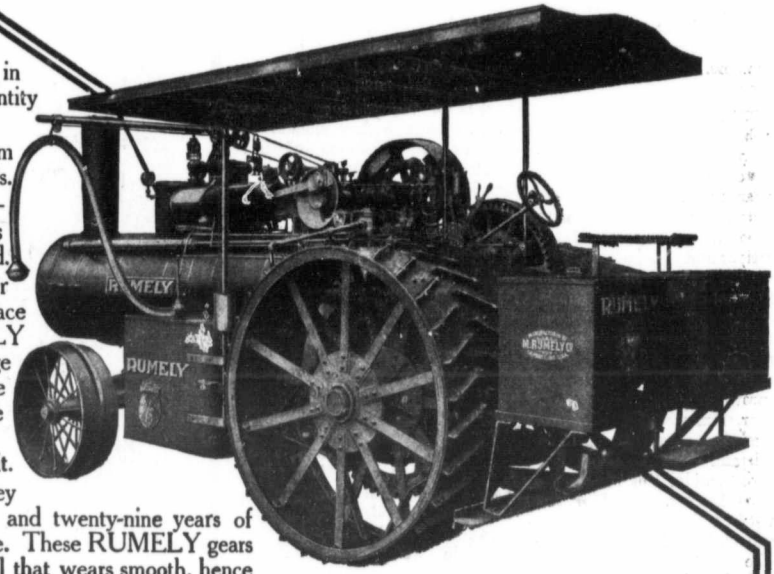
Now look at these gears. They are designed after careful study and twenty-nine years of traction engine building experience. These RUMELY gears are made of SPECIAL semi-steel that wears smooth, hence no undue waste in friction.

These gears are massive—they will stand the strain without danger of breakdown, and they will do the work—not for a month or one season, but will last and keep earning the purchaser a big profit on his engine. This is the successful power transmission.

The massiveness of the wheels, the gearing, the heavy rear brackets, the axles, etc., which add to the weight on the traction wheels, greatly increase the gripping efficiency. The gripping lugs scour well, and, being placed at the proper angle, prevent any unnecessary jolting of the engine and picking up of dirt.

Steam Plowing with a RUMELY Steam Plowing Engine is successful in the fullest meaning of the term. It is profitable, too.

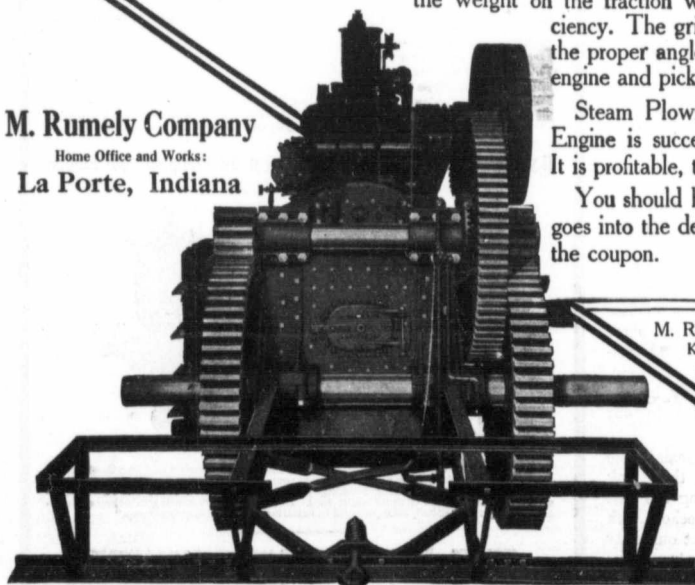
You should have our Plowing Engine Catalogue—it goes into the details—it will be sent upon request. Use the coupon.



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La Porte, Indiana



M. RUMELY CO., La Porte, Ind.

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Canadian Bank of Commerce

Annual Meeting of Shareholders

The forty-third annual meeting of the shareholders of the Canadian Bank of Commerce was held in Toronto on the 11th of January. After the Directors' report had been read to the meeting, the President called on the General Manager to address the shareholders. He spoke in part as follows:

GENERAL MANAGER'S ADDRESS.

As has been foreshadowed by the easy position of the money market during the greater part of the year under review—the outcome of a general disposition to continue the liquidation of old obligations and of a lack of desire to engage in new undertakings, which resulted in a large accumulation of funds at important centres—the profits of the Bank show a decrease of \$416,636.92, as compared with the figures of the previous year. They are, however, somewhat in excess of 15 per cent. on the paid-up capital, and we believe that you will not consider this an unsatisfactory showing. Had it not been for the quickening in general trade which occurred during the last three months of the year, and which was no doubt accelerated by the bountiful harvest reaped in the Western Provinces, the decrease would inevitably have been much larger. The surplus of funds not needed for the ordinary commercial requirements of the country, and the large amounts which came to us through the sale of securities abroad, were temporarily loaned in New York; and as the rates ruled low for a long period, the resulting profit was not entirely satisfactory; but the results of the policy we have pursued in regard to holding a considerable amount in reserve on quick call, even at low rates, have again justified the wisdom of such a course.

The year has been one of gradual recovery in trade, accompanied by a general appreciation of values, and we have been fortunate in this respect in recovering from assets in connection with which appropriations had previously been made the sum of \$300,000. This sum added to the ordinary earnings of the year has enabled us, after paying the usual dividend and providing for the annual contribution to the Pension Fund, to write \$419,801.72 off Bank Premises Account, and to carry forward \$722,130.02 in Profit and Loss Account.

This autumn we have for the first time made use of the provisions of the Bank Act amendment

of 1908, which empowers the banks during the grain-moving season to issue circulating notes in excess of their paid-up capital to the extent of 15 per cent. of the total of paid-up capital and surplus combined. At the close of our year the Bank's circulation stood at \$10,327,415 an increase of more than \$986,000 over the figures of the previous balance sheet. The highest amount of the excess circulation of this Bank during the past two months has been \$994,000. The wisdom of this provision and additional circulation has been signally demonstrated by the ease with which the necessary circulating medium has been provided for the movement of last year's abundant harvest, and we had no hesitation in exercising our right to take advantage of this provision although it entailed a loss which might have been avoided by withholding our own circulation and paying out sundry notes of other banks. It is clear that unless arrangements are shortly made for additional circulation by increase of capital, a situation may arise in which a struggle to reduce the amount outstanding at the end of January to within the limit of paid-up capital will become inevitable, and if this becomes at all general, it is not likely to be accomplished without considerable disturbance to business.

The increase in deposits during the year amounted to \$25,499,182, the largest annual increase in the history of the Bank, and an amount exceeding the total of its deposits only eleven years ago. An important part of this sum, however, consists of deposits known to be temporary, this class of deposits having probably reached a higher level than ever before. Concurrently with this large increase of deposits our loans have increased \$21,500,689, and we have nearly \$10,000,000 in excess of the figures of last year employed at call or short notice. We also hold \$3,388,571 more cash than a year ago, but this increase is only in proportion to the addition to our liabilities.

In view of the remarkable prosperity with which this Bank has been favored during the past few years, we must reckon with the question as to what our duty is to those who have entrusted us with the investment of a large capital. During what may be called the formative period of the Bank we have asked the shareholders to accept a reasonable dividend while we endeavored to

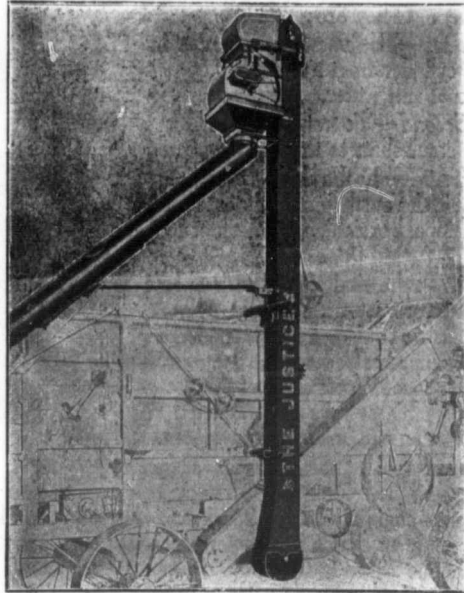
THRESHERMEN!

START THE NEW YEAR RIGHT BY ORDERING A

Whiteford Justice Measure

AND A

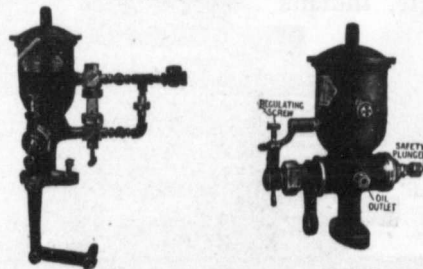
McCullough Practical Oil Pump



A square deal by the Whiteford Justice Measure for honest threshermen and farmers. If you do not want to be fair to your customer and yourself, do not buy a "Justice Measure," for it will be fair and correct to all in spite of you. But if you are tired monkeying with Baggers that are not and cannot be right of fair—then order a "Justice Measure."

- BECAUSE it is a Government Standard Measure for threshing purposes.
- BECAUSE it is Automatic, Non-adjustable—has no driving parts.
- BECAUSE it is Durable, Simple, Fair to all.
- BECAUSE it is the only machine in or out of Canada to get Government approval for this purpose.
- BECAUSE it is for this reason the Only Legal Machine.
- BECAUSE it will please your Customer who wants to be Fair.
- BECAUSE you do not care about the others.
- BECAUSE you can Collect for your Threshing.
- BECAUSE the satisfaction of knowing you are right is mighty comfortable.
- REMEMBER when buying that New Rig, that WE sell you a Complete Bagger fitted with Our Measure—the BEST YET SEEN; OR WE will fit the Measure to your Old Elevator.

If you want to be happy put a Practical Oil Pump on your Engine



It's a sure cure for all troubles arising from the use of imperfect and unreliable oiling devices. Hundreds of them are being sold to replace force-feed lubricators and oil pumps of various makes. Why is it? Nothing strange about it. It's all in the way it's constructed. Sold with or without sight feed. Dealers who like to sell goods they can conscientiously recommend, take pleasure in handling the "Practical Oil Pump."

WRITE US. WE HAVE A GOOD THING AND LIKE TO TALK ABOUT IT.
AGENTS WANTED IN EVERY TOWN. ADDRESS:

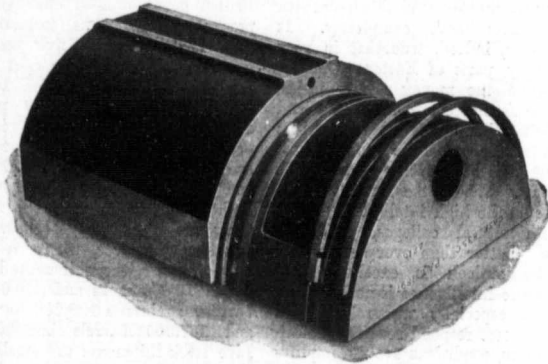
Virden Manufacturing Company, Limited

P. O. Box 678, VIRDEN, CANADA

In the January issue of this paper we gave you a partial list of customers of the

GOULD BALANCE VALVE

Who stated, over their own signatures, that the valve did exactly what the company warranted it to do; that it fulfilled every condition of their printed warranty; and was one of the best investments ever made of that amount of money. We have thousands of such letters in our files, but lack of space prevented their publication. ONE MAN might test the valve and be mistaken; even TEN MEN might be wrong in their conclusions, but SIX THOUSAND engine operators could not be mistaken.



One of our agents who has sold the Gould Balance Valves for three years and has equipped every engine in his territory, writes us:

"I have not heard a word of complaint on all of the Valves that I have sold, and I think that this is proof enough that it fulfils every condition of your printed warranty."

This agent is only one of the many hundreds who say the same, and is a sample of the satisfaction exhibited by our agents who have sold the Gould Balance Valves for the past three years.

In view of the above facts ask yourself the question: "Can I afford to go without a Gould Balance Valve?" As every engine owner either needs increased power or a corresponding saving in fuel, water and oil, have his engine work easier, handle easier, and do better work; he can only give one answer to the above question, and that is to equip his engine with a Gould Balance Valve.

The valve is warranted for five years, and is guaranteed to increase the power of a traction engine from 18 to 30 per cent. Write us for catalog which explains it fully.

Gould Balance Valve Company, Kellogg, Iowa

GEORGE WHITE & SONS, LIMITED, LONDON, ONTARIO

MANUFACTURERS IN CANADA

lay the foundations of a safe and permanent business. In the management of our Bank we have had a two-fold purpose; first, the permanence and continuity of a service to the country which must bear some relation to our duty, and second, the successful administration of your property, looking to its earning power now and in the future. With these purposes in view we have had the courage to adopt the policy of erecting a large number of branch buildings, for the time being taxing your profits. It cannot in justice be said that what we have done has exceeded our requirements or that we could safely have delayed this important work.

Nevertheless, we should not forget that you have been exceptionally patient with us in the working out of our plans, and we think the time has now come when the increment from your investment should be larger. It is our purpose to recommend during the coming year an increase of dividend to nine per cent, per annum, with the earnest expectation that our prosperity will before long justify a further increase.

PRESIDENT'S ADDRESS.

The President then moved the adoption of the report and in the course of his remarks said:

The statement we have laid

before you, the General Manager's comments thereon and his suggestions as to our future, strike the keynote for most things that can be said about Canada during the past year. We are recovering from the world-wide stringency of 1907 almost too rapidly, and in marked contrast to the years following the panic of 1893. We certainly are not able to discover all the reasons for the remarkable difference between the two periods, but prominent among them, doubtless, are the celerity with which the trading nations of the world now act together when a money stringency arises, the continued large production of gold and the fact that there has been no general re-adjustment of prices, and therefore comparatively few failures. In the case of Canada there are some additional reasons. We are now fairly well advertised in Europe and still better in the United States, and we represent opportunity to many of those who have energy out of proportion to their surroundings. This is attracting the immigrant as fast as we can settle him, the capitalist seeking industrial ventures and, still more, the capitalist seeking securities. The first of these two classes of capitalists still come from the United States, and the second from Europe, but they are not quite so sharply divided as here-

before. With a very large number of new settlers, many new industries and abundant capital, we needed only good crops and the prevailing high prices for food stuffs to accelerate our usual rate of progress.

The total value of the field crops of Canada, at local market prices, is placed by the Census Department at \$532,992,000, gathered from 30,065,556 acres, as compared with \$432,534,000 gathered from 27,505,663 acres in the previous year.

The basis of our trade relations with Great Britain has been improving, leaving out of account the abnormal year ending March, 1909. Taking the years 1901, 1902 and 1903 together, for every \$35 of products exported to Great Britain we received \$15 in goods and \$20 in cash. During years 1906, 1907 and 1908, for every \$39 of products exported we received \$25 in goods and only \$14 in cash. As we look to England to buy almost all of the securities with the proceeds of which we pay for our surplus of imports, and as practically all of the cash received both for surplus exports to Great Britain and for securities sold goes to pay the United States, any improvement in our imports from Great Britain at least tends to make the situation less one-sided. When we turn to our trade with the United States

there is no improvement in the proportion between exports and imports. In the years 1901, 1902 and 1903 for every \$38 of goods imported from the United States we sent to that country \$21 in products and paid \$17 in cash. During the years 1906, 1907 and 1908, for every \$62 of goods imported we sent them \$31.50 in products and paid them \$30.50 in cash. It is well also to note that the increase of our exports to Great Britain in the short period used for comparison is as \$39 to \$35, while the increase of our imports from the United States is as \$62 to \$38. It would undoubtedly be wise for the United States to take payment to a greater extent in products and we can afford to smile at threats of disturbance to such a total of trade as they enjoy with us. The discussion in the United States of the Payne tariff bill shows no disposition on their part to take a broader view of their relations with us; indeed quite the reverse, if we are to judge by the power to annoy us given to the Executive of the United States. But the fact that we intend to manage our natural resources in our own way, to favor Great Britain in our tariff relations, and to make such trade arrangements as we choose with other countries which are disposed in turn to treat us well, will be accepted, and the great and

rapidly growing trade between Canada and the United States will not be seriously checked, as it was in other days of tariff manipulation, when we were not so important as trading neighbors.

MARITIME PROVINCES.

The varied interests of the Maritime Provinces, taken together, have provided another year of reasonable prosperity, although the protracted coal strikes have curtailed the general trade of the communities directly concerned. In most parts farmers have had good crops with high prices. More attention is being paid to dairying and cattle-raising, which latter had been neglected of late years, and more intelligent methods of farming are being generally introduced, while a keener interest is being shown in farmers associations, agricultural colleges and similar means of improvement. Large yields of grain per acre can be obtained in many parts; parts; and great fodder and root crops and good grazing areas could be secured by a more intelligent direction of energy. The value of the field crops of the Maritime Provinces is as yet very small, being for the past year only \$49,684,000. The apple crop both in yield and prices, has been unusually satisfactory, and in some parts the growing of other fruits is becoming an important and profitable feature. Fishing, although, as usual very uneven as to the catch of different kinds and as to the fortunes of different fishing areas, has produced a more profitable result than the average. As might be expected from the conditions of foreign trade; the cut of lumber has been kept down; stocks, however, have been nearly cleared out, and, in consequence, the outlook for the trade is again satisfactory. Manufacturing interests have had a moderate revival and the prospect for a still larger volume of sales is good. In general trade the note is one of distinct hopefulness; orders are plentiful and prices have a tendency to advance. The most important industrial incident of the year has been the settlement of the long-standing dispute between the Dominion Iron and Steel Company and the Dominion Coal Company and this has been followed by a partial but substantial union of interests which should ensure the maximum of prosperity to the two companies. Both companies have done well during the past year, although the profits in both cases have naturally been affected by the prolonged coal strike, which began in July and lasted several months. The steel Company is making extensions and improvements to its plant, which must

largely increase its output, and apparently the demand for its product is such that the enlarged production can be readily sold. The coal company as a result of the strike, reduced its output about one quarter—say from 3,300,000 tons to about 2,500,000. It has now nearly a full complement of men. The output of coal for the whole province of Nova Scotia available for sale, which was about 5,500,000 long tons in 1908, decreased over 1,000,000 tons in 1909.

ONTARIO AND QUEBEC.

The year has been a prosperous one for the farmers of Ontario and Quebec. Despite much unfavorable weather, the crops were, as a whole, above the average and brought excellent prices. The agricultural areas, the weather conditions and the nature of the crops vary so much in these provinces that the yield has ranged from scanty to abundant, but there seems to be no district in which general prosperity among the farmers is not admitted, and in which this is not shown by their power to buy and to pay debts. The value of the field crops of Ontario and Quebec for 1909, as given by the Census Department, was \$290,469,000. In some districts steady improvement in farming is clearly evident. More attention is paid to tile-draining, the destruction of weeds, rotation of crops, good seed and manuring than ever before, and where the farming is at its best, the yield per acre of grain is not increasing, but puts to shame most other parts of North America. In other districts, however, the profits of farming are not what they should be, and it is hard to keep the young men from going West. Notwithstanding the world's high prices for wheat and the large yield per acre in these provinces, the quantity of wheat grown in them will, doubtless, lessen in proportion to other products, and even now there is very little to sell. The farmer finds his profit more and more in dairying, the raising of cattle, horses, hogs, fruit, vegetables for canning, poultry, etc. We do some things however, badly. We could supply the world with the finest apples, and well-ordered orchards pay an unusually handsome return, but as a rule everything in the apple business from the care of the trees to the landing of the fruit in Europe, is done in a more or less shiftless manner. On the other hand, there are districts where direct attention is given to fruit-growing and in these there is a marked improvement, and the great value of these products is being realized. We have in our West and elsewhere great markets for horses, but we do not try very hard to improve the

breeding, although we know that everything in the end depends on that. And as to breeding, the same may be said of those who rear cattle.

Because of the great increase in Western and other home consumption of articles produced on Eastern farms, our exports of certain articles—noticeable dairy products are falling off. This falling off is much to be regretted, as greater energy would apparently have enabled us to supply both markets more completely. It seems, indeed, true that in very many parts of Eastern Canada, while the money results makes the farmer comfortable, the land is not being worked to the best advantage, and the product must be less in quantity than in the past. Where the farming represents the high intelligence of our agricultural colleges, conditions are better than ever before, and the outlook is excellent; but where intelligence is not so great, and especially where the land does not respond readily to cultivation, conditions are not improving, and we fear this statement applies to a larger area in Eastern Canada than does the more favorable one. From the less prosperous districts men are still going to the West, and in all parts of Eastern Canada an ever present trouble is the lack of sufficient farm labor. This causes many kinds of difficulties, besides the obvious effect on the volume and cost of production. Indeed, we cannot have the best possible farming even where intelligence is at its highest, because every farmer finds himself forced to adjust his scheme of farming to the labor he can secure. Intensive farming would be best for the country as a whole, because by it the largest gross value per acre would be produced, and the farmer would thus have more to spend on labor and supplies, but scarcity of labor makes him turn grazier, so that he may get a satisfactory net profit from the least outlay possible for labor and supplies. On the other hand it has brought about an extraordinary advance in labor-saving farm machinery.

Partial drought and high prices have apparently lessened the number of animals on Ontario farms. As compared with 1908 the Government returns to 1st July show diminished numbers in milch cows and other cattle, sheep, swine and poultry, and only in horses is the number larger. The shipments of apples from Montreal were 581,000 barrels, the average for ten years being 445,000. The export of butter has nearly ceased, the shipments from the same port being 39,000 packages, against 573,000 in 1905, the collapse in 1907 being clearly maintained. A very largely increased home

demand will hardly explain this. In cheese the shipments were 1,872,000 boxes, worth \$17,225,000 the average for five years being 1,996,000 boxes, worth \$18,417,000. We used to explain the fall from the high figures of 1903 by the development of the production of butter, but now we must admit that we have less dairy products to export than formerly, whatever the cause. At the same time Great Britain does not need our dairy products as much as formerly. New Zealand, which five years ago supplied only 4 per cent of the cheese imported from the colonies now supplies 20 per cent. Notwithstanding improved facilities grain exports are smaller than in 1907 and 1908, being 27,959,000 bushels against an average for five years of 28,143,000 bushels. In flour, however, there is a large increase, the shipments being 1,713,000 sacks and 210,000 barrels, against 1,128,000 sacks and 167,000 barrels in 1908. Live stock shipments are smaller than in any recent year, but for several reasons the figures do not illustrate the trade as a whole. The Harbor Commissioner's are steadily improving the facilities of the port of Montreal, with the hope of making it the foremost port of this continent. The volume of shipments from Montreal and of inland shipments through the Lachine Canal both show a gratifying increase over 1908.

In manufacturing the conditions are very satisfactory, having regard to the recent check. As the year advanced, there was a steady increase in orders, with an improvement in prices. Not many new factories were built, but additions to existing plants were quite numerous. There are, of course, exceptions, but at the close of the year the majority of the factories in Ontario and Quebec were working at full time, many had increased their output over all past records, and nearly all have the promise of a larger volume of business in 1910 than ever before, orders from the west being unprecedentedly large in many lines. There has been great expansion in the volume of trade in steel, iron and metal goods of all kinds with a considerable increase in prices. Flour milling has been abnormally profitable. In lumber the cut of pine for this year has apparently been completely sold, and higher grades of lumber sell readily, but in box lumber and in lower grades the market still needs improvement. The outlook as a whole is very good. The new cut of logs will be dearer than that of the previous year, because of a recovery in the wages of the men. The most important event of the year in connection with

Emerson Engine Plows

An Engine Plow that is all plow. Carried on wheels with long distance axles. Made in sections with patent flexible connections, conforms to uneven surfaces.

Turns either way, right or left, and plowing all the time. No stops to turn corners.

Either Moldboard or Disc or both moldboards and discs for the same frame at a little additional cost.

16-inch bottoms are used regularly, but either 12 or 14-inch can be furnished if required. 24-inch discs are used regularly, but 26-inch can be furnished if desired.

The moldboard plow can be equipped with discs, or the disc plow with moldboards at but little additional cost.

Old ground bottoms or prairie breaker bottoms or discs interchangeable on the same frame.

Equipped with safety trips so that the bottom is automatically released when the share comes in contact with a solid rock or other obstruction that would break or spring the plow.

Close Centre hitch to engine makes light draft and an even pull on each engine driver. Means long life for your engine.

Quickly uncoupled from engine in case you strike a soft spot. No miring down of engine when using the Emerson plow.

Carried on wheels equipped with oil-tight, dust-proof wheel boxes running on long distance axles reduces friction and saves expense.

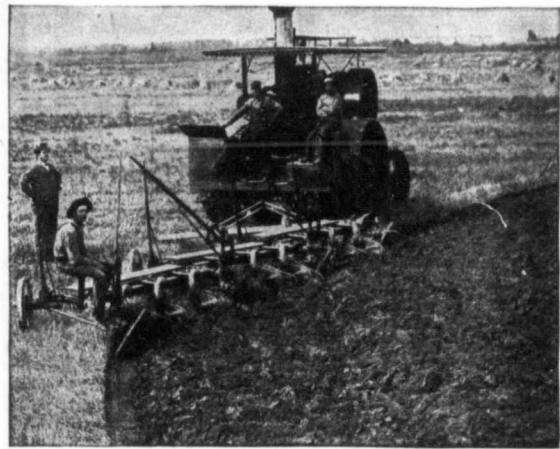
Wheel bearings are chilled where greatest wear comes and turning in oil must run light and prove durable.

Furrow Wheels run at an angle same as the three wheel sulky and gang, doing away with all landside friction and making the 10 foot Emerson run lighter than the 8-foot of any other make.

Bottoms, beams and castings interchangeable on the sections. Everything as strong as can be made. Should you break a part, take the same part off the rear end of the plow and tip up the rear bottom and go ahead. No time lost waiting for repairs.

Adjust the load to suit your power all the time. If the footing for the engine is bad, tip up one or more bottoms until the engine has the right load and keep plowing.

Each bottom is equipped with either spring trip or friction slip; insures against breakage.



Rolling Coulters, fin cutters or jointers may be used as preferred.

A spring coultter yoke prevents breakage of rolling coulters.

Made in sizes to cut 4 ft., 5 ft., 7 ft., 8 ft., 10 ft., 12 ft., 15 ft., 16 ft. and 20 ft.

Buy the size best suited to your present needs and any time you have use for a larger plow you are only out the additional parts necessary to add to your first purchase. You can't lose when you take the Emerson.

TUDHOPE ANDERSON COMPANY, LIMITED
 Winnipeg Regina Saskatoon Calgary

our forests was the action of the Government of the Province of Quebec in connection with the export of pulp wood with a view to the preservation of the great forest areas of that province. Much activity in building is general throughout the greater part of Canada, and in the smaller cities as well as the larger ones business properties are being sold at prices which would have been very surprising a few years ago. To a satisfactory extent these sales represent investments of capital unaccompanied by mortgages for part of the purchase money.

The mining business of Ontario centres at Cobalt and here the production is the largest on record. The growth of this mining camp is sufficiently remarkable to make figures for the last six years interesting. The value of the of the production has been as follows:

1904	\$ 136,217
1905	1,485,570
1906	3,573,908
1907	6,155,391
1908	9,133,378
1909 (estimated)	12,000,000
.....	\$32,484,464

Taking into consideration the ore reserves in sight and without reference to the effect of the price of silver, the output of Cobalt alone may maintain this

high level, or thereabouts, for a few years. Of the various other areas being either prospected or developed, little of a definite character can be said. Many millions have been spent in the work, but as yet practically no shipments have been made, although a moderate supply of ore awaits shipment at Gowganda. Lack of transportation facilities and the other great physical difficulties of the work in the north country must make development slow, but eventually other camps of importance besides Cobalt will, doubtless, arise. There have been apparently important discoveries of gold in the townships of Whitney and Tisdale, about 150 miles north-west of Cobalt. In the meantime silver has become the mineral of second importance in Canadian production, having displaced copper, nickel and gold, and standing according to the figures for 1908, in relation to coal as 13.5 does to 29.3. On the basis of our figures for 1908, we have now moved to third position among the world's producers of silver, having displaced Australasia. This is the highest position we can hope to hold, as our production is still small beside that of Mexico and the United States. While the silver market was rather uncertain during the year, the price remained about the same until December, when the market

showed a hardening tendency. The world's production has increased from 43 million ounces in 1868 to 109 millions in 1888 and 200 millions in 1908. This is not remarkable in comparison with other products, but the price has fallen from \$1.32 per ounce in 1868, to 94 cents in 1888, and 52 cents in 1908. The total value of all minerals produced in Canada in 1908, as shown by the preliminary Government report, was \$57,323,000.

At the end of 1909 business generally in Ontario and Quebec, whether in manufacturing, ordinary trading in merchandise, building, dealing in real estate, mining, selling of bonds and securities, or otherwise, is distinctly active, and accompanied by increasing prices and larger volume in most articles. The legitimate basis for this state of affairs is our excellent crops and an easy money market. But the very activity of business will cause the easy money to disappear and the high prices are already causing a speculative tendency, which is sure, as usual, to end in loss and disappointment to many.

We have as you already know, another year of great prosperity to record for the Prairie Provinces. The spring in Manitoba was cold and backward, but good weather in May and June gave

the crops as good a position at the end of June as in 1908, when the spring was early and favorable. In Saskatchewan and Alberta the spring conditions gave everything a good start, but July and August were very dry, and the yield suffered because of too quick ripening. Southern Alberta suffered severely from winter-killing of wheat—as high as 60 to 75 per cent. in some parts—but this loss was largely repaired by reseeded in the spring. In August there were further losses by frost and hail, and this part of the province did not bear out the first crop estimates, although the total results were fairly good. In August we published the estimate of our Superintendent of Central Western Branches based upon reports from nearly 400 correspondents. This was as follows:—

Wheat	113,979,000 bus.
Oats	157,537,000 bus.
Barley	24,324,000 bus.

In this estimate allowance was made for shrinkage by rain, heat, hail, frost or other adverse conditions. The country, however, had ideal autumn weather, and some carefully made estimates now put the wheat yield as high as 120,000,000 to 125,000,000 bushels. Our estimates for other grains seem likely to be confirmed. The flax crop, to which we do not always refer, is this year 3,500,000 bushels and, because of

the abnormal price, will bring the farmers about \$4,500,000. The grain crops are high in quality 90 to 95 per cent, being suitable for milling. The grain crops altogether are the largest in quantity and in value ever harvested in these provinces, and the total result in money will be from \$155,000,000 to \$160,000,000. The Census Department's estimate of the value of all field crops, cereal, roots, grasses, vegetables etc., for the three provinces, is \$192,839,000.

We cannot report very good prospects for the next season. It has been dry in the West for three or four months, and in consequence the ground is hard, making fall plowing difficult. Unless the spring is early and favorable, we cannot expect as large an increase in acreage as would otherwise be the case. These conditions should result more adversely in Southern Alberta and Southern Saskatchewan than elsewhere, because of the greater need of moisture in these parts of the West.

As we have tried to emphasize regarding Eastern Canada, the country as a whole is deeply interested in the largest gross product from each acre of land, because every dollar not saved by the farmer is spent in Canada in labor and merchandise. The average farmer, however, will not adopt new methods beyond the point which gives him comfort, financially and otherwise. And so, because the pressure of population is slight and the rest of the world at the moment pays high prices for food-stuffs, we do not, except in a few isolated districts, raise from each acre nearly as much as we would if the pressure of necessity were upon us. When this means neglect of the land, as, indeed, it generally does, we may be sure that some day we shall be punished for it. Few farmers in the West take enough trouble in preparing the ground for the crop; weeds are getting a hold upon the country which will in the next generation cause their children to say harsh things of their fathers; the land is not rested by changing crops or restored by fertilizers to any reasonable extent, and as yet the side profits for such useful adjuncts to grain crops as cattle, horse, sheep and hog raising, dairying, poultry farming, etc., are little in evidence except in particular districts, where marked success has attended dairying and stock raising. Even if the present money result was no greater, mixed farming, in which the crops are partly used on the farm to feed stock, would so sustain the value of the land for grain growing as to pay handsomely in the long run.

An adequate system of hail insurance should be advised at once, and some plan should be worked out by the Provincial Governments which will afford some reasonable assurance of a sufficient supply of harvest laborers. The increase in the number of elevators and the improvement in facilities for handling the grain crops after they leave the farmers' hands should be very satisfactory from the farmers' point of view. Certainly competition was never so keen before, and profits to the grain dealers are likely to be disappointing in consequence. In the Prairie Provinces, and including the small number in British Columbia, there were in 1909, 1,763 elevators, 37 warehouses and 769 stations, 2,569 in all, with a capacity of 54,234,900 bushels, as against 2,086 with a capacity of 43,037,400 bushels, in 1908. Including the Ontario terminals handling Western grain, the total growth in capacity is from 63,190,000 bushels in 1908 to 77,550,000 in 1909. The capacity of the Western flour mills, including those at Fort William and Keewatin, is now over 41,000 barrels daily, and as indicated elsewhere, they have enjoyed a year of unusual prosperity.

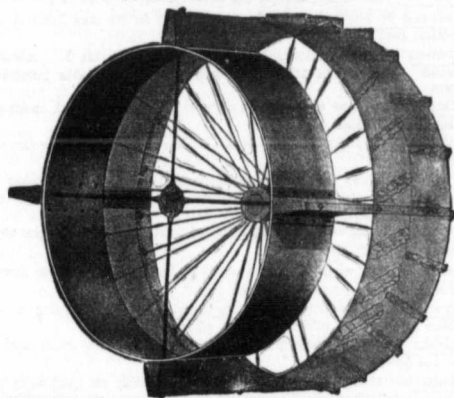
Cattle came through the winter in good condition, and practically without loss. Prices have been from \$5 to \$12 per head over the previous year. The number of export cattle passing through Winnipeg up to the middle of November was 61,628, the number of cattle for local consumption was 18,491, and of hogs 113,139. These numbers are considerably smaller than last year, but the prices realized by the producer are much better, and hides are selling for the highest price ever known in the West.

Ranching is probably doomed by the incoming of the grain grower, and this emphasizes what we have said regarding mixed farming in the West. The demand for beef is growing, indeed, the price of all meat food is very high throughout the world and it would be a ridiculous state of things if a country which is now actually importing sheep from the United States and Australia, and which is buying two-thirds of the bacon it consumes in the United States, instead of improving this very unsatisfactory state of affairs, should make it worse by the importation of beef, a possibility not at all too absurd to consider. The number of cattle in the West is smaller this year than last, and there is really no time to lose. The situation cannot be improved in a year, and the basis of stock raising by farmers on a larger scale should be laid at once. In any event it

THE SCHEIE EXTENSION RIM

For Traction Engines

Just what Traction Plowmen have been looking for
Fully protected by Home and Foreign Patents



They will take the engine through any mud hole or over any soft place Attached to any Traction Engine Wheel, either Steam or Gasoline,

Are a recent invention and a boon to any man owning a Traction Engine. Are the long looked for invention to prevent engines from getting stuck in soft ground. Will give your engine its necessary grip just when it is most needed. They will double the usefulness of traction engines by enabling the engine to be used for plowing in soft ground. They will do away with the necessity of wide heavy wheels. They are attachable under rim of drive wheels and any blacksmith can put them on. The Rims are made of steel throughout. Are not cumbersome, easily applied. Moderate in price and are guaranteed to do the work. For further particulars apply to—

The Scheie Extension Rim Company Ltd.
Langenburg Sask.

You can Know how a Wire Fence Will Wear Before You Buy It

There is no reason why you should take anybody's "say-so" about a wire fence.

You can test it before you buy it.

We have a simple formula for testing wire which we will be glad to send you along with samples of our fence wire. You can compare it with any fence that is made.

Our Peerless Fence made from all No. 9 English wire, is equal to all emergencies. It has more than double the strength required. On account of the superior galvanizing on this wire, it should last more than twice as long as ordinary galvanized wire. It stands the salt,

foggy climate of England for many years where ordinary galvanized wire rusts in as many months.

The Peerless Lock at each intersection of the crossbars is the most perfect device for the purpose yet produced.

This can't-slip lock grips the two wires firmly, yet permits the fence to adjust itself to any surface.

The Peerless Fence never sags nor is it affected by changes of temperature. Its spring coil formation allows for all contraction and expansion, the wires always remaining perfectly taut.

Don't buy a fence till you know it will last and give satisfaction.

Write to-day for our formula and test samples of all makes of fence. Compare them with Peerless—we're not afraid.

THE BANWELL-HOXIE WIRE FENCE CO., LTD.
Makers of Farm, Lawn and Poultry Fences and Gates.
Dept. V, Hamilton, Ont.
Winnipeg, Man.

Peerless

The Fence that
saves expense

which, in addition to the increasingly important stocks of spruce and poplar produced by their own mills, consume large quantities will take several years to produce a satisfactory situation. The

prices paid for hogs and cattle in Winnipeg during the past few months should tempt any farmer to take up this branch of farming. The prospects for the lumber market in the Prairie Provinces,

The Spirit of the Rumely Organization:

These buildings, all this machinery, is not the essential thing. Back of it there is a group of men who are working together in creating an organization.

An Organization! Think what that means in the human body. Millions of separate cells, each contributing its own particular part to the work of the others, to carry out the one will. Does the hand hesitate, or the foot halt in its task? The heart beats, the eyes see, the voice speaks. Each does its work in perfect harmony with all the other members of the body. By caring for the others and the whole, each is cared for itself. The story of life upon this globe is nothing but the irresistible growth of a more perfect organization, ranging from the simple-celled amoeba to the perfection of the human body.

Our company will grow as we make it perfect. There isn't a man in our business who will ever be useless or superfluous if he does well the task allotted to him. And further, as long as we all work together, harmoniously, and render American farmers real service by offering them honest goods in an honest way, the world will need the Rumely organization. As long as other men need the Rumely Company there will be increasing opportunities for its entire force.

The Rumely Company - Regina, Sask.

Distributing Warehouses: Winnipeg, Man. Calgary, Alta. Saskatoon, Sask.

We are erecting buildings, adding shop tools, developing new machinery for the farmer's use, extending our sales organization, building branch houses in places where before the Rumely trademark was unknown. But all

of pine, fir and cedar from north-western Ontario and British Columbia, are quite good. During the early part of the year retailers, after their experience in 1908, were slow to buy until the crops were assured, and prices were therefore unprofitable to the manufacturer so that the year as a whole is not likely to be very satisfactory, although much better than 1908. Since the assurance of good crops, both the volume of sales and the prices have so improved that an active and profitable business is already being done.

It is thought that the population of the three provinces is now nearly 1,250,000. Even based on the Census Department reports to 31st March, which estimates for foreign immigration since, but not for movement from Eastern Canada, the figures are 1,162,000. It is evident that our estimate of last year, namely 975,000 was too low. In addition to the unusual movement from the United States, there has also been a large number of immigrants from Europe, but the decrease from Europe as compared with 1908 is pronounced. The character is, however, so much better, and their declared possessions in money and other values so much greater, that these considerations more than compensate for the loss

in numbers. The outlook for immigration next year is exceedingly good in all directions.

Such prosperity has naturally excited real estate speculation, and the pace at which prices are rising and the tendency of ill-informed people to invest their money in suburban schemes in which the adjacency to solidly settled parts is often in inverse proportion to the claims of the dealers in this respect, is again apparent enough to warrant a caution on our part. There is, of course, a great legitimate increase in values both in the farm and in the cities, but those who buy on margin or who buy without knowledge of surrounding conditions, are sure to be punished in a majority of cases. Winnipeg has now a population of about 150,000. The building permits to the end of November covered 2,904 buildings, to cost \$9,152,000, as compared with 1,740 buildings in 1908 to cost \$5,427,000. It is the third city in Canada, and although we think of it mainly as a great market, it has already 180 factories employing 1,000 people. Like Chicago is earlier days, it may astonish us in this respect before many years have passed. In any event, when in 1912 the Centenary of the Landing of the Selkirk Settlers is celebrated, it will have a record of growth to show which

will be worth much to Canada as a general advertisement of the whole West.

Extensive new mileage has been built by the three railway corporations, particularly in Saskatchewan and Alberta. Great improvements in the way of double-tracking and to roadbeds and terminals have also been made, and again the crop has been moved to the head of the lakes in a satisfactory manner.

The plans of the several companies formed to supply water to the dry lands of Southern Alberta are now beyond the experimental stage, and great success is attending their efforts to obtain settlers. Of the western section of the Bow River area, being developed by the Canadian Pacific Railway, only about 15 per cent is still unsold and the energy and intelligence of this great corporation in establishing demonstration farms in discovering new kinds of crops, supplying good seed, making first improvements and breaking the land for settlers, limiting the holdings of individual settlers, and advertising the country in Europe and the United States, quite apart from the great irrigation works themselves, should command the admiration of every Canadian.

Doubtless few people in the East realize the extent to which

our western and north-western lakes have been supplying fish to the United States markets. The value of the catch this year is from \$1,000,000 to 1,500,000, and it includes seven important species of fresh-water fishes. The lakes of three provinces are being fished namely. Lake Winnipeg, Manitoba, Winnipegosis, Dauphin, Lake of the Woods, Rainy Lake, Lake Athabasca, and other large bodies of fresh water north of Edmonton and Prince Albert. The supply of fish in these waters is practically inexhaustible if properly protected, and as a result of the findings of a Commission appointed by the Dominion Government it is hoped that every necessary step will be taken. It will be a great calamity if their history is like that of the Great Lakes of Eastern Canada.

Summing up the trade conditions for these provinces, it may be safely said, as in the East, the volume of trade has increased as the year progressed, and that the level of 1906 has doubtless been reached by almost all trades, while many are doing a larger business than ever before. The extent to which retail trading is being done on a cash basis is gratifying, and in marked contrast to the early years of settlement in the eastern provinces.

Making The Canadian Thresherman and Farmer

We often wonder how many of our readers have ever stopped to realize just how much work is involved and how much anxiety has been passed through in putting out each issue of this magazine. As it comes to you each month wrapped in its pink wrapper with a nice colored cover, with good clear type and printing, full of reading matter and illustrations, we wonder how many of our readers realize the large staff that is required to get out such a publication.

In the first place the editorial must all be arranged for, prepared and put into type, keeping in touch with the various editorial contributors, which requires considerable correspondence and verifying the facts of the articles submitted probably as much more. Much of the matter has to be revised, rewritten and carefully prepared for the printers. This together with the business correspondence keeps from three to four typewriter operators working constantly for most of the year. All of this work must be done well in advance as it is necessary to start printing about two weeks before the date of issue.

Then there is the matter of illustrations for which photographs have to be secured, plates made, etc., much of this work taking considerable time and careful attention of experienced persons.

All of the reading matter in the magazine after it is turned over to the printers is set up on type setting machines into what is called galleys. Each of these galleys contain two columns of type from eighteen to twenty inches long. This must be gone over carefully first by the printer's proof reader, after which it is corrected and is then sent to the editorial proof reader to be gone over again carefully.

A careful survey is made of the size of the paper to be gotten out each month and a "dummy" is then made up and ruled off and laid out for the printer's guidance. The advertisements are all laid out on this "dummy" in their particular place as well as the reading matter.

Then the next proofs that come to the offices are proofs of the pages and these are all gone over carefully again by the proof reader for mistakes, before they are returned to the printer.

Then the advertising. We doubt if few of our readers realize just what this means to a publication. It is the back bone and no small amount of money is spent to secure it to say nothing

of the labor and skilled help required. The amount of time required to get in the orders for advertising cannot be comprehended by one having no experience in the work. Much of the work is started months in advance and the orders continue to come in until the last page is ready for the press. These have to be carefully filed, the copy carefully inspected for errors and plates secured when necessary. Often these go astray or the advertiser forgets to send them; so that the one responsible for the advertising often has a strenuous time and works the stenographer,

the pages and in turn appeal to the foreman who is responsible to everybody for everything, until that worthy clears the room and turns attention to the pressman who is demanding that the pages be given to him at once or dreadful things will happen.

To the uninitiated the above scene is confusion and riot, but through it all system prevails. Each is doing his necessary part and doing it the best possible way. Slipshod methods and lack of system must be and are eliminated.

After the pages have all been made up and have been correct-

ed, they are sent to what is known as the electrotyping department where a copper plate the exact duplicate of everything that is on the page in the way of reading matter, advertisements, etc., are made. This electrotype is one solid piece and the matter is handled in this way in order to facilitate speed in the press room. When you consider that in every page of the paper there are perhaps thousands of pieces of type and rules and illustrations and wooden furniture, there is always danger of some of this furniture pulling out and injuring the press; but when it is electrotyped in one solid piece there is no possibility of any such thing happening.

These pages are then locked up in big steel "chases" either eight or sixteen pages making what is called a form and this number of pages is run off at a time.

The printing press is perhaps one of the most marvelous inventions of this modern age. It is a ponderous machine, weighing tons, but it is so nicely constructed that it will respond to the thickness of a hair when it comes to printing.

Sometimes it will be noticed that in an advertisement or in an illustration the cut does not show up very plainly. This is due to the fact that in some way or other the illustrations have dropped perhaps not the thickness of a hair. The distribution of ink on the printed page is a most remarkable thing, a thing that it is impossible for the man who reads to-day to comprehend.

When you come to think of the fact that in a single issue you will find over one hundred thousand words of reading matter and from one hundred and fifty to two hundred columns of advertising, you can realize the amount



The Advertising Manager at work.

the telephone and the telegraph to the limit.

When all this has been done and it is never entirely completed because the work for one issue overlaps that of another, the editor, the printers and the pressmen have veritable wonders to perform. Everything must be put in type, read, corrected, revised and O.K'ed. Often proofs sent to the contributors and to advertisers are not promptly returned and only the most frantic appeals secure them. Printers, proof readers, copy holders and editors all insist that each and every article shall have the best position. The advertising manager and solicitors looking for "top of column" position for advertisements—all these crowd around



Getting the last pages ready for the press.

of scrutiny it takes to get these things into shape.

When the pressman receives the "form" as the pages of type are called, things move with a rush in the press room. The press room foreman directs the placing of the form on the press, others pile papers on the "iron man" as the automatic press feeder is called, wash the press rollers, place ink in the fountain, make final adjustments, etc., but the press is not yet ready. After "pulling the proof" the pressman puts on the "make ready," that is, evens up the plates, etc., so that the printing will be clear, clean and uniform. Sometimes this takes hours, although everything possible has been done in advance. At last everything is ready, the foreman gives the word and the machine is started. The first sheets are carefully examined by the pressman, copies are sent to the proof readers and the various departments and if nothing wrong is found, full speed is put on and the machine sings and hums and turns out the printed sheets in a steady stream.

The sheets after leaving the press room are sent to the bindery where they are put through folding machines. These folding machines are just as sensitive as the press, it being necessary in a great many cases to fold to a hair's breadth.

The work is done absolutely automatic and as you watch the broad, flat sheet being put into the folding machine and then whipped back and forth by numerous arms and rollers until it is folded up to size of a page, you imagine that you are gazing on something that is human.

These folded sections make sixteen pages of the paper and each section is stacked away by itself until the entire paper has been folded. These sections are then assembled making the complete paper.

These papers then have to be turned over to the stitching machine which puts the metal stitches in the back. After they are all stitched they are then turned over to the cutter to be trimmed after which they are ready to go to the mailing room.

All this time the Subscription Department has been at work. Subscriptions have been pouring into the office since the last issue



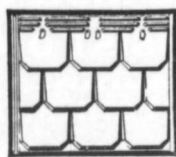
"Where are those forms?"



Use buying-sense when buying roofing

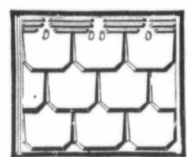
Mr. Farmer! Would you buy a horse from a man a thousand miles away—a man you did not know personally, on a mere paper guarantee? Certainly not. When you buy a horse you judge him yourself. You don't buy him on any paper guarantee, you buy him on what you know about him.

Buy roofing the same way—roofing that has proven itself by actual wear and tear test. Cover the roofs of your house and barns with



"EASTLAKE" Steel Shingles

LIGHTNINGPROOF STORMPROOF
FIREPROOF RUSTPROOF



the only steel shingle on the market that has proven itself ABSOLUTELY WEATHERPROOF under all climatic conditions—the ONLY steel shingle that can boast of an actual 25 year wear and tear test.

In perfect condition after 25 years

A quarter of a century ago scores of public and private buildings throughout Canada were roofed with "Eastlake" Metallic Shingles.

These roofs are in perfect condition to-day and have been certified as such by PRACTICAL BUILDING INSPECTORS.

THIS IS THE PROOF THAT COUNTS—better than one of these leaky guarantees.

After suffering hundreds of dollars of loss by laying an inferior roof, a paper guarantee is mighty poor consolation. Your lawyer could not dig a dollar out of it in a thousand years. Ask him—he knows.

Bank on the actual wear and tear test when buying roofing.

Easiest and quickest to lay

Then "Eastlake" Shingles are so easy to lay—saving labor which means money to you.

"EASTLAKE" STEEL SHINGLES make the most economical roof for all buildings. You pay nearly as much for the inferior brands of metal shingles, also the ordinary wood shingles, as you do for "Eastlakes" and they do not last one-tenth as long.

"EASTLAKE" STEEL SHINGLES are made from the heaviest sheet steel, evenly and perfectly galvanized, thus absolutely rustproof.

Their special patented construction insures a watertight roof. "Eastlake" Shingles are properly called the ONE RIGHT ROOFING.

The Philosopher of Metal Town.

Send a post card to-day for our free booklet, "Eastlake Metallic Shingles." It contains roofing facts you should know. Also ask for catalogue containing full information about our Metallic Ceilings, Steel Sidings for houses and barns, Corrugated Iron, Eave Troughing, Conductor Pipe, etc.

The largest and oldest manufacturers of sheet metal Building Materials in Canada.

N.B.—Write to-day for information about our Portable Corrugated Granaries—absolute protection for your grain.

Manufacturers



Western Canada Factory: 797 Notre Dame Ave., Winnipeg

was gotten out. These must all be carefully entered by the book-keeper, then turned over to the circulation manager who is one of the busiest men in the office. Under him are a large staff of boys and girls who are kept constantly busy.

We will follow one subscription through the office. The letter is opened in the morning and it is found that it contains a remittance from some farmer or thresherman for his subscription. It is then turned over to the book-

keeper who enters it in the cash book and turns the name over to the circulation manager who in turn turns it over to his staff to be acknowledged, and to be checked over with the names in the office to see if it is a renewal or a new name. After the checking process has been gone through it is turned over to the stencil cutter who cuts the name on a stencil by a special machine. This stencil is then put into a tin frame. This tin frame is placed in another machine and an enve-

lope is addressed and filed away and the stencil is then filed away in its proper place where it can be readily found. It is then ready to go to the addressing machine for the purpose of stamping the name upon the wrapper which goes to the subscriber with the paper inside.

You can readily see how much work there is handling just one name and when you consider the fact that thousands of them come into this office in one year you

Concluded on page 79

FARM WEEDS

(Concluded from last month.)

four-year rotation should be broken up early in August and cultivated at intervals to destroy the successive growths of weeds as they appear. The land should be again plowed or preferably ridged in the fall. These rotations may be expected to give good results anywhere in Canada east of Manitoba.

SHEEP DESTROY WEEDS.

When an abundance of succulent pasture of the finer grasses is provided, weeds can scarcely be said to be favored by sheep as a staple part of their diet. Sheep will, however, even when good pasture is provided, vary their diet by nipping off seedling plants or the fresh growing plants and the bloom with its contents of sweets, from older plants of many of our common weeds. When their pasture is depleted, sheep feed readily on Wild Mustard, Ox-eye Daisy, Yarrow, Plantain, Perennial and Annual Sow Thistle, Wild Vetch or Tare, Docks, Sorrel, Lamb's Quarters, Milkweed, Ragwort, Burdock and Shepherd's Purse. In fact, there are few weeds that sheep will not eat, to the extent of preventing them from seeding, if there is not enough of their favorite grasses to satisfy them. It is only when the supply of food is unusually short that sheep will feed on plants having leaves and stems covered with bristly hairs or spines, or with a flavor that is obnoxious to them. When the plants are young and tender, however, sheep have been observed to eat such weeds as Ragweed, Blue-weed, Cockles, Orange Hawkweed, Hound's Tongue, Stockseed, Mullein, Canada Thistle, Stinkweed, Toadflax, and others that are bristly or have a pungent flavor. Thorough cultivation with a systematic rotation of crops, combined with the maintenance of as many sheep as can be kept to advantage, is a certain and profitable means of keeping weeds under control.

SEEDING TO GRASS.

Lands foul with some kinds of weeds, particularly annuals, may advantageously be seeded to grass for hay or pasture. The cultivation of hoed crops becomes too expensive for labor when the soil is polluted with weed seeds. Grain crops may also be unprofitable because of weeds, and they afford an opportunity for the weeds to increase. A thorough summer-fallow would do much to bring the weeds under control, but this is not always convenient. Seeding to grass and cutting the hay crop early would prevent most kinds

of weeds ripening more than a relatively small number of seeds, and the number of vital weed seeds in the sub-surface soil would rapidly decrease from year to year. If perennial weeds are also prevalent, it would be well to pasture with sheep and mow the roughage closely each year, before the spring growth has formed seeds.

FARM IMPLEMENTS TO DESTROY WEEDS.

The best time to destroy weeds is within two or three days after the first pair of leaves has formed on the seedling plant. In friable soils the "weeder" is a useful implement for that purpose. The "tilting" harrow is also satisfactory for comparatively loose soils and is preferred as a weed destroyer on firm or clayey land. Weeds are irregular in time of germination; consequently it is necessary to apply the weeder or harrow frequently throughout the growing season. Fields of potatoes, corn and cereal grains, when sown with a drill may advantageously be treated with these weed destroyers once or twice before the crop distinctly shows above the ground, and again, with corn and ordinary grain crops, when the plants are three to six inches high. Even relatively heavy harrows ordinarily in use will do little damage to the potatoes, corn or grain plants if the land is not wet, and the loosening of the surface soil benefits the crop in addition to the destruction of the weeds.

For perennial weeds, or seedlings that have become well rooted, a cultivator having "diamond" shaped or other relatively broad shares is needed for hoed crops. The "disc" is a favored implement for destroying weeds in summer-fallow or in preparing a seed bed. When, however, it is desired to unearth and remove the rootstocks of perennial weeds such as Couch Grass, a narrow-toothed cultivator, that will loosen the soil and bring the underground vegetation to the surface, is preferred to an implement that will cut the rootstocks, the small cuttings of which may be exceedingly persistent in growth.

Commercial seeds and feeding stuffs are fruitful sources of weed introduction and distribution. Stable manure from cities and towns is often polluted with weed seeds; but its distribution is not so general as the seeds of clovers, grasses and cereals or ground meal for feeding.

Too much care cannot be taken to procure clean seed. An additional cost of fifty cents per acre for seed known to be clean

**SUPERIOR,
HOOSIER,
KENTUCKY,
Grain Drills,
and WHEEL DISC HARROWS,
MEET THE REQUIREMENTS
OF THE NORTHWEST FARMER.**

**ABSOLUTELY GUARANTEED TO
DO ALL WE CLAIM FOR THEM.
NO RISK IN PURCHASING.
INSIST ON SEEING THESE
MACHINES BEFORE BUYING
ANY OTHER. TAKE NO SUBSTITUTE.**

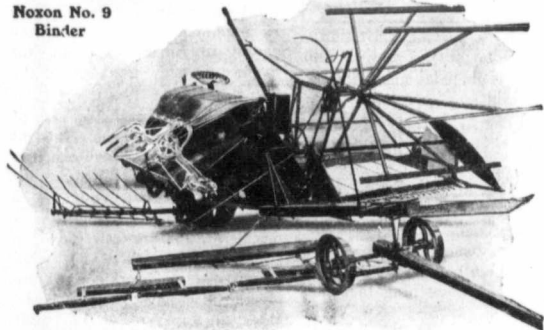
**SEND FOR CATALOGUES.
THE AMERICAN SEEDING-MACHINE CO.
INCORPORATED.
310 ROSS AVE., WINNIPEG, MAN.**

BRANDON
Operating in
MANITOBA ALBERTA SASKATCHEWAN
Subscribed Capital \$365,000
Substantial Cash Deposits with
THREE PROVINCIAL
GOVERNMENTS..
FIRE INSURANCE
All Classes of Desirable Risks Insured
Pure-Bred Registered
LIVE STOCK INSURANCE
Protection Against Loss from
Accident and Disease
Full Information on Application to any Local Agent, or
the Head Office of either Company
INSURE WITH HOME COMPANIES
THE ALBERTA-CANADIAN INSURANCE CO. THE SASKATCHEWAN INSURANCE CO.
CANADA

Patronize those who patronize this Magazine

NOXON Binders, Mowers, Rakes

Noxon No. 9
Binder



INDEPENDENT AGENTS AND OTHERS— Please note **THE NOXON CO.**, an independent firm, wish to make selling arrangements for territory in Manitoba and the West, for Binders, Mowers, and Rakes? Write direct to Headquarters, Ingersoll, Ont. ¶ Get hold of the line that has taken the lead in foreign countries. ¶ Binders 6, 7 and 8 ft. cut. Mowers 5 and 6 ft. cut. ¶ The Binder is the keystone of the implement business. ¶ When you get the NOXON you get THE BEST. ¶ Our Mowers and Rakes are equally good.

THE NOXON CO., LTD. - INGERSOLL, Ont.

is cheap insurance against losses caused by the introduction of noxious weeds. Where possible it is advisable to procure seed from lands that are known to be free from noxious weeds. Commercial seeds should be carefully examined and the kinds and nature of any weed seeds included therein clearly understood before they are sown. Absolutely pure seeds are not obtainable in quantity for commerce and many samples that appear to be clean contain seeds of the most objectionable weeds. Clover seeds foul with Foxtail are often less harmful than apparently clean samples that contain a few seeds of Bladder Campion or Perennial Sow Thistle.

Commercial feeding stuffs usually find a better sale when not too finely ground. The records of analysis of a large number of samples of meals, manufactured principally from coarse grains of various kinds, show that vital seeds of noxious weeds are usually present. The ground screenings from grain used for milling are a common ingredient of feeding stuffs. Many of the small weed seeds contained in them will retain their vitality until spread on the land with farmyard manure. Such small weed seeds should be separated from the coarser grains by screening, and burnt or finely ground apart from the grain.

Business Habits

There is probably not one farmer in ten thousand who keeps a set of accounts from which he can at any moment learn the cost of anything he may have produced, or even the cost of his real property. A very few farmers who have been brought up to business habits keep such accounts, and are

able to tell how their affairs progress, what each crop, each kind of stock or animal has cost, and what each produces. Knowing these points, a farmer can to a very great extent, properly decide what crops he will grow, and what kind of stock he will keep. He will thus be able to apply his labor and money where it will do the most good. He can weed out his stock and retain only such animals as may be kept with profit. For the want of such knowledge farmers continue year after year, to feed cows that are unprofitable, and frequently sell for less than her value one that is of the best herd, because she is not known to be any better than the rest. Feed is also wasted upon ill-bred stock, the keep of which costs three or four times that of well-bred animals, which, as has been proved by figures that cannot be mistaken, pay a large profit on their keeping. For want of knowing what they cost, poor crops are raised year by year at an actual loss, provided the farmer's labor at the rates current for common labor, were charged against them. To learn that he has been working for fifty cents a day, during a number of years, while he has been paying his help twice as much, would open the eyes of many a farmer who has actually been doing this and it would convince him that there is some value in figures and book accounts. It is not generally understood that a man who raises twenty bushels of corn per acre pays twice as much for his plowing and harrowing, twice as much for labor, and twice as great interest upon the cost of his farm, as a neighbor who raises forty bushels per acre. Nor is it understood that when he raises a pig

that makes one hundred and fifty pounds of pork, that his pork costs him twice as much, or the corn he feeds brings him half as much as that of his neighbor, whose pig weighs three hundred pounds at a year old. If all these things were clearly set down in figures upon a page in an account book, and were studied, there would be not only a sudden awakening to the unprofitableness of such farming, but an immediate remedy would be sought. For no person could resist evidence of this kind if it were once brought plainly home to him. If storekeepers, merchants, or manufacturers kept no accounts, they could not possibly carry on their business and it is only because the farmer's business is one of the most safe that he can still go on working in the dark and throwing away opportunities of bettering his condition and increasing his profits.

A Mixture of Grasses.

It is a well known fact that mixed crops are more productive than those sown singly. Thus, one acre sown to oats and barley, or oats and peas will yield as much or nearly as much, as two acres sown singly to either crop. So in grass lands, Clover and Timothy mixed, will produce nearly twice as much as if the ground were seeded to one of these alone. It is also a well known fact that our grass lands are not so productive as we could wish, and the reason of this may be, and probably is, that we have but one or two kinds of herbage in them. If we examine an old thick, luxuriant sod, in a pasture or a meadow, it will be found to consist of a variety of grasses and other plants, each of

which seems to vie with the other in occupying the soil for itself. This is the result of natural seeding, and gives a lesson which we may well profit by. There is another reason why grasses should be mixed; this is that the period of greatest vigor of different varieties occur at different times. We can therefore secure a succession of herbage for a long season by sowing a variety of grass seeds.

To give examples, we might mention that a mixture of Orchard Grass, Red Clover, Timothy, and Kentucky Blue-Grass will produce a pasture which will be in good condition for grazing from April when the first mentioned grass is in fine condition, up to October, when the last is in its most vigorous state; the Clover and Timothy serving to fill up the interval. With one of these alone there would be but one month of good herbage, and that coarse, if given the whole field to itself. In like manner, a quantity of Rye Grass added to a meadow would help to furnish a quick growing herbage which rapidly and constantly recuperates after cutting or eating down.

The fact is that we make much less of our advantages in regard to our meadows and pastures than we might. On the average, seven acres of pasture are required to keep one cow through the pasturing season, when by the best management one acre, or at the most two ought to be sufficient. This is due in great measure to the prevalent fashion of seeding down with but one variety of grass, with clover added sometimes, a fashion which, hereafter, experience teaches us should be more honored in the breach than in the observance.

The Business of Threshing.— Many men assume that they are fitted to be threshermen because they like to run a traction engine or tend a separator. Right here is where they are pretty liable to make a mistake. There is just as much sense in thinking you have a call to thresh merely because you love to see the wheels "go round" as there is to think you have a call to preach because you love yellow-legged chicken. These things may be valuable qualifications in either profession but they are not necessarily winners.

Love for one's profession is a mighty fine thing, but my experience indicates that it grows cold or waxes hot pretty much in proportion to what it brings us in good hard American dollars. The thresherman who cannot pay his notes when they come due is not generally a very amiable, enthusiastic sort of fellow, even if he can do circus stunts with his engine.

It is not my purpose to belittle the mechanical end of the business, because that is mighty important, but the financial end is after all the most important consideration. No man has any right, in justice to himself to buy a threshing outfit until he has carefully considered the business end of the proposition and decided upon his own business capacity. Threshing at best is a hazardous business. The investment is heavy, the profits never very large, and the risks enormous. Under favorable conditions and in the hands of right men, the business can be made to pay. Many men do make it pay, but, on the other hand there are many failures. In fact there are too many failures.

The responsibility for these failures lies, in most cases, with the men who engage in the business. They do not analyze conditions carefully enough. They do not consider the facts that every business man must consider before engaging in a new enterprise. Apparently a great many bank on their luck when the facts are against them. It has been well said that "facts are stubborn things." You may ignore them to-day and apparently escape from them, but they will rise up and smite you tomorrow, when escape is impossible. Right here I wish to quote from Mr. John D Rockefeller's "Reminiscences of Men and Events." He says: "Good old-fashioned common sense has always been a mighty rare commodity. When a man's affairs are not going very well, he hates to study the books and face the truth. From the first, the men who managed the Standard Oil Company kept their books intelligently as well as correctly. We



Practical Talks to Threshermen

Conducted by PROFESSOR P. S. ROSE

TALK No. XVIX.

knew how much we made and where we gained or lost. At least, we tried not to deceive ourselves.

"My ideas of business are no doubt old-fashioned, but the fundamental principles do not change from generation to generation, and sometimes I think that our quick-witted American business men, whose spirit and energy are so splendid, do not always sufficiently study the real underlying foundations of business management. I have spoken of the necessity of being frank and honest with one's self about one's own affairs. Many people assume that they can get away from the truth by avoiding thinking about it but natural law is inevitable, and the sooner it is recognized the better."

That is good straight talk from a man who knows and it applies just as surely to the business of threshing as to any other business. To analyze conditions tabulate the facts and face the truth even if it hurts; that is what makes for business success but it requires an uncommon stock of common sense and some bravery to do it.

There is a certain amount of preliminary study necessary before a man thinks seriously of engaging in the threshing business, and it is my purpose to discuss somewhat in detail the various factors that enter into the final solution of the problem.

I have already pointed out that the man must first study himself carefully, impartially, and honestly. He must take the facts as they actually are. This is probably the hardest task a man can do because personal vanity always rises up to blind our eyes to the truth. This question of personal fitness, however, must be settled and no one can do it but the individual who has the problem to solve. In arriving at the answer I should consider first my business ability; second, my energy and aggressiveness; third, my standing in the community; and fourth, my experience or technical knowledge. I have put technical knowledge, because it is always possible to hire some one to make up this deficiency, but the other three qualities can neither be hired nor bought. It is true one can sometimes find a partner to make up a deficiency in one of the three first essentials, but even this is apt to prove a source of trouble.

Business ability is not easy to define. It includes many things, among which may be mentioned handling men, keeping accounts laying out the season's run, making contracts, collecting and keeping the rig in the best of order and everyone good natured. Handling men, and I mean by this the customers as well as the crew, is mainly a matter of leadership. It is something that can be learned partially, but it is more a matter of natural aptitude. Some men are born leaders and others are not. There always have been "hewers of wood and drawers of water," and always will be. If you find out you are one of this class and are bound to thresh anyway, get a job hauling water or pitching bundles. It will prove more satisfactory in the end. It is best to face this matter squarely and don't argue because John Doe or Ole Olson has a rig that you must have one too. There is no logic in that.

We will leave the matter of cost, keeping, etc., for subsequent discussion and take up the second consideration, that of energy and aggressiveness. This is something an honest man can settle in short order. No one knows better than himself if he is a hustler and can stand the strain of long hours of hard work. This is essential to success in threshing more than in most businesses because the season is short and only hustlers can win. And another thing, a man must be of the temperament to fight hard when luck is against him. For if he gets discouraged and "lies down" when difficulties arise, as they surely will, he can't win.

The third point is also easily disposed of. A man generally knows whether his prospective customers are friendly towards him or not. If they are, it is a mighty big business asset. If they are not, it is a serious handicap, because no matter how well he does his work they will get some one else if it is just as convenient. It pays to have customers that will wait until you can get to them and if need be let your competitor pull by. This is a pretty serious test of friendship sometimes but when a man can command that sort of loyalty it means success. It is what is called in business generally good-will. When a firm sells out it sells its good will, when the doctor sells his practice,

he sells his good-will. In his case it is all there is to sell and yet often commands a pretty big price. Good-will, or one's standing in the community, is after all a pretty valuable asset and the man who thinks of going into business can not afford to overlook or nap to protect it, once it is gained, or to overlook the extent to which his competitor has acquired the good-will of the public.

The matter of technical skill or experience must not be lost sight of. In fact, it has been the purpose of these lessons to advise our readers along these lines. It is important and no business of a mechanical nature can hope to succeed unless there are competent men to operate and care for the machinery. It is desirable that the owner of the outfit have this skill. It saves money and delays and adds to the success of the business provided the other end, the business end, is handled as it should be. In any event, the owner or manager should know whether the men he hires are competent to do the work well. This amount of technical knowledge is imperative. Beyond that, men of special training can always be hired for a sufficient consideration. And right here I want to say emphatically, that a cheap, incompetent man is the dearest man you can employ to care for expensive machinery. The good business owner will see to it that he secures really competent help, even if he does have to pay pretty high wages.

Keep Children Away

A very peculiar and exceptionally exciting affair occurred down near Nevada, the other day, says the Garrison, Ia., Independent. A threshing machine was being operated on the Thomas Tow placet. The machine had been stopped for a short time and when it was started up again, the man who was feeding the separator heard a number of hair raising yells emanating from the bowels of the machine. The yells were repeated frantically and the machine was stopped, that an investigation might be made. Then it was that the cause was disclosed. A 7-year-old member of the Tow family had crawled into the machine during the time that it was stopped, bent up on a tour of investigation. He had crawled into the rear end of the machine and was upon the shaked when it began its operation. He crawled out a much wiser and well shaken youngster but none the worse for his rather exciting experience.

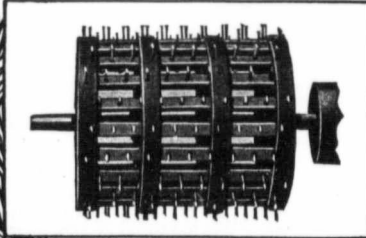
The better you behave the better you will get along.

Sit right down and write to

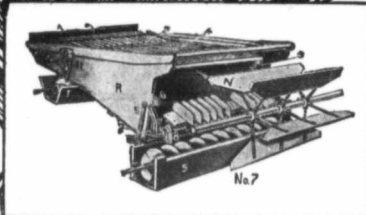
POINTS OF DIFFERENCE
THAT MAKE FOR PROFIT.

REEVES

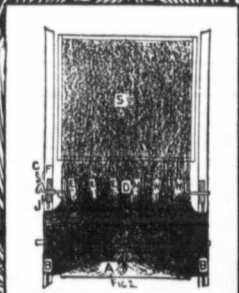
if you are
in the market for
a Threshing Outfit!



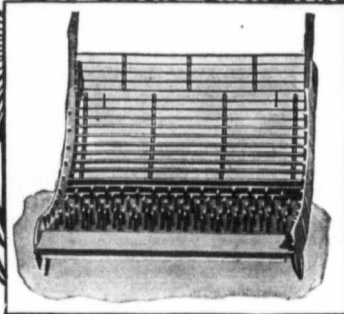
THE REEVES MAMMOTH CYLINDER



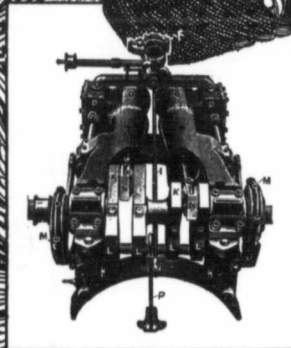
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There are lots of threshermen that did not buy REEVES outfits that now wish they had.

There are a good many places where REEVES SEPARATORS and ENGINES differ from other makes and there are good and sufficient reasons why these changes have been made. In every case where a REEVES SEPARATOR or ENGINE differs from others you will find that the change enhances the earning power of the machine.

Give us a chance to explain the "REEVES idea" of SEPARATOR and ENGINE construction before you make definite arrangements for buying.

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CANADIAN BRANCH: REGINA, SASKATCHEWAN.

The Thresherman's Question Drawer

Answers to Correspondents

(Answers to C. R., Pense, Sask.)

A. A belt should be dressed with neatfoot oil or some other animal fat oil; and a good time to do this would be just before putting them away after a season's work. After giving them an oil dressing, they can be rolled up and put in a dry place.

2. A leather belt should always be kept soft by using oil, or belt dressing made for the purpose of preventing slippage. Tar is too sticky for the purpose and is not good for the belt.

3. Rosin soap is often used for a belt dressing.

4. An undue tension on a belt is injurious to the belt, and often to shafting and boxes, and causes undue friction.

5. Soda ash is commonly used for hard scale in a boiler. The amount to use depends on the nature of the water, however, this can be determined by practice and also watching. Care should be taken so as not to use too much, as the boiler can be ruined by improper treatment. A safe plan is to have the water you are using analyzed by a chemist and a compound to suit the water recommended.

6. Just before you run the engine for the last time, if you will run the oil into the cylinder as fast as the lubricator or pump will deliver it you can oil the piston, cylinder, valve and valve seat better than it can be done by hand.

7. Take the piston, crosshead and connecting rod from the engine. Draw a line through and true it up by the cylinder, then square the shaft by the line.

8. The connecting rod is not on an angle when it is on dead centre. The angularity of the rod is spoken of in connection with the valve motion, and the piston travel. For instance, when the crank pin is at middle stroke, the piston is not in the middle of its stroke, or when the piston is in the middle of its stroke, the crank pin is not directly above the crank shaft on a horizontal engine, hence with a uniform speed on the crank shaft, the piston travels faster at one end of the cylinder than at the other.

9. It depends on the type of reverse. As this company attaches the Grimes reverse gear, it is as you describe. With the old Marsh reverse the action is just the opposite.

F. Y. W., HUMBOLT, SASK. **Q.** Why is it that a traction engine whose axle is placed behind the boiler, will not

pull a load backwards on soft ground or deep sand?

A. Whether the axle is at the rear end or middle of the fire box it will not pull as much backward as going forward. Yet there is some difference in engines. An engine that is easy to rear up in front while pulling a load going forward will not slip its drivers pulling backward. Neither rearing up in front and pulling forward, or slipping the drivers pulling backward is desirable. An engine should be balanced so that it will do both kinds of work well and there are engines built with an axle at the rear and some with the axle located on the side of the firebox, that do both kinds of work well.

S. N., CANORA, SASK.

Q. Is there anything saved in hooking up a valve if the governors are in perfect order?

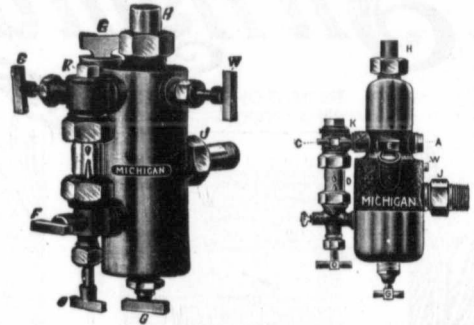
A. The governor, if in perfect condition, will not answer for hooking up the valve gear. The steam should be cut off early in the stroke and then work on the expansion of the steam the balance of the stroke. The earlier the cut-off the higher the pressure in the cylinder and the greater the expansion. The governor can not help in the economy but simply keeps the speed regular.

NEW DAYTON, ALTA. **Q.** In my boiler some of the staybolts at the side

of the firebox leak, and the plates are sprung between the staybolts about one-fourth of an inch. I would like to know if it is safe to run in this condition. I have calked the bolts several times, but it does not last very long until it begins to leak again. What is the cause of this trouble and how can I straighten the sheets and make the bolts stay tight?

A. The sprung sheets do not make the boiler unsafe if other conditions are normal. It is not necessary to straighten the sheets as they are as strong or rather stronger in their sprung condition than if they were straight. However, the cause of their being sprung should be removed. There are three things which cause this trouble. One is the accumulation of mud or sediment collecting in the lower part of the boiler; another is feeding the water into the boiler too near to the fire box, and the third is by freezing. If mud is allowed to collect in the water leg, the sheet will become overheated, due to

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are guaranteed to maintain the oil at scalding temperatures, in the most severe cold weather.

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American Falls, Idaho, August 16, 1909

Gentlemen—Please find herewith enclosed check to pay in full for the No. 5 Ejector which you lately sent me by prepaid express, and I must say that it is no wonder you can send them out on trial, as the ejectors are certainly the right things to have for filling engine tanks when in a hurry. I have been using different kinds for twenty-five years, but never had one that did the work so easily and quickly as yours, and kept the water cool for the injector. Before I could not use the injector, and now with your ejector, I can use the injector every time. So I wish that all the Thresher Manufacturing Companies would use your ejectors.

Yours truly, (Signed) F. D. RENN.

You get a Brass Strainer with the Chicago Ejector.

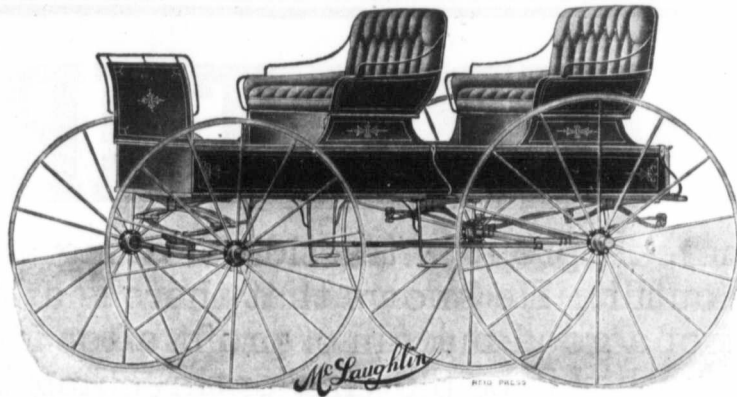
You Pay Extra for it When Buying Other Makes.

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McLAUGHLIN CARRIAGE CO., Ltd., Winnipeg Sale Rooms, 212 Princess St.

the water being kept away from it, and in this weakened condition, due to the heat will yield to the pressure. The side sheets are often sprung by means of frost, even when the boiler is supposed to be emptied of its water. If the water enters the boiler at the fire box end or even in cylinder part, near fire box, the sheets will be sprung due to the continual expansion of the boiler at the fire box end or water being turned off and on to regulate the supply thereof. If the water would be fed in at the fire box end continuously the temperature would not change to the degree that would cause this injury. The water should be fed into the boiler about 12 to 18 inches from the front tube sheet, just below the water line.

To get the stay bolts tight, have some one hold a heavy piece of iron, a sledge hammer or a short piece of shafting, against the one end of the staybolt while the other end is driven with a hammer. This will swell the bolts in the holes and make them solid. Chalking without this riveting of the bolts will not last, as the expansion and contraction of the boiler will make the calking yield.

C. R., Q. We have a 15 h.p. **LEDUC**, compound engine **ALTA**, which gives us plenty of power for the separator, but

there is not draught enough to make a lively fire, and it clinkers very badly. We have been thinking about taking off the small cylinder and connecting dry pipe to large cylinder and steam chest.

2. The thimble that connects the elbow to the governor on dry pipe will not screw up tight enough to stop leaking, and therefore wastes lots of oil. We got a new piece, but it was also too small. The threaded hole in the governor seems to be large but the threads are all right. How would you remedy this?

A. We would not advise you to take off the high pressure cylinder from your compound engine. If your fire clinkers too much this would indicate that you carry the fire too thick on the grates, thus not allowing sufficient air to pass through the fire. If draught is all you lack, you can increase it by reducing the exhaust nozzle. Be careful not to reduce it too much, as this will kill the power of the engine. The fault is likely in the operating of the engine; perhaps the tubes are not kept clean.

2. If the hole in the governor is tapped too large, a large thread should be cut on the pipe. This can be done by using an adjustable die and the die opened up to make the larger thread.

WEYBURN, SASK.

Q. I want to take off the independent pump from my 25 h.p. engine, put on a small injector, an 8 to 16 h.p., one that will just furnish the water as fast as I use it while threshing; so that I can start the injector and leave it on continually during threshing and have nearly the same amount of water in engine all the time.

How can I use a small injector like this and force the water through the heater as successfully as the pump did? Will the injector work as well through the heater as not? I have a large injector on other side and I think the smaller heater or pump side forcing water through the heater will be more economical.

2. I burned straw in my engine five seasons and the flues did not leak any till about the middle of last season, when they all leaked very bad. I got an experienced hand to fix them in good shape. They then did not leak the rest of the run with the exception of two or three that leaked a very little. Do you think these will last another season's run if well fixed before starting out, or will it be best to put in new flues, and what kind will be the best.

A. An injector will work all right forcing the water through the heater. It is a good practice

to have the injector small enough so as to be able to feed the water continuously. It is not necessary to get the minimum size injector, as the feed water can be reduced by throttling the suction until the required amount of water is delivered to the boiler. As to economy, the injector may not be any more economical than the pump, as you will not get as much heat out of the exhaust steam, due to the fact that the injector uses more steam to do its work. It is true that the heat put into water by the steam goes back to the boiler, but heating the water with live steam prevents the water from getting the heat from the exhaust heater. The most economical way of feeding water in the boiler is to use as little live steam as possible to do the forcing and reclaim as much heat from the exhaust steam to turn back into the boiler.

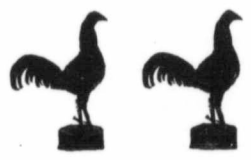
2. Five seasons' burning straw in a boiler without leaky flues is doing very well. If you have the same fireman you had for the five seasons and he is taking the same care of the boiler, the flues may be getting weak; although the number of times you have rolled them would indicate that they are not worn out. Possibly your fireman is the fault of your trouble.

EVERY THRESHERMAN KNOWS

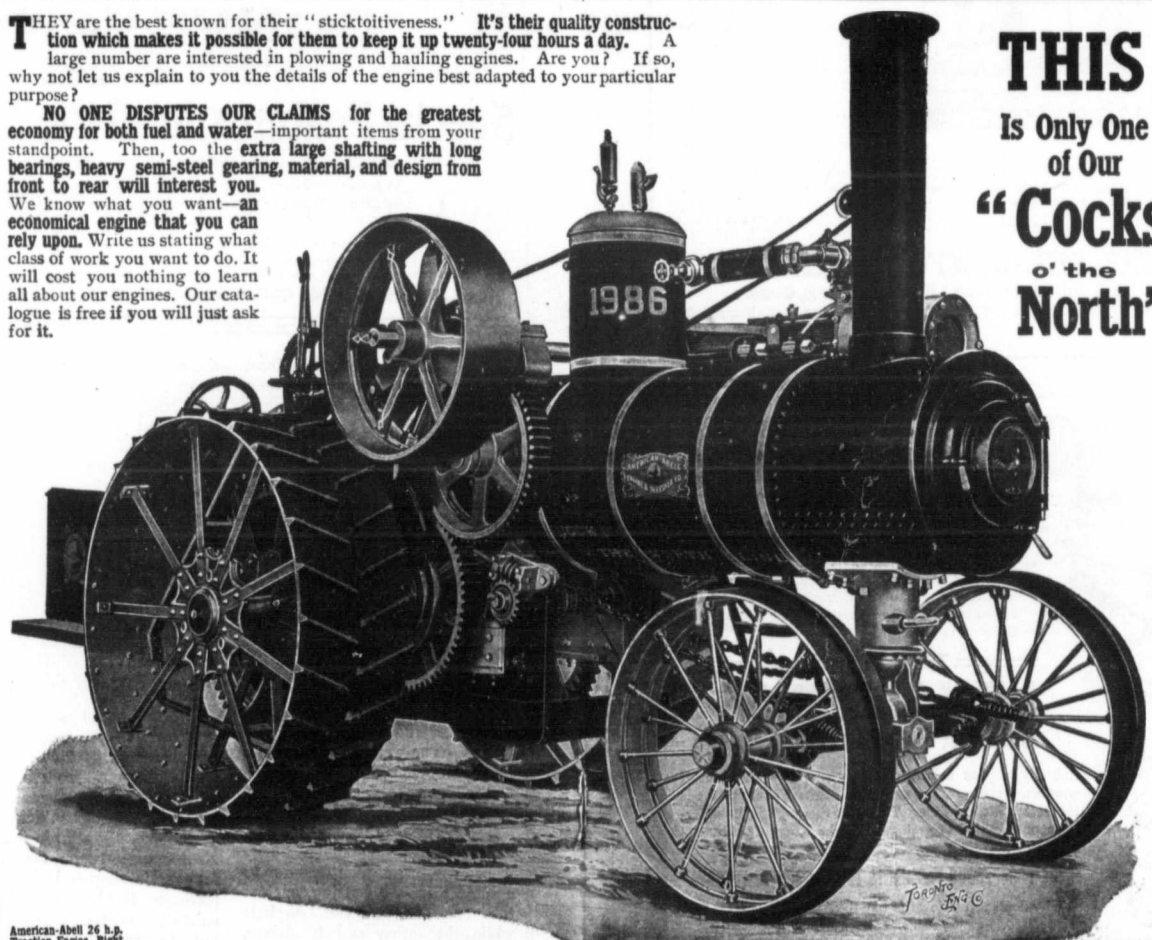
That there is profit in traction plowing and in running a threshing outfit provided he is equipped with an up-to-date outfit. He knows that there is a big demand for his labor and that the wages paid are such that he is assured of a good margin of profit after all expenses are paid. He furthermore knows that the backbone of his outfit whether it be plowing or threshing is his traction engine, for without a durable, economical and dependable source of power it is an up-hill and unprofitable task.

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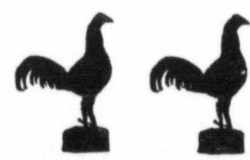


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Care and Handling of a Farm Cream Separator and Tester.

The hand cream separator is now just having a marked effect on dairying and in some localities it is the cause of radical changes in the equipment and in the product of many creameries. The change in dairying is being enthusiastically promoted by some parties and uncompromisingly condemned by others.

There seem to be at least three sides to the question, or three important interests involved, those of farming, the butter-maker and the consumer.

First. There are farmers who claim that hand separators give them the best possible skim milk to feed to their stock, such skim milk, they say, protect them from the danger of contagious disease being brought to the farm by the creamery skim milk and they also claim that the saving of time required to draw the milk daily to the factory is an important matter with them.

On the other hand they must invest considerable money not only in the separator but in some sort of power to run it, as the necessity of having something besides man power to run a farm separator is admitted by all dairymen who have attempted to turn the crank themselves. The loss in skimming at the farms, where one hundred or more separators take the place of one factory machine is another important item, as is also the diminished price of the butter which is often of a lower grade than that made by skimming the whole milk at a factory.

The next group of individuals that feels the effect of this radical change in the creamery industry are the creamery owners and the butter makers. Some of these feel keenly the loss on the quality of butter made from gathered cream. The experience of many factories with farm gravity cream in the past has been such as to cause butter makers to doubt the practicability of making so fine a quality of butter from farm separators cream as they formerly have made from whole milk.

It will take a long time to overcome this prejudice but we should remember that gravity cream is not hand separator cream. The

standard quality of butter certainly should not be lowered by farm separator cream, where it is skimmed from milk which is twelve or more hours old. The sooner cream is separated from the milk after milking the better cream for any purpose and this being true any faults in the butter made from such cream can not be changed to the farm separator.

The defects found from gathered cream butter usually arise from the improper care of the cream before it is delivered to the factory. These defects develop or are introduced into the cream either by the method of caring for it at the farm or by the way in which it is transported to the creamery.

In order to get farm cream to the factory in a good condition so that it is possible to make an extra quality of butter from it, the farm separator should be placed where there are no barn or other bad odors. It must be thoroughly clean, the bowl and all tinware scalded and put in a clean place out of the reach of dust. Under no circumstances should the separator bowl be left until it has been used a second time before the cleaning is done. The bowl slime and rinsings left in the separators after skimming, begin to sour and decay in a very short time, and if the cleaning is not done immediately after the skimming the taints of sour milk are hard to remove.

In localities where the hand separator has been used for a while and seems to have obtained at least a temporary foothold it has been found that many of the operators of these machines are more or less puzzled by the variation in the test of the creams as reported by the factory to which it is sold. They do not understand why this cream from their separator does not have a uniform test from day to day. It is perhaps natural for them to expect that since the separation of cream is a mechanical process the product should be fairly uniform in composition. There are however, several things which influence the test of separator cream and they should be well understood by the owners of hand separators.

First.—The temperature of the milk when separated ought to be uniform. If there is a variation

STEADY AS A ROCK
"THE MAGNET"

The Cream Separator of To-day and the Future



Because it has square gear construction, made twice as strong as is required to do the work and that is the only way to make durable a fast running machine like a Cream Separator. Because it has a special skimmer in one piece, easily cleaned which takes out all the butter fat besides separating all impurities from the milk and cream. Because its large steel bowl is supported at both ends (Magnet patent), which keeps it in balance. Because its brake (Magnet patent), circles the bowl, stops in eight seconds and prevents wear on the machine after separation is finished. Because its frame is strong and rigid and so firmly put together that it will skim perfectly on the rough ground or any floor. Because all parts are covered, no danger of accident in operating. Because all parts in the machine are designed mechanically correct and built of the best material by workmen who are specially trained to turn out perfect work. Because it is the only Cream Separator that

will continue to take out all the butter fat, no matter how long it is run, be it one or fifty years. The proof is in your own hands, try your machine by getting your milk in your dairy and you will find that the MAGNET continues to take out all the butter fat as it did at first. If you have a cheap machine you will find it is wasting your money every day because it has lost its grip and does not skim as it did at first. Buy a MAGNET and stop that waste.

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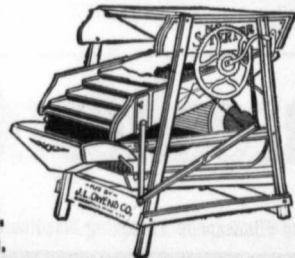
THE IMPROVED NEW SUPERIOR
Is the Best of all Good Fanning Mills

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We want to send you our booklet on our IMPROVED machine: OUR 1910 MODEL. We have improved our mill, increasing the capacity fully 35%. Our New Wind Adjustment makes it so you can separate by weight, which is the proper system you want in grading your seed oats. We have lots of other things we want to tell you about, which is to your interest. Write now. Be sure and see the Improved New Superior before buying any Fanning Mill and then judge for yourself.



The Harmer Implement Co.
132 Princess St., WINNIPEG, Man.

of ten or more degrees when the milk is run through the separator at different times, the richness of the cream will vary with the temperature. In some cases the milk may not be separated as soon after milking as at other times and when the separator is finally started the milk has cooled off considerably below the proper temperature of separation and the test of the cream is thereby changed.

Second.—The speed of the bowl has considerable influence on the richness of the cream and if for any reason the speed is not uniform or is different at one separation than at another, the test of the cream will be changed by this irregularity.

Third.—Cream changes in richness with the amount of milk separation per hour. If at any time the separation is hurried by crowding more milk through the bowl than it is customary to separate, the test of the cream will be changed.

Fourth.—The cream screw in the separator bowl is placed there for the purpose of changing the thickness of the cream when desired and it will perform its work if all the other factors of separation are uniform.

Fifth.—The amount of skim milk or water run through the bowl when the separation is about finished will influence the test of the cream, depending upon whether the bowl is flushed out with a little water or if a large quantity is used.

After the operation of a hand separator becomes aware of the effect which each one has on the test of the cream, he can if he wishes to do so, run the separation each time so that his cream will have a uniform test. Now, it so happens that when milk is separated at the farm there are a great many things that interfere with the regularity with which the separator is operated.

At some farms the separator is started up when the dairyman begins to milk and it is allowed to run from the beginning to the end of the milking. Each cow's milk is poured into the receiving can on the separator and the milk is separated by the pail full. In such cases the separator skims for a few minutes and then runs empty. This alternation of a skimming and not skimming has considerable effect on the cream separated, and a cream nearly uniform in composition can be obtained by arranging the milking so that the separator will be running at full capacity until the milk has all been through it. In other cases the dairyman gets rushed and tries to hurry a lot of milk through the separator in a short time, thus changing the rate at which the milk is skimmed

and the effect of this fluctuation will be noticed in the test of the cream.

If the users of the hand separators are careful to regulate the skimming each time so that it is done in the same uniform manner they can depend upon getting cream that will be uniform in the test. The points which need to be especially watched are the speed of the bowl, the temperature of the milk, and the amount of milk skimmed per hour.

CARE OF CREAM.

The ideal way of cooling cream is to have it run from the cream spout of the separator directly over a water cooler. This should reduce the temperature to as near 50° Fahrenheit as possible.

The cream must then be kept at a temperature below 60° Fahrenheit by setting the cream cans in cold water. It should be gatkered for delivery to the factory every other day in the hot summer weather. When cream cooler is not used the cream cans should not be over six inches in diameter and by setting the cans in cold water the temperature should be reduced to 60° Fahrenheit or below. This must be done once and in order to hasten the cooling the cream should be frequently stirred. A tin disc to which is attached a strong wire handle two feet long makes an efficient agitator for this purpose.

A BABCOCK TESTER.

It must be borne in mind that the accuracy and value of the test depends not alone on the test itself but quite as much as on the proper taking of the samples. If that is improperly done the results are of little value. For example: The writer has known of cow owners who, when desiring to test milk of an individual cow, have taken the sample by milking directly in the sample bottle. When it is known that the first part of a cow's milk is largely water, and the last part or stripings is very rich in fat, it is self evident, that such a sample would yield results of little value so far as determining the actual richness of that particular cow's milk.

Milk to be tested should be poured from one can into another several times or carefully stirred with a stirrer until it is of a uniform mixture. The sample is then immediately taken. Soon after the sample is taken, it must be placed in an air tight jar and some preservative added to keep it sweet.

The Babcock test bottles are graduated on the supposition that an eighteen gram sample is taken. Milk varies very little in its specific gravity and a pipette graduated to hold 17.6 cubic centimeters will deliver approximately



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eighteen grams of milk. When the sample is ready for testing the jar containing it should be placed in warm water and slowly heated to a temperature of 70° Fahrenheit.

Mix the sample well, especially see that any cream which may have gathered on the side of the jar is carefully mixed with the other part of the sample. The measuring pipette is now filled to the mark. This is done by sucking the milk up into the pipette above the mark, the dry fore finger is immediately placed over the top of the pipette to prevent from escaping. By gentle releasing the pressure the milk is allowed to flow out until level with the mark on the stem of the pipette. The pipette now contains eighteen grams.

The sample is then emptied into the test bottle. To do this the test bottle should be held in a slanting position, the pressure on pipette released, allowing the milk to flow into the bottle in such a way as to allow the air to gradually escape from the bottle.

The next step is adding the acid. This is measured in the acid graduate, the exact amount to use will depend largely on the strength of the acid, the temperature of the sample to be tested, etc. If ordinary commercial sulphuric acid is used 17.6 cubic centimeters will be found approximately correct. With a little individual experimenting the operator will soon notice the proper amount to use. To prevent the burning or charring of any part of the milk the acid is poured slowly down the inside of the bottle until all has been added. Now give the bottle a gentle rotary motion this giving equally on all parts of the milk. Then let it stand for three or four minutes, after which it is given another rotary movement and then placed in the tester. It is always best to hold the bottle in such a way that if accidentally part of it should spurt out it would not strike the face of the operator.

The bottles are placed in the tester in such a position as to keep the machine balanced. The bottles should now be whirled for five or six minutes at such a speed as indicated on the machine.

The machine is now allowed to slow down for the purpose of adding water to the bottles. Enough water is added to bring the contents up to the neck of the bottle after which the machine is again started and run for a few minutes, again stopped and sufficient warm water added to bring all the fat contents up into the graduated part of the bottle, after another whirling of one minute the samples are to be read. It may be well to state that it is preferable to use soft warm water and

that the temperatures should be about 120° Fahrenheit.

To read the test or the amount of fat taken out of one bottle at a time, hold it upright, the graduated part should be on a level with the eye.

The difference between the highest and the lowest limits of butter fat columns is the amount of butter fat expressed per cent direct. Most milk bottles are graduated up to 10 per cent, each large division indicates 1 per cent. of butter fat.

If the testing has been properly done the butter fat column should be perfectly clear, of a brownish yellow color, the line separating it from the acid should be clear and distinct. Too strong acid is apt to cause black or charred particles to appear in the fat, this same result may also be due to too high temperature of either the milk or the acid. Insufficient amount of acid or too weak acid, or too low temperature of milk or acid may result in a white or cloudy test.

The best thing to do when a fire occurs on shipboard, Augustus, is to put it out.

Some men are more fully appreciated after their life insurance has been paid.

The chiropodist advocates tight fitting shoes for others.

If you would save your good name, don't have it engraved on the handle of a good umbrella.

When a man hungers for the bread of life, don't feed him lectures on agriculture.

Care And Operation Of Farm Tillage Machinery.

By STANLEY CHALMERS.

Of all the important questions which the Canadian farmer has to deal with there is none which should command more careful attention from the farmer than "The Care and Operation of Farm Tillage Machinery." This is a part of farming that receives too little attention at the present time. The reasons are, first:—so many new implements have come into use during the last twenty years that the farmer has not acquired the knowledge of the operation of his implements that longer experience will give; Second, there is a seeming indifference to this subject throughout the west. One of the largest losses on the average farm is that which results from the farm machinery not being properly handled and taken care of, so that it is discarded before it has done half as much work as it might have done with proper care.



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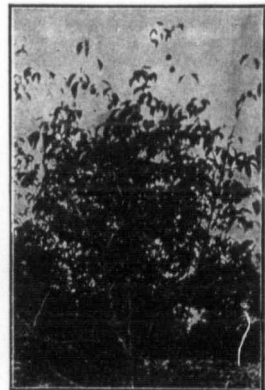
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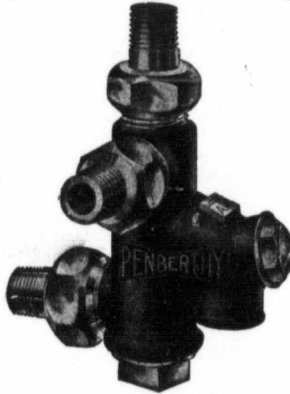
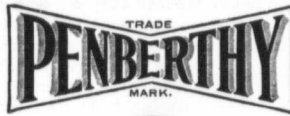
Brandon

Manitoba

We are Sole Western Agents for Sutton's Seeds in Sealed Packets.

In my opinion if less cheap labor was employed in Canada our implements would be much the better for it. So many men hire with farmers here not knowing the nature of the work which they have to do and the implements which they have to handle, that considerable loss is caused in this way. Now, if good men only are employed the things will receive more proper care and will be handled with better results than while in the hands of the cheap man. The man operating the machine should look over his machine and tighten the loose nuts twice a day. In this way the implement will never get out of order and consequently will last much longer. If an implement once gets badly disabled it is rarely as good an implement afterward; hence the necessity for keeping it ship shape. Before the season begins, when the implements will be in use, each machine should be thoroughly overhauled for bad pieces, bolts missing or other defects and should be fixed up. This will mean a great saving of time in the busy season as well as helping the implements to bear the strain better. Plenty of machine oil of good quality should be used, for the old saying that oil is cheaper than machinery, contains a lot of truth. Paint is a good thing to prolong the life of implements; a good coat of paint prevents the action of rust and frost on the machines as well as greatly improving their appearance. An implement shed is a requirement on every farm. The open air treatment has proved very successful in some cases but it is not a success in that of farm machinery. The farmers of the west as a rule have not implement sheds. If they had it would be a great saving to them as a first class implement shed will not cost any more than the loss on implements on the average farm for a few years.

The manure spreader is an implement which will soon be very common in this country. Its work is much superior to that done in the old way. It should be driven moderately fast and the wheels have then less chance to slip. It should be well oiled twice a day while working and the cog wheels should be greased at least once a day for the grease used in this way is cheaper than the cog wheels which will be worn out if it is not used. The manure should be tramped level with the box otherwise large lumps will escape without being treated in the proper way. The manure should not be tramped close into the beater as this makes it difficult to start. The machinery ought never to be put in motion while the machine is moving, because it is hard on the cog wheels which put it in gear. Some manure



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spreaders are said to work in the winter time. Under favorable conditions no doubt they will but it is a hard strain and shortens the life of the machine considerably because of the jolting over the hard ground and of the wheels slipping. It is better to work it only in summer to obtain the best results. Always keep the manure spreader in shelter, because ill usage will affect it sooner than almost any other machine, and shorten its period of usefulness.

The harrow though simple is one of our most useful implements when handled correctly. It will take the place of the cultivator or disc if used at the right time. It should be seen to that the draft is even on the draw-bar and that the harrow pulls evenly. Otherwise it is impossible to keep straight which is such a necessary feature in handling farm implements in order to get the best results. The harrow is not so sensitive as other implements to ill usage but nevertheless should be properly housed when not in use.

The handling of a gang plow to get the best results is where the experienced man is most useful. The plow should be inside in the slack season and should be best fitted up in every particular before the season's work is begun. Everything needs to be in the best possible order, with all the

nuts tight so that there will be no lost motion, and so the plow will be easier to pull. All defects should be attended to when first seen as it will take less time to fix them then than it will later on. Take good care to have the wheels greased often enough for they will wear a lot if they are not, and besides, the draft will be much heavier on the horses. Keep the plow at a uniform depth and make it go as deep in hard places as in soft ones, as this improves the quality of the plowing and keeps the plow from slipping out of the furrow. The driving though has more to do with the keeping of the plow in the proper position with regard to the furrow than the depth. The mould-boards need to be oiled at the beginning of the season to get the rust off them to let them clean. The mould-boards and shares cannot be clean or else good plowing must be done. When the plow is left in the field at night the mould-boards should be left clean and they will clean better next day. Care should be executed when plowing with gang plows among stones or roots. The plow must be driven slowly to avoid breaking a share or bending the beam. In these cases it is best to plow only with a walking plow. Gang plows should never be put away for winter without first being liberally sup-

plied with grease and oil on the mould-boards and shares and in the oiling places.

In conclusion I would say that 50 per cent of the money now spent in implements in the Canadian west could be saved by the farmers if their implements were properly housed. If every farmer in the west had an implement shed the large gain now on the implement dealers books would go on the farmers books and make him more independent. Therefore I would advise farmers to get implement sheds and save their money.

Tainted by Cement.

Water from a freshly cemented cistern will be tainted in taste. This is caused, says Municipal Engineering, by the solution of the salts contained in the cement. The following is offered as a remedy:

If the first water put in the cistern is allowed to remain a few days and then pumped out, almost all the trouble will disappear. A very few fillings will certainly reduce the amount below the point where the taste would be objectionable. If the wall after the first emptying is given a good waterproofing with alternate applications of soap and alum solutions at intervals of twenty-four hours, the cure can be hastened.



I
A dark stream, often of golden color, always of golden value, flows to waste from many a Canadian barn-yard. This liquid fertility often enters the side ditch of the farm lane, sometimes of the highway, and empties into a brook, which removes it beyond the reach of the plants that would greatly profit by it. Mice may gnaw a hole into the granary and daily abstract a small quantity of grain, or the skunks may reduce the profits of the poultry yards, but these leaks are small in comparison with that from the poorly-constructed and ill-kept barn-yard. The most valuable part of manure is that which is very soluble, and unless it is retained by some absorbent, or kept from the drenching rains, it will be quickly out of reach. Manure is a manufactured product, and the success of all farm operations in the old States depends upon the quantity and quality of this product. Other things being equal, the farmer who comes out in the spring with the largest amount of the best quality of manure will be the one who finds farming pays the best. A barn-yard whether on a side-hill or on a level, with all the rains free to fall upon the manure heap, should be so arranged as to lose none of the drainage. Side-hill barn-yards are common, because the barns thus located furnish a convenient cellar. A barrier of earth on the lower side of the yard can be quickly thrown up with a team and road-scraper, which will catch and hold the drenchings of the yard above, and the coarse, newly-made manure will absorb the liquid and be benefited by it. It would be better to have the manure made and kept under cover, always well protected from rains and melting snows. Only enough moisture should be present to keep it from fermenting too rapidly. An old farmer who let his manure take care of itself, once kept his sheep under cover, and was greatly surprised at the increased value of the manure thus made. In fact, it was so "strong" that when scattered as thickly as the leached dung of the yard, it made a distinct belt of better grain in the field. The testimony was so much in favor of the stall-made manure that this farmer is now keeping all his live stock under cover, and the farm is yielding larger crops and growing richer year by year. If it pays

to stop any leak in the granary, it is all the more important to look well to the manure that furnished the food, that feeds the plants, that grows the grain, that fills the grain bin. At this season the lving mills are all grinding the hay and grain, and yielding the by-products of the manure heap. Much may be saved in spring work by letting this heap be as small as out-door yard feeding and the winds and rains can make it, but such saving is like that of the economic sportsman who went out with the idea of using as little powder and lead as possible. In farming, grow the largest crops, even though it takes a week or more of steady hard work to get the rich, heavy, well-prepared manure upon the fields. More than this, enrich the land by throwing every stream of fertility back upon the acres which have yielded it. Watch the manure heap as you would a mine of gold.

II
Any excess of growth at the toe renders the pastern more oblique, and, as a consequence, throws undue weight upon the "back sinews," whereas too great height of heels has a similar effect upon the joints of the extremities, by rendering them too upright. Taking as our guide the foot of the animal that has never been brought to the forge, and which, in consequence must be considered as a correct model, let the external wall of the hoof be reduced by means of the rasp to a level with the firm unpared sole. If there is no growth of the external wall beyond this level, then there is nothing to be removed.

III
In the selection of a shoe for the healthy foot, we must bear in mind the chief object in view, which is to protect the parts from excessive wear. This protection is to be found in a metallic rim of proper size and shape, securely adjusted. Almost every shoe in common use meets this end more or less satisfactorily, and we have already remarked that the proper preparation of the foot that has been previously shod is of vastly more importance than the particular kind of shoe to be adopted. At the same time, there are faults in the shoe most commonly employed which had their origin in its particular adaptation to the foot after this had undergone more or less severe mutilation at the hands of the farrier, and which have been retained

more through custom than through actual necessity, as we have reason to hope. The most prominent of these faults consists in extreme narrowness of rim with a concavity upon the upper or foot surface, in order to prevent the sole from sustaining least weight or pressure, which it is perfectly unfitted to do after being pared down to a point of sensitiveness. In a state of nature we know that every portion of the foot comes to the ground and sustains its share of weight, and in the shod state it should do the same, as far as practicable. Hence, the shoe should be constructed with its upper surface perfectly flat, and with a breadth sufficient to protect a portion of the sole, and to sustain weight. It should be levelled upon the ground surface, in imitation of the concavity of the sole, and not upon its upper surface, where the space thus formed serves as a lodging place for small stones and other foreign bodies. In shape it should follow the exact outline of the outer wall, being narrowed at the heels, but continued of the same thickness throughout. The lateral projection at the quarters, and the posterior one at the heels are unsightly, of no benefit, and should never be allowed where speed is required.

Even now, in some of the newer regions of the West, the easiest way to get rid of the manure is considered the best. The English farmers have long been obliged to feed farm animals largely for the fertilizers they yield, and this has proved that covered yards are the most economical. These covers are not so expensive as might be supposed at first thought. Substantial sheds, large enough to accommodate a hundred head of cattle, may be built at a cost all the way from \$1,000 to \$1,500, according to the locality and price of labor and lumber. The roof may be made with three ridge pole resting upon outside walls, and two rows of pillars. There should be ample provision for ventilation and the escape of the water falling upon the roof. The original cost will not be many dollars per head, and the interest on this will represent the yearly cost. If this should be placed at two dollars for each animal, it will be seen that this outlay is more than repaid by the increased value of the housed manure over that made in the open yard, and exposed to the sun and drenching rains. The saving in food consequent upon the warm protection of the animals has been carefully estimated to be at least one tenth the whole amount consumed. In the saving alone, the covered yard gives a handsome return upon the investment.

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W**Hundreds Have Purchased! Why Haven't You?****Do you enjoy?**

Hauling wood 20 miles and
Sawing wood and Splitting
wood " " "

Do you like

To pay \$6 to \$12 per ton
for coal " " "

"No!"**Well then—buy our
Sterling Straw Heater**

and Burn Straw. It costs
you nothing " "

**Our Sterling Straw Heater
IS
Simplicity itself**

It is made up in two parts—

THE BASE or Fire Plate
INTO WHICH FITS
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18 x 60 inches

TO USE.

Simply take the cylinder out to the straw stack,
pack it with straw, and bring it back to the base.
Then touch a match to it and it requires no further
attention for hours.

Wolsley, Sask., Nov. 19, 1909.

The Sterling Straw Stove Co.,
Gentlemen, Somerset Block, Winnipeg, Man.
I used your Sterling Straw Heater in my shop last winter. I
have a large and very cold building and finding a coal stove
insufficient, supplemented it with your stove for the very
cold weather. Finding it a better heater than the coal stove,
I used it entirely the balance of the winter and found it gave
better and even heat, with no attention for twelve hours
at a stretch. My fuel bill was \$1.25 for a load of straw and
\$2.50 for coal, saved the price of the stove in three weeks.
Yours truly, (Signed) H. W. WOOLLAT.

Our price is \$9.00
Delivered at your station

Extra Cylinder \$4 when ordered with Heater
—Remit by Express or P.O. money order—

THE STERLING STRAW STOVE CO.,
413 Somerset Block. **Winnipeg, Man.**

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IV

There is no question more frequently or seriously considered by the farmer, than how he shall get, keep and spend an adequate supply of manure; nor is there anything about the farm which is of greater importance to its successful management than the manure heap. There are few farmers now left who pretend to ignore this feed for the land; and few localities, even in the newer Western States, where manure now is thought to be a nuisance. We have gradually come to the inevitable final end of our "virgin farms," and have now either to save what is left of their wonderful fertility, or to restore them slowly and laboriously to a profitable condition. We have reached the end of our tether, and are obliged to confess that we have trespassed over the line which bounds the territory of the locust, or have improved the face of the country so much that, the protecting timber being removed, the water supply is becoming precarious and springs, brooks and rivers no longer flow as they did heretofore. To some extent the tide of emigration, which has flowed westward so many years, is now eddying or even ebbing, and the cheap, worn lands of the East are finding purchasers, who undertake to bring them back to their former condition. At the same time Eastern farmers are discovering

more and more certainly that they must increase their crops, and make one acre produce as much as two have heretofore done. The only way in which either of these classes can succeed, is by keeping sufficient stock to manure their animals so skillfully and well that they shall pay for their feed with supply of rich manure, with which the soil can be kept in a productive state, and to save and use the manure with such care that no particle of it be lost. It is not every farmer who can procure all the manure he needs; but very many can save what they have, with far greater economy than they now do; and this, although it may seem a question secondary to that of getting manure, is really of primary importance; for by using what one has to better purpose, he opens a way to increase his supply. We have found this to be the case in our own experience, and by strict attention to saving and preserving every particle of manure in its best condition, we have succeeded in so enlarging our supply of fodder that the number of stock that could be fed was largely increased each year, and very soon it was necessary to go out and buy animals to consume the surplus. To bring a farm into improved condition, there is no cheaper or more effective method than this.

The ordinary management of manure, in open barn-yards, where

it is washed by rains, dried by the sun's scorching heat, and wasted by every wind that blows, is the worst that is possible. In this way half or more of the value of the manure is lost. By figuring up what it would cost to purchase a quantity of manure equal to what is thus lost, the costliness of this common method would be discovered, and the question how much could be afforded to take care of the manure would be settled. When properly littered, one cow or ox will make a ton of manure every month, if the liquid as well as the solid portion is saved. Ten head would thus make one hundred and twenty tons, or sixty two-horse wagon loads in a year. A pair of horses will make as much manure as one cow, or twelve tons in a year. A hundred sheep, if yarded every night and well littered, will make one hundred tons of manure in a year, and ten pigs will work up a wagon load in a month, if supplied with sufficient coarse material. The stock of a one hundred acre farm, which would consist of at least ten cows, ten head of steers, heifers, and calves, a pair of horses one hundred sheep, and ten pigs, would then make, in the aggregate, three hundred and sixteen tons of manure every year, or sufficient to give twelve tons per acre every fourth year. If this were well cared for, it would be, in effect, equal to

double the quantity of ordinary yard manure; and if plenty of swamp muck could be procured, at least six hundred tons of the best manure could be made upon a one hundred acre farm. If this were the rule instead of rare exception, or only possibility, what a change would appear upon the face of the country, and what an addition would be made to the wealth of the country.

Advantages of the Road Drag.

A Kansas paper dwells upon the good points of the road drag as follows:

The road drag has several advantages notably these: Its cost is merely nominal; there is no machinery to get out of order; it doesn't have to be fed, bedded, curried or harnessed; neither does it have to be cranked, primed, inflated, gasolined, watered, painted, oiled or dissected; its "up-keep" doesn't amount to two whoops, and in the summing up it does more good to the roads per square inch, per horse power, per pound, per mile, per year than any horse or automobile, shod or unshod.

Some people would refuse to take advice if it were offered to them in sugar-coated capsules.

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 fulfils 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.

THE IRISHMAN AT HIS BEST

A lady one day, being in need of some small change, called downstairs to the cook and inquired, "Mary, have you any coppers down there?"

"Yes, mum, I've two; but, if you please, mum, they're both me cousins—" was the unexpected reply.

The same lady hearing sounds of mirth ascending from the lower regions of her house one night, rang the bell and inquired of the servant, "Is that hilarity I hear in the kitchen, Bridget?"

"No, ma'am," was the reply, "it's Mr. Murphy, and the jokes of him would make the Pope himself laugh."

"I told you half-an-hour ago to turn on the gas in the parlor, Bridget?" said a mistress enquiringly. "Sure, an' I did, mum," answered Bridget. "Don't yez smell it?"

"Have you answered the door, Bridget?" enquired a mistress who thought she heard the bell ring. "Not exactly, mum," said Bridget savagely, as at the same time she felt her head; "but Oi spoke to it just now, whin Oi cracked my head against it."

"Is the Rev. Mr. Brown at home?" asked a stranger, confronted by a smiling maid at the parsonage door. "No, sorr, he is attending a wedding," answered the maid. "I particularly wanted to see him. Can you tell me when I shall be likely to find him?" asked the caller. "Well, sorr," was the smiling reply, "I don't know just whin he'll be back, for he has another funeral to attend after, and the both will delay him some time, sorr!"

A dispensary doctor once prescribed two pills for a sick laborer, which he sent by the man's wife in a small box, bearing the direction, "The whole to be taken immediately." On visiting the patient a little later, the doctor was surprised to find that the pills had not helped him. He asked the man's wife if she had given him the medicine. "I did doctor," replied she; "but maybe the lid hasn't come off yet."

The sick man had swallowed box and all.

"How did yez fale phwin the dentist was pullin' yure tath?" enquired Mrs. McGorry of her husband.

"How did I fale, is at?" exclaimed Mike. "Bedad! Oi regritted wid all me haan-rt that Oi wasn't born a hen!"

While a drove of bullocks were being driven through a northern village, one of them suddenly stopped, and, notwithstanding all the efforts of the drover, would not move. A chemist who happened to see the affair went up to the bullock and injected a drug, which made the animal career down the street. A few minutes after the drover entered the chemist's shop, and asked him if he gave the bullock the medicine. "I did," replied the chemist.

"Well," said Pat, "I'll take a penn'orth of it, as I've got to follow the baste."

Dr. Nansen, the Arctic explorer, came across an Irishman on one occasion who declared that he had travelled farther North than anybody. "What nonsense!" exclaimed the doctor, getting angry. "Why sir, do you know I calculate to have travelled as far as any human being can possibly get."

But still the Irishman persisted, and went on to say—"Now listen to this. How do you know that ye've travelled as far as any human being can get?"

"Because," replied the doctor, "I came to a huge wall of ice that no one could get around."

"What did ye do then?"

"Well, I conversed with my staff of men on the subject."

"Ah, yes, begorra," exclaimed Pat. "Oi heard ye. Oi was on th' other side o' the wall!" And he walked away in triumph.

An Irishman entered a tramcar, seated himself, took out his pipe, and put it in his mouth.

"You can't smoke here," said the guard.

"I know it, sorr; I'm not smokin'," said the Irishman.

"But you've got your pipe in your mouth," continued the guard.

"Yes, sorr," retorted the Irishman; "an' I've got me feet in me boots, but I'm not walkin', sorr."

An Irish gentleman who wished to express his hospitable feelings to his surrounding friends said—

"Now, mind, if you are ever within one mile of my house, I hope you will stay there for a week!"

An Irishman who had walked a long distance, feeling very dry, and seeing a milkman in the streets, asked the price of a quart of milk.

"Three-pence," replied the milkman. "Then give us a quart in pints," said Pat. "Right," was the reply. Pat, on drinking one pint, asked—"How do we stand?" The milkman replied—"I owe yer a pint." And I owe you one," said Pat; "so we are straight."

An Irishman went to a Scottish contractor several times and asked him for a job. The Scotsman, tired of the man's perseverance, told him to go to the devil and see if he could get a job there.

"Ah! sure, be mi soul, I've been to him," said the Irishman, "and he's taking nobody on but Scotsmen."

A stranger walking along a country road met an Irishman who was holding a ram by the horns, and the following conversation took place—"Will you hold this ram," said the Irishman, "while I climb over and open this gate from the other side?"

"Certainly," said the obliging stranger, as he seized the big horns.

"Thanks," said the Irishman when he got to the other side. "The vicious brute attacked me about an hour ago, and we have been struggling to gether ever since. As long as you

stand before him holding his horns he can't hurt you. Farewell! I hope you will be as lucky in getting away as I have been."

In a country school the principal undertook to convey to his pupils the use of the hyphen. He wrote on the blackboard, "Bird's-nest," and pointing to the hyphen, asked the class, "What is that for?"

After a short pause, a young son of the Emerald Isle piped out—"Please, sorr, for the bird to roosit on."

"Dear Tim," wrote another Irishman to a friend for whom he was anxious to do something, "I'm sending you my old coat by parcel post, so I've cut the buttons off to make it lighter. But you will find them in the inside pocket. —Yours truly, Pat."

"An phwat'll Oi do at all, Moike?" asked Mrs. Gallacher, who was treating herself at a country station to a pennyworth of her "exact weight." "This machine only goes up to fifteen shilings, an Oi'm sixteen shilings if I'm an ounce."

"Get on twice, Bridget," said the resourceful Gallacher, "an' add up th' totals."

Two Irishmen were earnestly discussing the comparative usefulness of the sun and moon, but they could not dismiss the topic as lightly as did James Russell Lowell the sea. At last one of them swore that the sun gave the stronger light. Said the other—"But the moon is more sensible." "How do yees make that out?" "Oh, it's aisy." "Let's hear yees prove it!" "Bedad, the moon shines in the night, when we made it, while the sun comes out in broad daylight, when even a one-eyed man can see widout it."

"Pat, have you a watch?" enquired a master of his servant.

"Niver a wan, sir, and phat would I do wid it?" enquired Pat.

"Well," explained the master who was also an Irishman, "I want you to report at the office at half-past eleven. But, anyway the bells ring at noon, and you can come half-an-hour before."

A lady one day heard a knock at the door, and afterwards asked the servant who had called. "It was a gentleman, ma'am, looking for the wrong house," replied Mary.

An Irishman in search of two relatives arrived in Cape Town, having heard that they were working there in an iron foundry. One day, while looking for his folks, he saw a big boiler, on which were large letters as follows—"P-A-T-E-N-T-E-D, 1890." "Hurrah!" shouted the Irishman; "I've found 'em—I've found 'em! Pat and Ted, landed 1890! Wurra, wurra! the very names of the bhoys and the selfsame year! Wurra, wurra! shure an' I must have been born under a lucky star!"

A New Gas Tractor for Canada

The Alberta Port Huron Co., have just made arrangements to handle the Joy-McVicker Tractor for Canada. This is a new gas tractor in so far as the Canadian market is concerned, but from all appearances is an excellent machine. It is a large machine, being 50 h.p. nominal and 140 h. p. brake and it is therefore capable of developing a very large amount of power. On another page of this issue will be found a cut of this engine plowing.

The engine will be handled in the Province of Alberta by the Alberta Port Huron Co., and in the Provinces of Saskatchewan and Manitoba by the Canadian Port Huron Co., both concerns being well known to the trade. Mr. Julien Thompson who has charge of the Alberta Port Huron Co., will have charge of the Alberta end of the business, and Mr. N. P. Thompson, Manager of the Canadian Port Huron Co., will have charge of the Saskatchewan and Manitoba end.

A New Thing for Traction Engine Owners.

Our readers will notice in this issue the advertisement of the Scheie Extension Rim Company Limited of Langenburg Sask. This concern is putting on the market an extension rim for traction engines, the idea being to provide a safe-guard against the engine being stalled in soft ground.

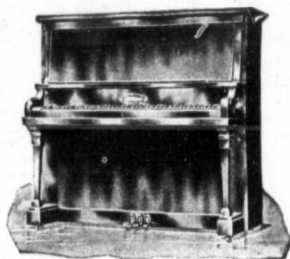
It is a very simple affair and can be attached to any traction engine wheel, either steam or gasoline, adding practically no weight thereto. The makers claim that this rim has been thoroughly tested and that it will do its work upon every occasion. For traction plowing in soft ground, it is claimed that it will carry the engine over any condition of soil. The principle of the attachment, it is claimed, is that it will not tend to mire as the ordinary mud lug will, but it tends to bear the engine up and lift it out of the hole. Tests have been made in swamps and sloughs with traction engines and in every case it has worked perfectly. Our readers will do well to investigate this proposition.

The average boy will go out of his way to climb a fence rather than pass through a gate.

A man may be self-made but a woman prefers to be tailor-made.

The pencil is sometimes hard pushed to tell the truth.

The success of some is usually due to the failure of others.



THE GREATEST OPPORTUNITY ON RECORD

MASON & RISCH
Announce their pre-inventory Sale of
HIGH-GRADE PIANOS

An opportunity which could not be had under any other conditions; New Pianos from \$175 up; terms to suit the purchaser. It is not often that a chance like the present occurs to buy a Piano.

Handling our own retail trade as we do, having our own store in every city of any size from Port Arthur to the Coast, we are in a position to offer retail prices on High-Grade Pianos at the same prices paid by the small retailer who buys wholesale.

The Mason and Risch guarantee protects you at present and for years to come. Honest methods, square dealing, supplemented by progressive, modern "Factory to Home" selling plan have built up the largest business in the west.

If you cannot attend this sale in person, then write for full description of the bargains which will be mailed to you immediately.

We give below **only** a few of the many bargains to be had at this great sale, and the terms will be made to please every one.

7—English made Upright Pianos for	\$65 each.
2—German made Upright Pianos for	\$90 and \$100
3—Evans Bros. Pianos for	\$135 and \$155
3—Bell Pianos for	\$160, \$175, \$180
1—New Scale Williams Piano for	\$200
2—Gerhard Heintzman Pianos for	\$220 and \$235
2—Morris Pianos for	\$225 and \$240
1—Gourley Piano for	\$255
3—Heintzman Pianos for	\$260, \$277 and \$310
2—Harmonic Pianos for	\$265 and \$270
3—Classic Pianos for	\$287 each
4—Newcombe Pianos for	\$290 and \$295 each
2—Henry Herbert Pianos for	\$300 and \$310
4—Mason and Risch Pianos for	\$320 and upwards

The above list **only** gives you an idea of what this wonderful sale affords, and there are many other equal bargains. These Pianos were taken as part payment on New Mason and Risch and the Pianola Pianos, and have been put in first class condition in our repair shop. **Our Guarantee** of satisfaction goes with every Piano.

New Pianos, during this sale, will be sold at a reduction of 25%. If you are a music lover, or intend to buy a Piano within the next two or three years, you cannot afford to let this opportunity slip.

Easy Terms will be arranged to suit each purchaser, and you can just as well buy through our Mail Order Department as you can by selecting the Pianos yourself.

Don't Delay. Write To-day. Pay Some Other Day.

THE MASON & RISCH PIANO COMPANY, LIMITED,
Factory Branch, 356 Main St., Winnipeg, Man.



Standardization of Farm Machinery.
Continued from page 12

TESTS FOR POWER REQUIRED

I recommend general power tests to determine and classify the power necessary to operate at respective rated capacities the principal kinds of farm implements, especially those which require horse power or engine power. A practical illustration of the necessity for this has recently occurred in my own experience, where in purchasing a No. 16 De Laval separator I inquired of a gasoline engine manufacturer what sized engine his company would recommend me to purchase for operating same. He stated that they usually sold a 5 horse engine for that purpose. I found on procuring the separator and trying it that it actually required less than $\frac{1}{2}$ of one h.p. I also recommend the standardizing of name plates and name plate data so that there would be on each machine a name plate giving the manufacturer's name, the shop number of the machine, the year made, and such other data as is applicable to the particular machine, as for instance; proper revolutions per minute for operation of the main driving shaft, the rated h.p. output at certain speeds and similar information such as is usually furnished with other than agricultural implements.

I recommend the dissemination of such knowledge as suggested in the above headings and that it be properly tabulated and put in bulletin form together with suitable explanations. Thus the farmers will have it within easy reach and will gradually become familiar with it and be able to detect radical defects in design and workmanship of machinery and be able to select for themselves the most efficient machinery for their purposes.

This paper was asked for by your Secretary following my statements made at your meeting held at Madison a year ago last winter that no attempts had yet been made to standardize agricultural machinery as had been customary in other lines of machinery and my suggesting this work as an inviting field for the agricultural engineer and one which should ultimately bring great benefit to the farmer and to the manufacturer as well. I realize this is not the work of a day, but that it will no doubt take years of patience and perseverance and hard work to accomplish the desired results. My purpose, therefore, in this paper is not to attempt to present a complete plan but to bring more general attention to the need of the movement and to suggest how a beginning can be made through the efforts primarily of this as-

sociation. The details can only be worked out practically after proper conferences of the Engineers of this Association with the various Government Departments or Associations mentioned, and probably with the manufacturers as well.

Concrete Construction
Continued from page 14

ing out the window sashes and frames, but the concrete installed remaining intact and as good as before the fire.

Concrete is also sanitary in every sense, and healthful conditions exist wherever it is being used in buildings. A building of concrete can be flushed out with water regularly without damage to the material, moth nor rust will not corrupt, nor thieves break through or steal. I have a friend who says he wouldn't have a concrete house because you couldn't tear it down nor even burn it down and the only way to remove it would be to blow it away with dynamite.

I trust that what I have said will induce you to at least investigate the possibilities of this material and believe me when I say that it is no longer an experiment but a building material that will become more and more a benefit to mankind, making the unhealthy tenement of the great city a sanitary, healthful abode and producing more substantial homes throughout the length and breadth of our whole land.

The U. S. Government has put its seal of approval of the material by using millions of barrels of it in construction of the Panama Canal and every municipality in the land has also set its seal of approval on its use. What is good enough for the Government should suffice for you and me.

We call our reader's attention to the advertisement of the Northwestern Hide & Fur Co., Minneapolis, Minnesota. This is one of the oldest hide and fur houses in Minneapolis and known to be reliable. Their illustrated circular and price list contains much valuable information, and the pattern sheets, animal tracks, 40-page trapper's book and catalog, will interest all farmer's boys. Send 6 cents in stamps and mention our paper, and it will be mailed to you free.

Of Interest to Everyone.

On another page of this issue will be found the Annual Report of the Canadian Bank of Commerce. This is well worth the time it will take for everyone to read. This report is perhaps as good a digest of Canadian conditions in the year just past as anything that comes to hand.



Nature's Sweetest Vocalists

A Song-Bird to beautify the home and fill it with NATURE'S GRANDEST MELODY all day long. The finest collection of BIRD LIFE IN CANADA will be found in our aviary at WINNIPEG. GREAT REDUCTION on regular market prices for NEXT 30 DAYS.

EVERY BIRD sold by us GUARANTEED A PERFECT SONGSTER. YOUR MONEY BACK IF NOT. We also GUARANTEE SAFE ARRIVAL of Birds, etc. to out-of-town customers. HERE ARE A FEW PRICES:

GERMAN TRAINED WARBLING CANARIES - In full song. Regular \$5 to \$10 each. This sale.....\$3.00.	PARROT CAGES - Regular \$5.50. This sale.....\$2.90.
NORWICH CANARIES - Six inches long, dark, yellow or spotted; in full song. Regular \$8 to \$10. At this sale.....\$3.50.	Extra large with brass top. Regular \$5.50. This sale.....\$3.00.
YORKSHIRE CANARIES - Full song, from 6 to 9 inches long, deep yellow or spotted in color. Reg. \$10 to \$15 each. This sale.....\$4.50.	FISH GLOBES - 10c. and upwards.
GREY AND GRAY LINNETS - The regular price \$4.50. Special price only.....\$2.50.	JAPANESE ENAMELED CANARY CAGES - 75c. and upwards.
GOLDFINCHES - Beautifully plumaged, elegant singers. Regular price \$6.50. Special price.....\$2.75.	AUSTRALIAN LOVE BIRDS - Known as the handsomest birds in the world. Reg. \$10 per pair. This sale per pair \$4.00.
	AUSTRALIAN PARROTS - Body of grey, pink breast, actual talkers. Regular \$15. This sale.....\$8.50.
	MEXICAN DOUBLE YELLOW HEADED PARROT - Regular price \$25. Special price \$7.50.
	GOLD FISH - Large size, each.....10c.

TAME MONKEYS, FANCY DOGS, SQUIRRELS and OTHER PETS ALWAYS IN STOCK
COLLIE DOGS and FRENCH POODLES A SPECIALTY
OUR ESTABLISHED POSITION and thousands of unsolicited testimonials are a GLIMPSE OF THE SECURITY for honorable dealing.

The Winnipeg Bird Store
J. HIRSH, MANAGER
354 PORTAGE AVE., WINNIPEG



Planet Jr.

Does six men's work quicker, better, and far cheaper than old-style back-breaking gardening methods. Saves seed and insures a bigger, better yield. Be modern. Use Planet Jr. Seeders, cultivators and wheel-hoes, because they are made by a practical farmer and manufacturer who knows what is needed to lighten your labor.

No. 4 Planet Jr. Combination Hill-and-Drill Seeder, Wheel Hoe, Cultivator and Plow. Opens the furrow, sows any kind of garden seed accurately in drills or hills, covers, rolls down and marks out the next row—all at one operation. Also a perfect Wheel-Hoe, Cultivator and Plow.

No. 12 Double-wheel Hoe has adjustable wheels so that it works equally well all-rite or between rows—insures close work and does away with hand-weeding.

There's a Planet Jr. for every farm and garden use—45 kinds in all. Our 1910 free illustrated catalogue describes them fully. Write for it today.

S. L. Allen & Co., Box 1108B, Philadelphia, Pa.

Steele, Briggs Seed Co.
WINNIPEG, CANADA Limited.
Agents for Planet, Jr. Tools.

SOME SOLID FACTS
about washing clothes and the machine to use

Every woman should know about the **GEE WHIZZ** Washing Machine

WHY?

Because ninety-nine out of every hundred that try them, find them to exceed any other washing machine made, and to save 75 per cent of the labor required to wash by hand on the board. They will positively wash clothes clean without the use of the washboard; this includes neckbands and wristbands of shirts.

The washing can be done on the GEE WHIZZ in half the time it takes to do them on other machines. It will wash a handkerchief as well as a bed quilt or a length of carpet.

The washing is done by the force with which the hot soap suds are driven through the clothing. The machine is ingeniously constructed to do this and is so easy to operate that a child can run it. The clothes are not subject to grinding or rough usage, and are washed thoroughly clean too, without having to resort to the washboard to finish them.

To see it is to try it. To try it is to buy it.

Insist on your merchant getting a GEE WHIZZ and is GUARANTEED to fulfil these claims. If you wish to see it, write us giving his name, and we will be pleased to send you full particulars.

And to give you double assurance, the GEE WHIZZ is GUARANTEED to fulfil these claims. If you wish to see it, write us giving his name, and we will be pleased to send you full particulars.

Made in Winnipeg
For Booklet and Full Information write
The Gee Whizz Mfg Co., Winnipeg.

Get this out and mail to us. If you are thinking of buying a washing machine write us for illustrated booklet, with full information. If your dealer can't supply you with a Gee Whizz, let us know his name. Address The Gee Whizz Mfg Co., Dept. C.T. & F. Winnipeg

Homesteading.

Homesteading is a thing that every young man ought to do, if he has no other way of making a home.

Supposing you are not well off, one hundred and fifty dollars will build you a shack twelve by fourteen, with seven foot walls and a tar roof, which is a comfortable, nice size shack, and get you enough provisions to last six months, which is a term, and also coal or wood enough to last you through a term. If you are located in a wooded country, wood is the best, if not get coal.

From my own experience I found it most satisfactory to put in your duties in the winter months, we have almost six months of winter up here, and work out in the summer, that is if you have no stock.

You may find it a little lonesome at first, but it soon wears off, if you have good and near neighbors, and it is great satisfaction to know that you are realizing one thousand dollars a term (six months), if you have a good quarter near a railroad.

When you are through and proved up, if you do not care to work it you can get \$3,500 for it. If you have considerable broke on it, if you are in a fair way to go ahead, work it, get four head of horses, or even three if your land is not too heavy.

I know a young man who took up a homestead and had a failure of crops two years hand running. That is certainly discouraging. He had grit enough to go ahead and break more of his homestead and the third year he had twenty-five acres of wheat and fifty acres of oats on his own place. The wheat turned out 30 bu. per acre and the oats yielded 70 bu. to the acre. The best oats in the country and that's not all he had. He rented a half section or rather one hundred and twelve acres broke on the half section. On one quarter he had sixty-two acres in crop, fifty acres of wheat and twelve of oats. The wheat went twenty-five bu. to the acre, and kept the oats for sheaf feed, which was a great crop. On the other quarter he had fifty acres of wheat, this also went twenty-five bu. to the acre.

Now if he had got discouraged and cleared out the second year of his bad crop, you can readily see where he would have made his mistake. You have to have a little sand in you to homestead, and if you have none go to the poor house.

The water question is a great draw-back in this country. They have located a spring in a ravine in our township and that is where the people draw their water from, some have to draw it as far as fifteen miles, and that does not pay any man. Some of them

have got tired of drawing water so far and prefer to haul it half as far out of the ground. I don't blame them for getting tired of it. A few of them have gone to work and bored wells, finding water at 150 to 200 feet, near China somewhere robbing the Chinamen of their rain, no wonder they have a rice famine occasionally. However, water is being located in all parts of the country at a reasonable depth.

When a young fellow has proved up on the homestead and has had three or four good crops he ought to be thankful that he is in shape to go ahead and be a prosperous farmer, and considering he got his land for ten dollars (160 acres), and when he looks back at the time he was a bachelor and now has a wife and a comfortable home and everything paid for. He is the most independent man in Canada to-day.

Go west young man, grow up with the country. Here I am and here I will remain until I starve to death on my government claim.

S. W. Ironside,
Haddington, Sask.

The "Wright" View.

In spite of the honors heaped upon them, the Wright brothers, who have solved the problem of successful air navigation, remain modest, uncommunicative men. Apropos of their reticence, Maximilian Foster, their financial agent, tells a good story in "Outing."

"You see," said the financial agent of the two Dayton sky-fliers, "the Wrights are what you might call too shy and too modest. I said so once to Wilbur, and do you know what he answered?"

Mr. Flint paused long enough to chuckle.

"Wilbur said to me, 'M. Flint, the best talker and the worst flier among the birds is the parrot.'"

Which is one good reason, perhaps, why the world at large knows so little about the Wright flying-machine.

A tram line in an English Midland town is crossed by three consecutive streets which bear masculine surnames. An Irishman with a large carpet bag, and carrying a big umbrella, entered one of the cars and sat down gingerly near the door. Four or five other men completed the list of passengers.

"James," shouted the conductor presently, the "Street" being quite inaudible to his hearers. A passenger signalled, the tramcar stopped, and he alighted. Half a minute afterwards they neared another cross street.

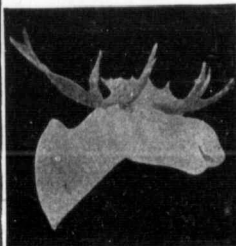
"William," announced the conductor. Another man got out. The Irishman's eyes grew visibly larger.

"Alexander," shouted the conductor, and a third man got up and left the car. When it had started again, the Irishman rose and approached the conductor. "O! want to get out at Avenue Place," he said, tanning his arm. "Me foorsht name is Michael."

EXPERT TAXIDERMY

Awarded for Merit Diploma, Silver Medal, Two First Prizes, Winnipeg Exhibition, 1909. Send me for the Best Results and Value for Money

THE ONLY TAXIDERMIST MAKING SCIENTIFIC MODELLED MANNIKINS



Scientific Modelled Mannikin.

My training and long experience guarantee you correct work through and through.

My Bird and Animal Mounting is unequalled. Finest and Most Durable Fur Rug Work. Rare Birds, Animals, and Big Game Heads bought at full value.

Cheapest House for supplies. Send me your Big Game Heads.



The Fine Finish and Natural Expression of my work is in a class by itself.

Ordinary Mounting showing Paper Nose Form

JOHN AMBROSE, Practical Taxidermist
173 Fort Street, - Winnipeg

Lime and Limestone.

In the first place, limestone, marble, calc-spar, chalk, (of rare occurrence in this country), marl, and oyster, and other shells, are all essentially the same in composition, however, they may differ in texture, form, and other particulars. They are all different forms of the carbonate of lime; that is, they consist of the alkaline earth, lime, in combination with carbonic acid, and in the case of shells, with animal matter. As a general thing, we only know carbonic acid as a gas. It has a very weak hold of the lime, for if we drop a fragment of limestone into strong vinegar, the acetic acid of the vinegar will unite with the lime (forming acetate of lime), while the carbonic acid, being set free, will be seen to pass off in bubbles. In this case we free the lime from its carbonic acid, by presenting to it a stronger acid, that of vinegar. But if instead of using another acid to displace the carbonic acid, we place limestone in any of its forms in a strong fire, the carbonic acid will be driven off by the heat, and there will be left, simply lime. This is called quick lime, or caustic lime, and by chemists oxide of the metal calcium or calcium oxide. Lime, then, is limestone without its carbonic acid. All the forms of limestone are very little soluble in water; lime itself is more soluble, though but slightly so, requiring at ordinary temperatures about seven hundred times its own weight in water, yet it gives a marked alkaline taste to water in which it is dissolved. Lime in this condition, as quick lime, or when combined with water, "slacked," as it is called is much employed in agriculture. A small portion of lime is required by plants, but the chief use of lime when applied to the

MADE IN CANADA



PERFUMED LYE

READY FOR USE IN ANY QUANTITY
For making SOAP, softening water, removing oil paint, disinfecting sinks, closets and drains, and for many other purposes. A can equals 20 lbs. Sal Soda. Sold Everywhere.
E. W. GILLETT CO., LTD.
Toronto, Ont.

Harrow While You Plow



Put your land in perfect condition for planting at one operation. The low-priced Racine Rotary Harrow Attachment for Plows follows the furrow and cuts, packs and smooths the soil, keeping in the moisture and leaving no ridges. Burrs trash and litter well under the surface. Blades are curved and positively will not clog or wind as do ord. many blades. If your dealer can't supply you, write to us right now - for illustrated circular.
Racine Economy Spring Co.
Wisconsin St.
Racine, Wis.

soil is to bring the vegetable matters contained in the soil into a condition in which they can be used as plant food. This application of lime as a fertilizer has long been followed by farmers, and in many cases with the most beneficial results. Within a year or so great claims have been made for ground limestone, especially by makers of mills for grinding it;

Kill the Gophers and Save the Grain

The early spring will soon be here and the gophers will soon be out in vast numbers to feast upon the green grass, the seed and the tender shoots of grain in order to recuperate from their starved condition. The wet season of last spring and the lateness of the dry period has made it possible for these grain destroyers to increase in numbers very rapidly. FARMERS:—Now is the time to get together for your mutual interest and carry on systematic warfare in order to rid the fields of these pests that destroy thousands of bushels of grain every year. Make preparations at once for their destruction by purchasing—

Mickelson's Kill-em-Quick Gopher Poison

which is the only successful gopher exterminator in existence and thus gave many a bushel of grain for the yield at harvest time. "KILL-EM-QUICK" is in powder form to be mixed with wheat, cracked corn, chopped up alfalfa, alfalfa meal or other grain which has been soaked over night and the water drained off the next morning. To prepare any dry grain for immediate use add boiling water and drain off when cool; then mix in the "KILL-EM-QUICK." The poison will then adhere to and form a coating on the outside of the kernels of grain. It thus comes in immediate contact with the tissues of the stomach and a kernel of the prepared grain eaten will cause almost instant death. "KILL-EM-QUICK" has a peculiar odor which attracts the gophers and being very pleasing to the taste they eat it in preference to any other food.



Kill-em-Quick Backed by Cash Guarantee Fund

Thousands of farmers use and recommend this patent preparation for the extermination of the gopher pest. "KILL-EM-QUICK" is backed by a cash guarantee (which is printed on every package), that in case this gopher poison does not prove satisfactory after same is used in accordance with directions this company will refund direct to the purchaser the amount paid for it. The element of danger in the handling of poison is eliminated to a large extent in "KILL-EM-QUICK" as it is convenient and ready to use. "KILL-EM-QUICK" kills Gophers, Squirrels, Field Mice, Ground Hogs, Rats, Mice, Wolves, Coyotes, Rabbits and Badgers.

Two Sizes, 75c and \$1.25 per package

NOTICE—Officials of Improvement Districts should call upon the local druggists for large quantity quotations. Sold by Druggists and Drug Dealers. If not carried in stock accept no other, but have it ordered for you. If unobtainable, the Bole Drug Company (jobbers), Winnipeg, Man. will send same prepaid upon receipt of price. All inquiries for information should be addressed to the

Mickelson Kill-em-Quick Company, Manufacturers,
Dept. K. Minneapolis, Min. Dept. M. Winnipeg, Man.

some of these have asserted that it was superior to burned lime, and superior to nearly all other fertilizers. The question which must interest farmers is, has limestone, however fine it may be, any value as a fertilizer? To this the answer would be both "yes" and "no." Upon a heavy clay soil the carbonate of lime, or limestone in any form, appears to have a beneficial effect; it makes such soils friable and open, so that water and air may penetrate them. While its action upon the vegetable matter in the soil is far less prompt and energetic than that of quick-lime, yet its presence, affording a base with which any acid in the soil may unite, is often beneficial. To extol ground limestone as "the great fertilizer of the age," to even claim that it is equal to lime itself is a mistake. Both have their uses. It should be borne in mind by inquirers about the value of ground limestone, that many soils already contain more lime in this form than can ever be utilized, and need no addition.

Advertising won't help you get rid of your troubles.

A New Automobile Company

Elsewhere in this issue will be found the advertisement of the Mooney Automobile Company, who have opened up an automobile show room at 253 Main Street, Winnipeg, for prospective automobile buyers who have the opportunity of seeing the Studebaker E. M. F. "30" and the Studebaker Flanders "20."

These are popular priced cars of an exclusive type. These people claim that a year ago it was necessary to use considerably persuasive power to impress upon the automobile buyers the excellencies of these cars, but to-day the problem is to manufacture cars fast enough to meet the demand. They are a high class car in every particular at a medium price.

Bonspeil visitors are very cordially invited to make a call at their show rooms.

The Twentieth Century Wonder.

This is the age of invention, and in no one line of machinery has more progress been made than in agricultural machinery.

The advance from the hand sickle to the grain cradle, and from that to the first reaper is too well known to need comment here, and the first reaper as compared with the modern binder was a crude affair. In like manner we pass from the "flail" to the cylinder thresher which was driven by horse power, the grain being separated from the straw by hand, and from that to the modern separator which not only threshes, and separates the grain from the straw, but also cleans, weighs, and bags the grain ready for the market. The horse power has been superseded by the portable steam engine, that by the steam traction engine, that by in turn must give way to the Twentieth Century wonder, the gasoline traction engine.

The traction gasoline engine is the acme of power perfection for the farmer. Owing to the ease with which it can be handled and moved about from place to place it is most readily adapted to the use of the farmer, and its low cost as compared with the larger and more expensive steam traction engine makes itself doubly valuable. This of course, is intended to apply to the small simply engines.

The Twentieth Century farmer would not think of turning his soil with a wooden plow, nor sowing nor reaping his crops by hand, nor hauling his crops to market with ox carts, all of which our fore-fathers did, but instead he uses all the improved modern machinery, among which is the gasoline traction engine. With its many advantages and its few disadvantages it is an undisputed fact that it has come to stay, and we must one and all take off our hats to it and acknowledge it the Twentieth Century Wonder.

VEGETABLE SELECTED FOR FLOWER

SEEDS

GRAIN WESTERN CANADA GRASS

SEED GUIDE FOR THE WESTERN FARMER COMPILED BY A WESTERN AGRICULTURIST A WESTERN HORTICULTURIST

This entirely new and beautifully illustrated catalogue of STEELE BRIGGS should be in the hands of every WESTERNER. It is a reliable PILOT for every planter, telling HOW and WHAT to sow, guiding from the shoals of unsuitable varieties and leading safely in BEST RESULTS FROM GARDEN AND FIELD CROPS. Send your name for a copy—FREE.

Steele, Briggs Seed Co.
WINNIPEG, CANADA Limited.

Our 1910 SEED CATALOG

IS NOW OUT.

*Copies have been mailed to all our customers.
If you have not received a copy drop us a card.*

Wm. Rennie Co. Ltd.

WINNIPEG

Greece is a large consumer of edible oil. Her population of about 2,500,000 uses annually 20,000 to 25,000 tons of oil, or eight to ten kilos per capita.

Winter freezes the water but we must cut our own ice.

What children need these days is more models and fewer critics.

DAYLIGHT AT NIGHT

THE INCANDESCENT KEROSENE LIGHT CO.

USE A CANGHESTER BURNER

The only perfect burner made. The only burner that saves you coal oil because it does not burn off the wick.

Call and see practical demonstration. If interested or if unable—
Send for Descriptive Catalogue Free.
Price of Burner \$3.00.

THE INCANDESCENT KEROSENE LIGHT CO.
80 PRINCESS ST., WINNIPEG,

A Combined Manure Spreader and Farm Wagon.

The Hawkeye Detachable Spreader is the Newest and Greatest Advancement ever made in the line of Manure Spreader Construction.

Built on right principles.—Stands in a class by itself and is a spreader that solves the spreader problem.

It simply means that it is a Manure Spreader and Wagon Box combined, that you can use it to spread your manure and in ten minutes time, you can remove the beater, put in an end gate and you have as good a farm wagon box as it is possible to make, it then being a complete farm wagon which can be used for all uses on the farm. In other words, it is two machines in one, selling at the price of one. It is built to fit the ordinary farm wagon gear, either standard or wide tread with any size or style of wheels.

The Hawkeye Spreader will spread from five to twenty loads of manure to the acre.

To convert the Detachable Manure Spreader into a wagon, all that is necessary to do is to unhook the chains, remove the apron, then by simply removing two bolts which are fitted with hand nuts, the entire spreading mechanism can be removed, leaving a regular farm wagon box.

There are several other things which must be taken into consideration when figuring on buying a manure spreader. In the first place, we take it for granted that all will concede that the only way to get the full benefit out of your manure is to put it on your land with some kind of a spreader. You might as well leave it lay in your barnyard as to pile it out on the ground with a pitch-fork. As many know to their sorrow. There are many spreaders for sale which require at least three or four horses to pull and can be used for no other purpose except for spreading manure, which makes it a piece of machinery that is laying idle and in the way at least eleven months in the year, and costs at least twice as much as the Hawkeye Detachable Spreader which will do all the work that any heavy, high-priced, horse-killing manure spreader will do and can be used every day in the year as an ordinary farm wagon.

Two horses can handle it easily. It will hold as many bushels as any spreader costing twice the money. You can put it anywhere you can an ordinary farm wagon. You can drive right into your barn. You can go through any farm gate. Any boy who is large

Parsons Hawkeye Mfg Co., Winnipeg, Man.

Virden, Man., June 20th, 1909.

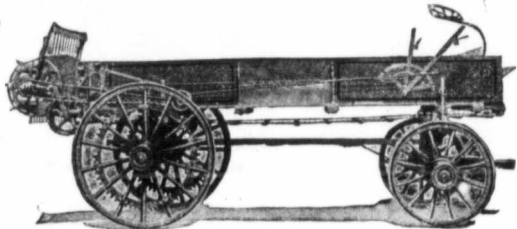
Gentlemen,—I have given your Detachable Manure Spreader a good trial, both in light and heavy manure on my farm, and find it very satisfactory in every way. I can recommend it to all up-to-date farmers who approve of good farming, not to be without one of these labor saving machines.

Yours truly, JOHN C. ROSEFIELD.

Built, Sold and Warranted by the Parsons Hawkeye Mfg. Co. All shipments for Canada made from Winnipeg, and as we carry a large stock there is no delay.

Parsons Hawkeye Mfg. Co.

Winnipeg, Canada



enough to drive a team can handle it.

The boxes are built out of the best wagon box lumber that can be bought. The sides are one solid piece, not two as is the case with some others. The bottoms are made of narrow matched lumber about three inches wide. In fact all the material used, whether wood, iron or steel, in the construction of the Hawkeye spreader is the best that money can buy and the workmanship is unexcelled.

This is the same spreader we had on exhibition at the Winnipeg Exposition last July and we believe that it attracted as much attention and caused as much favorable comment as any piece of machinery that was exhibited. We have sold a large number of these spreaders in Canada and below you will find a few opinions from parties who have used them.

In addition to these letters we will state that one of these spreaders was taken to the Agricultural College Farm at Winnipeg and was given every test that could be thought of by practical farmers and it was pronounced as being the most complete manure spreader that was ever offered for sale in Canada, regardless of price.

If you are intending to buy a spreader this year write us for full information as to the price as well as to the terms on which you can buy them. Any responsible Farmer in Canada, and by "responsible" we mean a person who either owns his farm or is able to give satisfactory Bank references, can get one of these spreaders on more favorable terms than was ever offered by any farm machinery manufacturer in Canada before.

Do not put off writing us. The time will soon be here when you should get the manure on your land. Be ready when that time comes

Parsons Hawkeye Mfg Co., Winnipeg, Man.,

Lethbridge, Man., June 25th, 1909.

Gentlemen.—We take pleasure in herewith enclosing to you our check in payment of the Detachable Manure Spreader which you shipped us March 21st. We find this machine satisfactory in every way and you cannot recommend it too highly. It is exactly what we have been wanting to buy for our own use for several years and we are positive that we will be able to sell a large number of them to our customers as the price is very reasonable.

Yours truly, R. MURRAY & SONS.

Gas Engine Experience

Continued from page 24

threshed 394 bushels of oats, bag measure, one fore-noon this year out of the shock which is good for a 6 h.p. gasoline engine and 26 inch separator.

My experience with a gasoline engine is that it is cheaper. I can certainly recommend it for small power and for intermittent work up to 15 h.p. Above that power and for continuous and heavy work I believe steam is cheaper.

We run a custom mill, making flour for farmers out of their own wheat, at the same time grinding feed. We have a 25 h. p. boiler, stationary and a 20 h. p. horizontal engine with which we run elevator cleaning machinery one pair of 4 inch stones (French Burrs) and flour dresser.

I notice that many gasoline engines in Wetasikwin do not run well. They are either not timed properly or are using more gasoline than is necessary; generally using too much fuel.

Yours truly,
Alfred W. Haselwood.

Hillside, Sask.

I have a 3 h.p. horizontal gasoline engine manufactured by the Pierce Engine Company, Racine Wis.

I bought this engine second hand about six year ago and it had been in use then about two years.

This engine always runs well after I get it started and when I first got it I never knew whether I was going to get it started or not, especially in cold weather. Then after it had been running for about two hours it would commence to miss fire, occasionally at first, then after a short time it would stop. This puzzled me at first until I discovered that the trouble was in the batteries. I got a wet battery for the engine and had a good spark for about two hours, then it kept getting weaker and weaker. I put this battery away and bought a 6 cell dry battery which gave good service for about a year, then it commenced to miss fire and finally gave out entirely.

As my work only averaged about one day per week for grinding and sawing wood, I thought \$6.00 per year was too much for batteries. So I bought an auto sparker and I have never had any trouble with my engine since. I can start it up when it is twenty below zero by warming the cylinder with a kettle of boiling water.

I believe it would pay to have a warm comfortable engine room.

Your engine will start easier and will run with less gasoline than it will either outside or in a cold engine room. I have ground 66 bags of oats and barley and sawed three loads of wood with 5 gallons of gasoline and this was not all done at one time, so that there was probably some gasoline evaporated between the time we started and the time we finished. Gasoline cost 26c. per gallon this year, which is the cheapest we have ever bought.

I consider a gasoline engine is the best power for a farm and I would not like to be without one. I had a part of my threshing done this fall with a 25 h.p. portable International gasoline engine and a 32 inch Bell City separator and I never had as good a job done before; besides, there was only three men to board in addition to our own crew. With this outfit and six men all told we averaged 1000 bushels of wheat, oats and barley per day and the engine used 15 gallons of gasoline per day.

Fred J. Dash.

The Gas Traction Engine

Continued from page 22

not be as good as when plowed in a moist condition.

Goes Like Sixty

Sells Like Sixty
Sells for Sixty-five
\$65

A perfect engine for pumping, grinding, sawing wood, corn shelling, churning, washing machines and all farming purposes. Larger sizes for feed cutting, threshing, silo filling and all heavy farm work.

GILSON GAS AND ENGINE

FREE TRIAL—WRITE FOR CATALOG—ALL SIZES
Gilson Mfg. Co., Ltd.
1 York St., Oshkosh, Ont., Canada

It must be understood that the writer is not talking in favor of the average gasoline traction engine now found on the market, as there are but few successful makes at present. There is no reason why this type of engine should not be more fully developed and we believe that in ten years from now one hundred of these engines will be used where one is used to-day. The steam engine is not a thing of the past and it will be always used for certain classes of farm work, but it must be considered somewhat more expensive in its operation than the gasoline engine and for that reason will be replaced in many places by it.



My First Jumper.

A TRUE ADVENTURE STORY BY
HAROLD L. VICTOR BUSHELL.

On the second of May in the year 1897, my oldest brother Walter and I finished seeding on father's farm in Southern Manitoba.

Ten miles north of there my brother had his homestead. He had asked me at the dinner table to-day to help him with his crop, and I was quite willing for there, lots of rabbits, wolves and even a few deer had been seen grazing on the hill sides, so it was more than likely I should have some good shooting.

About four o'clock we pulled out with four horses and a seed drill, the rest of the implements being already there. Of course we took along a few eatables from home, but we had no meat and being fifty miles from town, decided to make the rifle which I always insisted on carrying supply us.

Let me say just here that it was only a .22 caliber Savage Junior, single shot at that, but I was very quick and sure with it. Many a time I had called down a crow which would be flying with his mate, between me and the bright blue sky, unaware of the leaden missile with which I was about to take his life. I just tell you this to assure you that I could handle the rifle very well.

Old Buff, our big water spaniel was racing and barking in glee for he had seen the gun, so there was no use trying to send him home. Occasionally he would run down the road, then back to the house in a way that showed he was disgusted with their crawling gait. But there was no need to hurry as the horses had worked hard all spring and we could do no more that night. When about six miles from home, the sun lowered casting a beautiful golden glow over the quiet, rolling landscape, not exactly quiet, for hosts of birds were cheerily whistling their joyful songs, in return for their swollen crops. In the distance could be heard the solemn hoot of the owls, and occasionally a series of short quick barks, followed by melancholy howls, which reminded us when at home to shut the hen house because a wolf is not at all shy at night, to walk in to the hen house and help himself to the chickens.

Arriving at the homestead shortly after dark, we watered and fed the horses, then got our supper, shortly after which we went to bed. Arising early the next morning we got to work for we had to hustle to get through for Sunday.

I drove the horses while Walter picked scrub, for I was not in the habit of working very hard if I had the scrub to pick.

However, I always found time in the evening, while the horses were feeding, to run over and shoot a chicken or two out of a flock which monopolized a hill, not far from the shack. Of course it was closed season for any game but one is sure of getting the male bird at this time of the year, as the hen always sits on her eggs during the chill of the evening.

The time passed slowly enough, and I wished several times that I had never come near the place, and that my brother had left me at home. I guess I was right down tired and homesick. When I took these spells I never told him, but would talk to the dog till I felt somewhat relieved.

On Saturday evening there was still a small field to finish, so I pulled out after supper with the rifle on top of the wheat inside the seed drill. Walt was burning some scrub quite close to me. I paced up and down yelling at the horses to gee or haw, and advising them to get a move on if they wanted to get home. Once I stopped and shot at a duck on the pond near by but missed it.

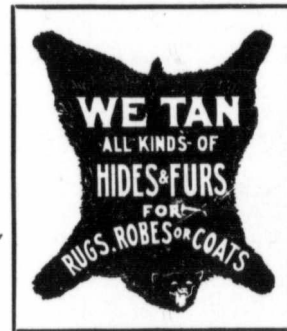
My brother heard the shot, and saw the duck fly away unharmed. Now he knew that I was proud of myself as a marksman, and so to tease me he shouted "O what a pretty shot." This nettled me so that I yelled back, "I would just like to dare the same chance at your lopsided skull, I'll bet I would make good use of it." But he only laughed as was his good natured way, and made me feel worse.

The sun was going down and its golden rays in perfect harmony with the birds' mellow songs, helped to cheer me. Anyway a few more rounds would finish the field, and we would soon be on the road home.

While I was thus absorbed, I was suddenly startled by my brother's voice just behind me, "look! look!" he cried. Looking the direction he pointed I saw

HAVE YOU A HIDE

or skin to be tanned for a coat, robe, gauntlets or rug? Send it to us and we will make it as soft as a glove. We use no acid in our tanning only the purest and best bark and mineral extracts.



Our total charges to tan and line an average sized hide, weighing about 50 to 55 lbs., with the best of lining and double row of felt trimming is \$9.50.

Smaller hides less in proportion, and we pay freight one way

We have been tanning hides for robes and coats for 15 years in the west, and our reputation is one of the best. Ask your neighbor.

Send for our Illustrated Descriptive Catalogue and Shipping Tags, etc. A post card will bring it.

We will pay 2 cents per lb. over the market price for well haired Black hides.
25 to 40 cents for Muskrats. \$2.50 to \$5.00 for Wolf Pelts.

THE BRANDON TANNERY CARRUTHERS & CO.
CUSTOM TANNERS

Manufacturers of Galloway and Sheep Lined Coats, Robes and Gauntlets.
Buyers of Hides and Sheepskins.

TANNERY, BRANDON, MAN.

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Dealers in Hides, Furs, Wool, Senega Root, etc.
Write or Wire us for Quotations.

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Mention "Canadian Thresherman and Farmer."

We Want All Your
RAW FURS AND HIDES
 Frozen Hides per lb. 9c.
 Write for our full price list, tags, etc.
NORTHWEST HIDE AND FUR CO.
 277 RUPERT ST., WINNIPEG.

HIGH PRICES FOR HIDES AND FURS
 G. S. Cured Hides, No. 1, 12½; No. 2, 11½; Green Frozen Hides, 11 and 10; Dry Hides, slaughtered, 20 and 18; Dry Fallen, 14 to 16, No. 1 and No. 2. FURS: Winter Mink, 60; Min. c. 57 to 58 each; White Weasel, 9c.; Timber Wolf, 58; Coyote, 54; Badger, 53 50; Red Fox, 57 to 58. These prices are for No. 1 large skins; other grades in proportion. All other furs are equally high. Give us trial shipment. No duty on hides and furs. A set of pattern sheets, showing correct sizes for Mink and Skunk, also animal tracks, photo engraved from nature, as they appear in snow and mud (deer, muskrat, rabbit, skunk, coon, fox, squirrel, mink and otter), and forty-page trapper's book and catalog, price list of hides, furs, etc., will be sent free, if you mention this paper and send 6 cents in stamps.
 The Northwestern Hide and Fur Company
 Minneapolis, Minn. Estb. 1890

SHIP YOUR
FURS AND HIDES
 TO
McMILLAN FUR & WOOL CO.
 220 KING STREET
 WINNIPEG, MANITOBA
 WRITE FOR CIRCULAR
 TRAPPERS GUIDE FREE TO THOSE WHO SHIP TO US.

TAXIDERMY BOOK FREE
Mount Birds and Animals
 Sportsmen! Fishermen! Hunter! Naturalists and others seeking to better themselves by learning a great profession. The wonderful art of Taxidermy, so long kept secret, can now easily be learned right in your home during your spare hours. No need to give up your business.
WE TEACH BY MAIL how to mount birds, mammals, game birds, tax skins, make rugs and mount all trophies. A delightful, entertaining and money-making profession for men and women. Desires no cash. Easily and quickly learned. Success guaranteed or no tuition. Endorsed by thousands of delighted graduates.
Grand Book FREE! Our beautiful, illustrated book, "How to Learn to Mount Birds and Animals," and our handsomely Taxidermy Magazine absolutely free to all who write. Stop depending on a job. Hire a profession. Write today. T. W. School of Taxidermy, 50 Broad Way, Omaha, Neb.

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 BOOKLET AND DRAWING SHEET ON APPLICATION

Don't Forget that Renewal
 With our big Guessing Contest it may mean much to you.

some 500 yards away, three deer. Slinging open the drill box, I grabbed the rifle, and whistled the dog. Walter laughed as I left, thinking he had started me on a fool's errand. After wading across the pond, I stalked slowly along the edge of the bush towards an old road from which I knew I should be able to see the deer. To this road I came sooner than I had expected, and at first glimpse, pulled up and shot at the nearest and largest of the animals. I heard the bullet strike. But away they went jumping four feet high at every spring. This must be where they derived their name ("The Jumping Deer") from. As soon as they are startled they gallop away jumping bushes and fences, where other deer pass around. I followed them as quickly as I could through the straggling bushes, just as I reached an opening I again saw the deer, the doe was waiting for the fawn which was too young to go very fast, while a limping but wise looking old buck brought up the rear. I could still see my brother, he had finished the field and was standing watching me.

The dog was furious with excitement, and it was all I could do to make him obey me.

Again I shot at the wounded animal which instead of running as I had expected, stopped and fixed his gaze on me, while the doe quietly slunk off with her young. While I was fumbling with my rifle to reload it, Buff broke away from me, and made for the wounded deer, but he came back the next instant with the infuriated animal at his heels, and both straight for me. In my frenzy I dropped my gun with a shell half way in the chamber, and turned to run, but was immediately knocked down from behind with such terrific force that I nearly lost my senses. It was lucky for me that the deer shed their horns in the spring, or I would not have been alive now to tell this story. Buff was keeping the deer engaged by this time, so I tried to get up, but this attracted the deer, and again I was knocked to the ground. Then I remembered the rifle, it could not be far away. I must get it; acting on this last impulse I started to creep flat along the ground. During this performance the deer making a quick jump sideways to avoid the dog, happened to jump right on my back. Immediately sharp pains shot all through my body, I tried to call, but I could not make the slightest sound. Then I thought I heard Walter's voice mingled with the continuous barking and stamping, and a sharp crack, then all was still.

When I came to an hour or so afterwards Walter was bathing my head on the bed in the shack,

Concluded on page 78

ESTABLISHED 1865.
RAW E. T. CARTER & CO.
 73 Front St. East, TORONTO, ONT.
FURS
 HIGHEST PRICES PAID for all kind of RAW FURS.
SHIP US NOW.
 We Pay Express Prompt Returns
 Write for Latest Price List

Hamilton's Pulverizer Attachment for Plows

 Hundreds of farmers proved to themselves and their friends last year that this Pulverizer works perfectly. Packs the soil when you plough; very little draft; no side draft. We have added a frame for carrying weight, and a scraper. Also three new types of wheels; V-shaped wheel; V-shaped with flat flange; and V-shaped with triangular flange.
 Write for descriptive circular and low prices.
 Rights protected by United States and Canadian Patents.
Hamilton's Winnipeg

A Special Offer
 Good only for the Month of February

Canada West Monthly, One Year, Regular Subscription Price **\$1.50**
 Family Herald & Weekly Star, One year, regular subscription price **1.00**
 "The Soul's Awakening," A Beautiful Picture **.50**
Total Value \$3.00, all for
\$1.25

CANADA WEST MONTHLY is the magazine magnificent, employing as it does the best artists, writers, engravers and paper makers. The progress of the West in particular and the advancement of Canada in general are in no other publication so strongly set forth in prose, poetry and pictures.

Remember, this offer is only good for the month of February

Vanderhoof, Gunn Co. Ltd.
 WINNIPEG, MAN.

Land Rollers.
Continued from page 16

expensive than the smooth roller, but the superior quality of the work which may be done with them more than justifies the extra expense.

The corrugated rollers may be divided into the following classes.

A—Rollers with longitudinal corrugations. These are built up of wheels with pipes bolted to the rims much the same way as the planks are bolted to the rims of wheels to form smooth rollers. However, the pipes are placed some distance apart.

B—A form of clod crusher is now made which has wheels with side projections from the rim. At a distance these projections have the appearance of a rough gear wheel with "herring bone" cogs. They are said to be excellent clod crushers.

C—The more common forms of corrugated roller is made of cast iron wheels. The rims of the wheels are made so as to present a narrow edge to the clods. As the clods are cut or crushed by this edge, the flattened portion of the rim comes in contact with the small pieces of dirt and reduces them in much the same way as the flat roller does.

The corrugated roller has a great many advantages over the flat roller. It has a greater clod crushing capacity. It breaks up smooth, baked surfaces where the smooth roller has little or no effect. The surface of the ground is left roughened in such a way that winds have little tendency to blow the dust in clouds over the surface as is the case with smoothly rolled fields.

The rough surface makes easy for the smoothing harrow to establish a fine dust mulch at a single harrowing, which aids greatly in conserving the moisture.

I base the statement that the corrugated roller has the greater clod crushing capacity upon the statements of those who have used both smooth and corrugated

rollers and upon field tests which have been made during the past year.

In the test the following rollers were used:

One cast iron corrugated with wheels nineteen inches in diameter and three inches wide.

One cement corrugated roller with wheels nineteen inches in diameter and four and three-fourths inches wide.

One smooth faced steel roller twenty-three inches in diameter.

It will be noticed that the diameters are very nearly the same. Both the cement corrugated and the smooth rollers were six feet long while the cast iron was seven feet and four inches long. They were so loaded that the total weight of the roller and driver amounted to 283 pounds to the foot in width of the roller. Three different tests were made with each roller. One on smooth plowed ground; one on fairly rough ground and one on very rough ground. The ground was nearly level. Three kinds of clods were considered; those varying in size from one ounce to one pound, one pound to five pounds, five pounds and over.

I will not stop to go into details other than to state that after the rolling was completed a frame two feet square was placed at random upon the ground rolled by the different rollers and all clods were carefully weighed into three groups named above. Three check tests were made upon the unrolled ground in order to determine the amount of reduction accomplished by each roller.

The data would prove rather tiresome to one who is not specially interested in rollers. But the results may be summed up about as follows:

In the tests, the cast iron corrugated roller crushed a slightly larger per cent of clods, both large and small than did the others. The cement corrugated roller, however, was so close a second that numerous tests would

Saskatchewan Winter Fair

Regina, March 22, 23, 24, 25, 1910

- ¶ Grand Exhibition of Horses, Cattle, Sheep and Swine.
- ¶ Provincial Judging Competition.
- ¶ Pure bred Cattle Sale.
- ¶ \$5000.00 offered in premiums.
- ¶ New Classes—Improved Features.
- ¶ The Stockman's Convention.
- ¶ Annual meeting of Saskatchewan Live Stock Ass'ns.
- ¶ Lectures forenoon and evening on live stock questions by leading agriculturists of Canada.

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Secretary, F. Hedley Auld, Regina, Sask.

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for your grain by consigning it to a firm who sells it for you at the highest market prices than to one who buys it themselves at their own prices.

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WINNIPEG, MAN.

OF INTEREST TO FARMERS

Farmers living near enough to the railroad to load their own grain on cars should not be without our

WEEKLY GRAIN LETTER

If you are not already receiving this, send us your name, post office address, as well as the name of your shipping station. We will then write you regularly, giving you full information direct, regarding the demand existing for the different grades and the prices being paid for them on the Winnipeg market.

If you feel that these letters would be of value to you write

RANDALL, GEE & MITCHELL — 237 Grain Exchange, WINNIPEG, Man.
Licensed Cash Grain Commission Merchants

be necessary in order to be absolutely sure that it was not equal to the cast iron roller. The smooth roller crushed on an average of about one half as many clods as the others. The most striking point in the test is the fact that the smooth roller left more than five times as many medium clods and over three times as many small clods as did the others rollers.

A Campbell sub-surface packer loaded to the same weight per foot in width was used in the test, on the same plots and its draft will be taken into consideration in the following data.

Draft in pounds per foot of width of roller.

	Smooth Steel	Corrugated Cast Iron	Corrugated Cement	Campbell's Sub-Surface Packer
Smooth Ground	63 1-2	75	58 1-3	88 4-5
Medium Rough Ground	66 2-3	83 1-8	63 1-3	84 2-5
Rough Ground	75	85 1-4	83 2-3	93 1-3

Too many of our commercial rollers show little care in their design, in that the hitch is not in the line of draft which causes a great deal of neck weight in some cases. The frames do not permit of sufficient flexibility to allow the rollers to adapt themselves to the uneven ground. Some of the rollers have tongues loosely connected to the frame. This causes an intensely jerky draft.

And lastly sufficient care is not taken by the farmers in loading the rollers according to the kind of work they have to do.

Saskatchewan Winter Fair

The Saskatchewan Winter Fair promises this year to eclipse anything along that line that has yet been held in Saskatchewan. There should be a large exhibit of excellent stock, as the Winter Fair Board has spared no pains in the preparation of an elaborate premium list, and during the past season the number of pure-bred stock in the province has still further increased by the importation of several carloads of choice animals. This is true particularly in the horses classes, but the improvement in the cattle classes will also be noticeable as a number of prominent breeders in the province are giving much attention to that phase of the live stock industry.

In the preparation of the premium list much attention was given to details, and classes that were a little weak in prize money last year have been extended so as to encourage the greatest competition, and a large number of

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DOMINION WIRE MANUFACTURING CO., LTD., MONTREAL

DO IT QUICK FOR SPRING IS COMING

animals will doubtless be brought out for the show in March.

A commendable feature of the premium list is that the market classes for both cattle and horses are given increased attention. Last year a prize of \$15 was offered for the best heavy draft team in harness. This year in the same class \$95 cash prizes and a \$25 gold medal are offered. The class is for the "Best team of gelding or grade mares in harness" and the prizes are \$50, \$30 and \$15, for first second and third prizes respectively. The gold in view. The lecturers engaged medal is offered for the best gelding or grade mare, and there should be good competition in this class.

Others besides the Winter Fair Board rightly regard the market classes as worthy of the greatest attention, and the Leader Publishing Co. has offered a \$100 silver cup for the best pair of fat cattle, steers or heifers, either pure-bred or sired by a pure-bred bull." To be eligible to compete in this class, the animals must be bred, owned and fed by the exhibitor. Pure-bred heifers cannot be entered in competition for this prize unless they are also entered in the dressed carcass competition.

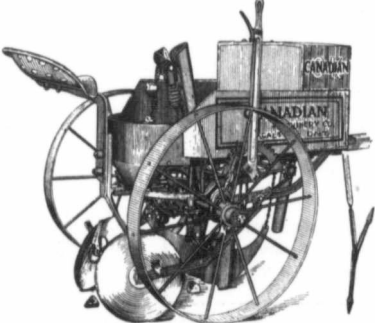
In the livestock judging competition classes for sheep and hogs have been added, and a splendid trophy valued at \$50 has been given by the Standard Publishers, Ltd. Regina, to the Winter Fair Board for the winner of the provincial championship in judging live stock.

Full particulars regarding transportation, entry fees, etc., are given in the premium list, copies of which may be obtained from F. Hedley Auld, Secretary, Regina.

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O. K. Canadian Planter 1910 Model



With or without fertilizer attachment. Works easy and easy to operate. One lever raises or lowers plow disc and puts machine in and out of gear.

New Features
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Canadian Potato Machinery Co., Ltd.
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A. H. JOHNSTON

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A convenient and useful pocket medicine case, containing remedies listed below (in chocolate coated tablet form). Directions in English, French and German. These are standard remedies put up like a doctor's medicine case for convenient carrying. Registered with the Dominion Government, and the tablets are absolutely harmless either for adults or children. If you will stop to think of the chances you run of getting sick or hurt, perhaps miles away from a Druggist or Physician, you will order one of these cases to-day. Weight 8 oz. For sale by T. Eaton Co. or The Bole Drug Co., Winnipeg, or sent direct postpaid for \$1.00. Additional remedies 25c postpaid. Agents wanted.

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- 6 For Bleeding from any source One yard Surgeon's Plaster.

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IT DOES NOT MATTER WHAT YOU WANT OR WHAT TEST YOU WANT

READ ABOUT THESE ACTUAL GRAIN SAVING TESTS

Note carefully the percentage of saving. It is almost perfect.

I made a canvas test to-day on my new Avery Separator, equipped with an Avery Feeder, Wind Stacker and "IXL" Device on the farm of George Damerow, five miles north of Atwater. The wastage was less than $\frac{1}{10}$ of 1 per cent. Casper Stoffers, Owner, Atwater, Minn. 10-7-09.

We, the undersigned farmers, witnessed the above test.

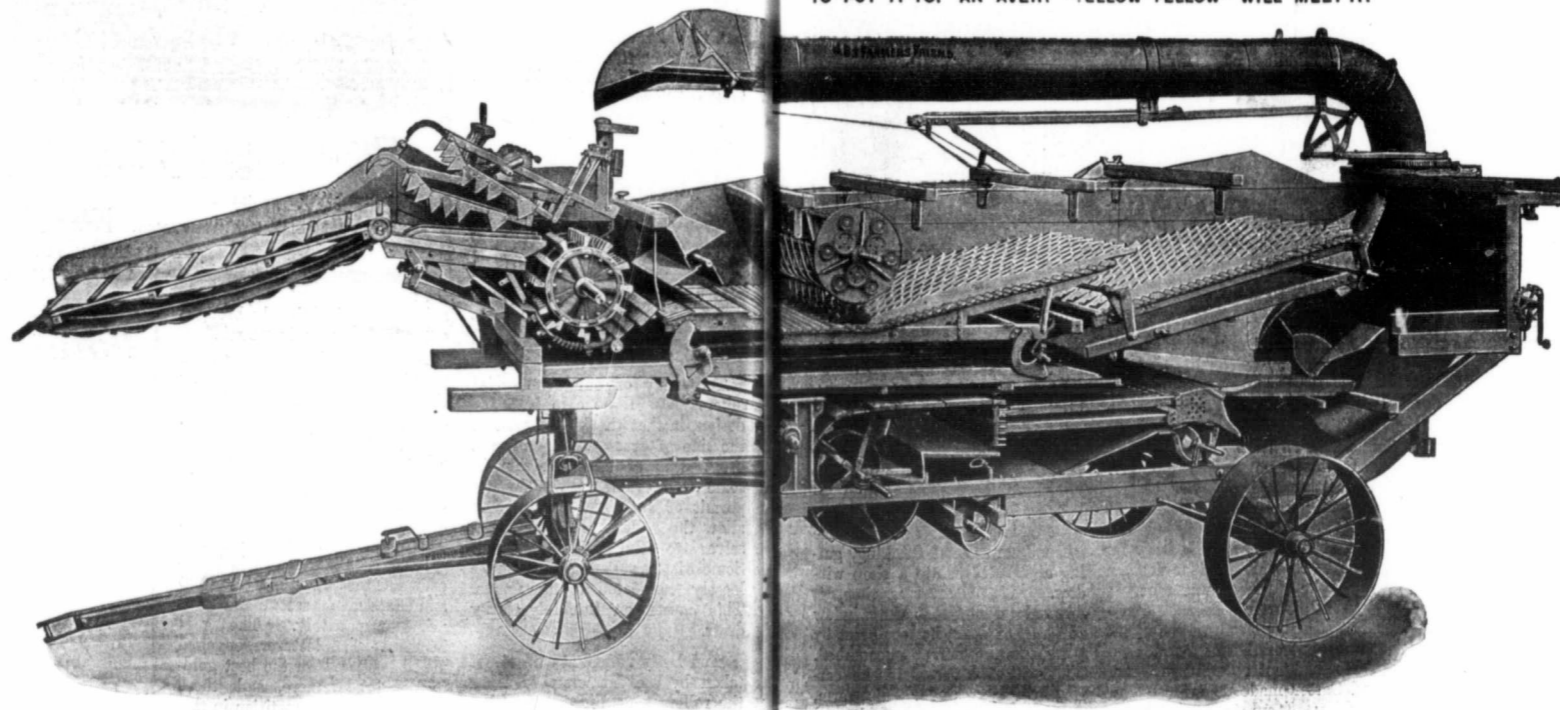
George Damerow, M. C. Thompson, F. H. Toensing, C. F. Kagenbring, Elmer Pagel

I made a canvas test to-day on my Avery Separator, equipped with an Avery Feeder, Wind Stacker and "IXL" Picker, and the scales showed that 99 92/100 per cent. of the grain was being saved. The test was made on the A. Holte job. Halver Gunderson, Owner, Davenport, N. D. 9-29-09.

We, the undersigned, witnessed the above test.

O. J. Holte, Peter Eugene, Olaf C. Lybeck, Oscar K. Fubeck, Ole Jacobson, A. J. Holte, Oscar Rosendahl, H. M. Myhra.

There could be no stronger evidence of the Grain Saving Abilities of an Avery "Yellow Fellow" than such canvas tests as these.



Here is the AVERY "Yellow Fellow"

There are five divisions in the process of threshing. Each must be well done or you will not have perfect work. You want to get a Separator that will do every part in the most perfect manner possible.

Study the construction of an Avery "Yellow Fellow" in the illustration above and in the description below, and you will understand clearly how the "Yellow Fellow" performs each division of the work.

FEEDING. The Avery Feeder has a large capacity. It is always hungry, but never chokes. It will take grain in almost any amount, and any condition, straighten out the bundles and feed it in uniformly without slugging.

THRASHING. The concaves and grates, both front and rear, are adjustable, and the teeth are tapering so that the proper adjustment can be made to do perfect threshing under all conditions. A "Yellow Fellow" gets the grain out of the heads.

These are the REASONS why an Avery Thresherman named his Separator—
AN AVERY "YELLOW FELLOW"

GET INFORMATION ABOUT THE

Don't place any orders until you know all about the Avery "Yellow Fellows." Get send it free. Write a postal or a letter.

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HAUG BROTHERS AND

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They show that an Avery "Yellow Fellow" does it.

that their "Yellow Fellows" run the Season through without a single break.

using "Yellow Fellows" that are from 12 to 16 years old, and many others which are almost that old. TO PUT IT TO. AN AVERY "YELLOW FELLOW" WILL MEET IT.

IT'S EASY ENOUGH TO MAKE CLAIMS, BUT IT'S THE FIELD TESTS THAT COUNT.

Where else are you offered such evidence as this.

I own and operate an Avery Separator, Feeder and Blower, and to-day made a canvas test. I had four men pitching wheat into the Feeder. The test showed that the Separator was saving 99 94/100 per cent. of the grain. This test was made on the farm of Fred Blocker, eight miles north of Bird Island. L. A. Tinnes, Owner, Bird Island, Minn. 9-8-09.

We, the undersigned, witnessed the above test.

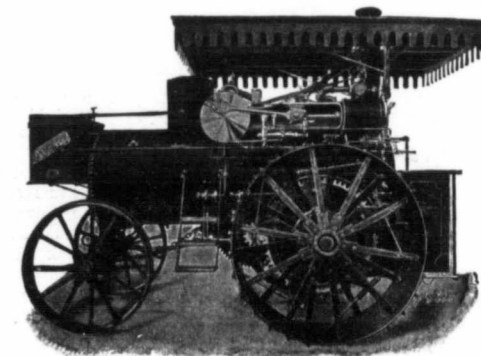
Fred W. Blocker, Charlie Karnik, Herbert E. Hasler, Frank Hirscher, Walter Jacobson, Albert Larson.

We own and operate a 42 x 70 Avery Separator, equipped with Avery Feeder, Wind Stacker and "IXL," all 1909 make. We made a canvas test to-day on Wm. Schultz' job, four miles N.W. of Valley City, and the waste was only 1-12 of 1 per cent. Schulz and Kernkamp, Owners, Valley City, N. D. 9-23-09.

We, the undersigned, witnessed the above test.

Wm. Schultz, Lewis H. Schroeder, Roy Kernkamp, A. J. McPherson, Merton Bates, Chas. Davis.

Such evidence as this ought to convince you that it pays you to get a Grain Saving Avery "Yellow Fellow" Separator.



YEARS OF TIME AND HUNDREDS OF USERS have TESTED OUT THIS ENGINE

Here are some of the things that these tests have proven the Avery Single Cylinder Engine to be.

AN EASY STEAMING ENGINE. Every engine owner will tell you that these engines steam easily on wet and rotten straw that others can hardly burn at all.

A FUEL SAVING ENGINE. These engines have proven that they are able to do the same amount of work as others on a much smaller amount of fuel and water. The reason is because the boiler has a special full water front. Investigate this. It is found only in the Avery Engine.

A LONG LASTING ENGINE. Built of the right quality materials. Brackets hand chipped to fit perfectly, not lapped to the boiler. Honest workmanship.

Separator, ready for your inspection

SEPARATING. The long adjustable concave and grate surface, the moving grate underneath the beater, the IXL separating device and the long rack with its long upward and backward throw, make up a combination of separating parts that have proven themselves able by actual field tests to get almost every kernel out of the straw.

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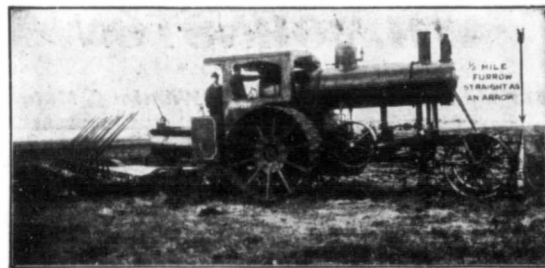
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There is no work which an engine is used for that an Avery Double Undermounted Engine will not do with success.

It is a splendid Belt Power Engine, and has a number of advantages for this work. Because of its Undermounted Construction it is also much superior for Heavy Traction Work such as Plowing, Hauling, House Moving, etc. It is the only Undermounted Engine on the market. Built like a railroad locomotive. For all round traction and belt work there is no Engine equal to it.

THE COCKSHUTT-AVERY PLOW ATTACHMENT

Also meets the test even in the toughest plowing. Has double Straight Beams and Heavy Cast Shanks, which will stand up in much better shape in heavy plowing than the single, curved beam style. No springing of the beams under heavy strains, but perfect plowing at all times. Built in five sizes: 5, 6, 8, 10 and 12 gang. Can be attached to any make or style of traction engine.

HE was a little, thin, mild-mannered man, rather shy and diffident—not at all the criminal type. And yet for two years he had been fighting desperately for very life itself. There had been three trials. Three times he had sat through the heart-breaking, soul-wearying process of the law, listening with ears strained and hands



clenched to the endless testimonies and cross-examinations, now paling at the arraignment of the state's attorney, then brightening with hope when his own counsel scored a point. He had fought inch by inch every segment of the circe of circumstantial evidence they had hemmed him in—fought doggedly, his shrinking diffidence forgotten, with his Scotch mother's headhardiness and, withal, his Irish father's sanguine spirit.

And in between had been long days of lonely waiting, days spent in pacing his cell until six steps and turn, six steps and turn, had become purely an automatic function, days when home had faded into the past, and the



He was a little, thin, mild-mannered man future was an abyss into which he dared not look.

And now he was free!

When the door of the jail clanged behind him he stood for a moment, blinking uncertainly in the sunlight. The mists of two years' semi-darkness were in his brain, the sluggishness of long inaction in his veins, and his hands looked white and transparent in the glare. Already the first joy of acquittal was over—the victory in his first fight for life had left him numbed with reaction.

ACQUITTED

By MARY ROBERTS RINEHART
Illustrations by Lester J. Ambrose

And there was bitterness too. The law, stern, relentless had left him his life, though even that grudgingly, but had taken everything else. What little money he had saved had gone long since for lawyer's fees. His occupation was gone; there had been men in plenty to take his place, men whose reputation had never suffered the tarnish of a false accusation. More than all perhaps, his pride was gone, the pride of an honorable man in himself and his ambitions.

He had not expected his freedom until the following day, and there was no one to meet him. It was rather a relief, this part of it; he needed a little time to himself. Quite at random, he turned to the left and walked slowly along the pavement which skirted the jail. A man passing looked at him curiously, and he flushed.

"I must look like a convict," he thought uneasily, and he turned, self-conscious, into a more deserted street. The glare of the sun on the white pavements dazzled him; the roaring of the city confused him most of all; after the solitude of the last two years he was troubled by the proximity of his fellow-men.

After a time these first sensations left him. He began to feel the soft breeze from the Sound; to notice the fresh green of the trees, and to wonder if the honeysuckle was blooming on the little back porch at home. He had walked far by this time, and had recovered his equilibrium sufficiently to feel hungry. He got a lunch at a cheap restaurant, and found the coarse fare delicious. Then, fortified by a cup of hot coffee, he was in condition to think and plan. He took out his watch, the cheap silver affair which had ticked out its twenty-four endless hours every day of that long two years, and looked at it. He would have time, he reflected, to look around a little for something to do. Maybe he would have good news to take home to little Annie and Edith.

He had his boots blacked at the next corner, and with something of his former spruceness he took a cross-town car. When he got off near the old office, he was almost boyishly hopeful.

He was innocent, he argued to himself, acquitted by a jury of his peers. Sinned against, not sinning. Surely his years of faithful service would count for him now.

The dingy entrance to the office building was unchanged. He could have stooped and kissed the dusty floor. There

was a new elevator, he noticed. The ramshackle gates had been replaced by handsome bronze ones, the cage was ornate with mirrors and plush. He could have embraced the elevator boy.

"Well, George, how are you?" he said with a smile—and this little, middle-aged clerk's smile was an illumination.

"Don't know," said the boy constrainedly. "How are you, Mr. Carter?"

"I guess I'm as well as could be expected," said Carter. "I'm getting out now for a little exercise."

But, the attempt at facetiousness fell flat. George's face remained uncomfortably unresponsive, and Carter began to feel the chill. He stepped off at the office floor, and sent his name by a strange boy to the head of the firm. Then he walked anxiously up and down, his eyes on the familiar pattern of the faded linoleum on the floor.

It was some time before Mr. Walcott came in. When he did he had his hat in his hand, and Carter realized—it was an old ruse of Walcott, and he knew its import—that his familiar footing with "the old man" was gone.

"Well, Carter," he said, somewhat stiffly, "I congratulate you. You're out of that at last."

He had not offered his hand, and Carter made no advance.

"Yes; I am to be congratulated," he said, somewhat bitterly, "if there is any room for congratulation where an innocent man has been imprisoned for two years, separated from his family, and finally acquitted after spending every dollar he had in the world to save his miserable life. Still," he said, brightening, "my innocence is established, and I have still my wife and child, Mr. Walcott."

"Come in again when I'm not so busy, Carter!" The other man was uncomfortably conscious that Carter's clear eyes saw through his constraint. "I'd like to hear about it. Of course the papers kept us posted, but—well, come in, anyhow."

He turned to the door of his inner office, but paused with his hand on the knob.

"You understood at the time, I believe, that Hitchin took your place when—when this thing occurred. He makes a very good credit man."

"Yes, I understood," said Carter dully.

"Mrs. Carter Well?"

"Very well, thank you."

As the door closed behind Mr. Walcott's imposing figure, Car-

ter put his hair back nervously and put on his hat. Then, without waiting for the elevator, he stumbled blindly down the stairs. Twenty years of service, of long nights over the books without extra pay, short vacations and clipped holidays, of hardly won promotion—and this was all! Those years of whittling had fitted him to a narrow groove, and



His familiar footing with "the old man" was gone

now another peg had taken his place. That was all.

He walked along the street, his head down, a pathetic droop to his thin shoulders, debating his next move. None of his friends were in a position to help him, and every fiber of him rebelled against going to a stranger with a "hard-luck" story. He stopped, and stood thinking, gazing abstractedly into a shop window. When after a time dawned on him that the window was full of dolls, he was beset by temptation, and succumbed. When he left the shop, he carried guiltily under his arm, a paper-wrapped baby, dressed



He stumbled blindly down the stairs.

in gorgeous pink and impossible lace. And although his small capital was diminished by the transaction, the little surprise for "Edy" lifted him from the depths, made him remember that although his triumphant vindication was a triumph in name only, there were yet home, and wife, and child.

He had his latch key in his hand a half-dozen squares before his street was reached. All those

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When ordering any of these books mention "The Canadian Thresherman and Farmer."

months in prison that small, flat key had been his only visible symbol of home; and now he was about to use it. He trembled noticeably as he went up the steps, and the key twisted in his



He stopped, and stood thinking.

impatient fingers. When at last the door was open and he was fairly in the little hall he could only call "Annie, Annie," in a choking voice, and then, weak and overcome from the long strain, he dropped to the seat of the hall-rack and sobbed.

Upstairs a childish voice called eagerly, "Mother, mother, father's home!" There was a whirlwind dash as Edith flung herself at him, and a moment later his wife was crying happily on his shoulder. When the first wave of emotion was over, he still sat there, his arm around the slight woman beside him, and Edith on his knee, while under his feet Chick, the fox terrier kicked and squirmed with an ecstasy of joy.

It was growing late, and it was not until the dusk of the little hall hid his face that he dared speak of the events of the day. When he did so, his air of nonchalance was so overdone that it at once attracted his wife's attention.

"I stopped at the office on my



"I do not think it would be good business," way out," he said, twisting one of Edith's curls around his finger. "Things look about the same there. Haven't even got a new linoleum in the outer office.

She drew a long breath. It was a subject she had feared to broach.

"Did he say anything?"
"Oh, yes. Asked about you; said to come back again when he wasn't so rushed."

"John! Was that all?"
"Well, that's enough, isn't it? You couldn't expect them to do without a credit man for two years, to hold a situation for me, Annie. For one thing, they didn't know whether I'd ever need another position or not. Walcott's all right. I guess there were no vacancies."

"No vacancies!" Her tone was bitter. "You gave the twenty years of your life, half paid and overworked. Then, when, after being taken away, imprisoned, for no fault of yours; made to fight for your very life, you are acquitted, vindicated there are no vacancies! Why don't they make a place for you? They know you don't know any business but theirs."

He winced a little. Then he slid Edith gently to the floor and rose.

"We mustn't spoil the first day, Annie. We're all well, and

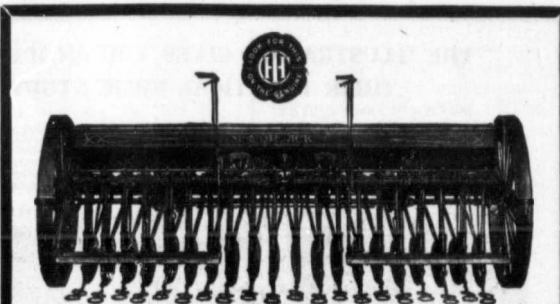


Went out bravely alone . . . dodging a brick occasionally.

we're together. Please God, there are good days coming."

He made a careful toilet the next morning, brushing his clothes and tying his black tie with unusual nicety. He was quite hopeful as he started out, and turned at the corner to wave at his wife. The neighbors looked out curiously from behind the curtains, but, perhaps owing to a mistaken sense of delicacy, none came out to greet him.

The very day that Riter, the cashier of the Walcott Company, and Carter's only enemy on earth, had been found dead beside his desk, his skull crushed in with a heavy office chair, there had come to the little credit man an offer from the Simmons Company so advantageous that he had been sorely tempted. Afterward, at the trial, his perturbation on that momentous day had told against him, the office force testifying



McCormick Drills

You don't know what the condition of your ground may be when you start to seed it, consequently it is up to you to secure a drill that will enable you to sow your seed properly in bad as well as good conditions of ground. That is the great reason why you should interest yourself in a McCormick drill.

The McCormick drill is so made, that it can be equipped with double disks, single disks or shoes, consequently if you find that you need any one of these three styles of furrow openers, or all of them, by purchasing the two extra sets you can meet any condition which may arise.

McCormick drills are non-sagging. A truss rod extending under the frame makes it absolutely impossible for this drill to sag.

The McCormick drill is equipped with a continuous axle (not stub). This continuous axle imparts positive action to the feed runs, whether the machine is being driven straight down the field, around sharp curves or in turning corners, consequently the field will be sowed evenly.

Perfect Working Disks

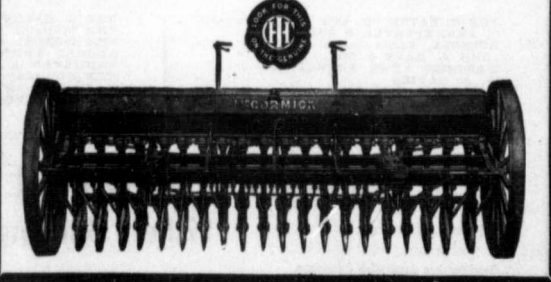
On both the single and double disk drills, the oil pipes run through the bearing standards from the top of the disks where they are covered with threaded stoppers. The oil lubricates the bearings from the inside of the cones and works outwardly, consequently the oil which lubricates the cone is free from grit, and it has also a tendency to force out any grit or dust which may have gotten into the bearing. The operator is not obliged to dig out oil holes or get into an unnatural position in order to reach the oil hole with the oil can. These bearings are as nearly dust proof as it is possible for a drill bearing to be made. The spacing between the furrow openers is sufficient to give the drill great trash clearance. These drills will work in any condition where it is possible for any drill to work.

Spring Implement Line
The McCormick spring implement line also includes Disk Harrows, Smoothing Harrows and Cultivators for summer fallow purposes. These implements are equally well made and efficient in their service as the drills.

The McCormick agents will gladly demonstrate and explain to you the merits of any of these implements or machines in which you may be interested. Write the nearest branch house for catalog.

Western Canadian Branch Houses:
WINNIPEG, MAN. EDMONTON, ALTA. REGINA, SASK. SASKATOON, SASK. CALGARY, ALTA.
BRANDON, MAN. YORKTON, SASK.

International Harvester Company of America
CHICAGO (Incorporated) U.S.A.

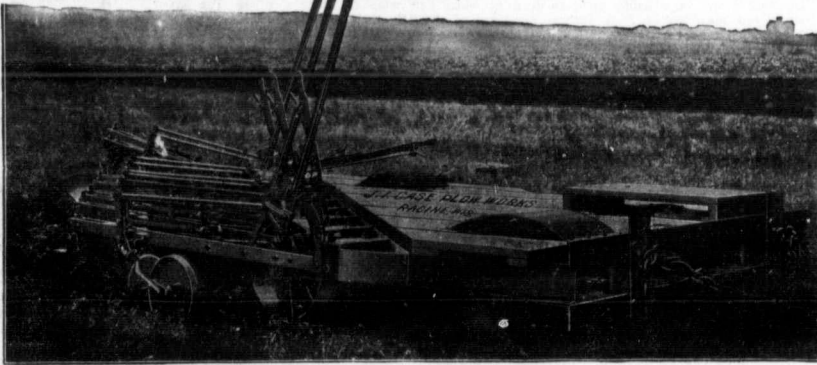


Oil reaches the bearing from the inside the same as on the double disk, thus feeding oil free from dust and dirt.



Sectional view of double-disk furrow opener, showing how the oil reaches the bearing and bearing construction. Note that the oil enters the bearing from the inside.

J. I. CASE ENGINE GANGS



Each plow is a unit—free to raise and fall independently of the other plows.

Each plow may be set for depth independently of the others, a big advantage over two plow units in plowing rough land.

One Lever Lifts Two Plows

All the plows can be lifted out quickly and the furrow ends square. A strong lift

spring for each plow makes them handle easily. The suction or penetration of each plow is adjustable by a screw bolt. High curved standards, attaching the plows to the beams, give ample clearance for trash.

— Made with 4, 6, 8, 10, 12 or 14 Plows —

For complete description and prices address

Harmer Implement Co. Winnipeg, Man.

Or J. I. Case Plow Works, Racine, Wisconsin

unwillingly to his changed demeanor before the body was found.

When the dying confession of the janitor of the building set him free, Carter thought at once of the Simmons Company. It was early yet, only about eight o'clock and he could scarcely hope to see the firm before nine. He went into a barber, shop, and leaned back comfortably as the white-coated darky lathered his face. The familiar odors of bay rum and eau de cologne were luxuries after his long seclusion, the tinkling of the slot-machine music box was divine melody to his ears. He looked better, more like himself, as he put on his coat again and went out.

He did not have to wait long for Mr. Simmons. He came out in a moment, his hand genially extended, his whole manner breathing cordiality.

"I am glad to see you, Mr. Carter," he said, as he shook hands. "Your imprisonment has been a shameful mistake, one of those errors that seem unavoidable in the course of the law, but that are pretty hard to bear. However," he added jovially, "I'm glad they discovered their mistake before it was too late."

Carter shuddered.

"I came to see you, Mr. Simmons, about a letter you sent

me. Probably you remember—" Simmons was more serious now.

"Yes, I remember it," he said, dropping into a chair. "Sit down, Carter; you don't look over strong. Of course, that was some time ago, and things have changed. In the first place, the

firm impeccable; and while our policy is not narrow, I do not think it would be good business to send letters all over the country signed by a name that has attained—or—unpleasant notoriety."

Carter had not sat down. He stood now rather white, looking

with a line or two in the papers. And the—taint is still there."

"You have made your decision finally?"

"Yes, I'm afraid it's final. I'm sorry, too; but it would not be good business; and anyhow, Carter, a steady, hard-working man like you should have no difficulty in finding something to do.

He had felt so sure that the disappointment was doubly hard to bear. He buttoned his shabby overcoat, and turned slowly to the door. He scarcely heard Simmons's "Good-morning, Carter. If I hear of anything I will let you know."

The rest of the day he spent going from one business house to another. He did not take time for lunch, and besides, he felt that food would choke him. It rained in the afternoon, and his feet were soaked through; but he kept doggedly on. The result was the same, varying only as to form. And he went home with a face whose white hopelessness told his wife the story without words.

He began to cough that night, and was alternately chilly and hot. In the morning, however, he felt better, although the cough kept up, and all that day he trudged through the mud. He gave up going to firms that knew him, and tried everything he saw advertised. Once he was almost

Continued on page 75



"Put that down, Carter!" he said sternly.

only position in which you would be useful to us is as credit man; we can get clerks and bookkeepers for the asking, but good, conservative credit men are rare."

Carter brightened perceptibly.

"But," went on Mr. Simmons, "we have kept the name of our

firm across the vista of roofs and sky-lights from the window.

"But I am acquitted, Mr. Simmons."

"I'm really sorry Carter. But I think you can realize that while the trial made all kinds of a stir, the acquittal has been dismissed

KNOWLEDGE IS POWER



HERE is an old saying that "knowledge is power." It was true two thousand years ago when it was first uttered, and it is true today to an even greater extent than it was in the days of old. It is not a new thought, and yet it is fraught with a great deal of meaning, and every one should ponder its significance.

Each and every one of you who read this article, can remember when a little information or knowledge of some certain subject has been of great value to you. You can also very likely recall times when the lack of a little knowledge has been a decided loss to you. It has been well said that it is our ignorance that costs us money, not what we know.

Now a young man's time is his capital; that is all he has really to make his fortune with, and it is enough if he invests it right. But you may ask how shall he invest it? The answer is easy. Invest it in learning something that he can make use of. The man who depends upon his muscles alone to make a living, is up against a hard proposition. The odds are against him. He is in direct competition with the horse, the ox, the steam engine the gas engine, and they can all beat him. If a man expects the best success in any business, he must make his brains work for him. The "knowing" how is what counts. It isn't long hours at work that counts, so much as knowing how to do things just right. The man who knows all the details of his business can always beat the other fellow if he has the ambition to go ahead. The successful men are the men who study their business and study hard. They are never ignorant of the things they ought to know and that is why they succeed.

Now get out your pencil and figure out how much your ignorance cost you last year, and see if it won't pay you to invest some of your spare time and a little money in learning how to farm better or how to run that engine better than you did last year. Time is the most valuable thing you have and you are a poor business man if you don't wake up and turn it to account. If you are figuring on taking that Correspondence School Course on Traction Engineering E. H. Heath & Co. are conducting, "Do it now." Turn your spare time this winter to account and be ready to beat the best of them next fall.

E. H. HEATH CO. Limited
WINNIPEG - CANADA

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."

WE should like very much to have our readers drop into our office when the morning mail is being opened and see the way that the subscriptions are rolling in. It would do you good and we believe that you would be highly gratified to feel that you were a member of such a large family. It is certainly gratifying to us to know that so many of the farmers and threshermen of Western Canada appreciate our magazine and are willing to pay us anywhere from \$7.00 to \$10.00 in advance. It shows that they have faith in us and in our proposition.

There is one word, however, that is constantly working against us and which we are constantly fighting and we want each and every one of our readers, who have not already done so, to unsheath their knife and help us to kill it. That word is P-R-O-C-R-A-S-T-I-N-A-T-I-O-N. It is a big word and it means putting things off. It is constantly whispering in the ears of a great many of our readers such things as, "There is plenty of time to renew," "Don't bother about it this time you go to town," "Do it some other day," etc., etc. When you hear such whisperings just say to yourself most emphatically in the words of the Prophet "Get thee behind me" and get pen and ink or pencil and fill in your subscription blank, enclose your money and send your subscription right along to us.

If for any reason you do not want to take our magazine we would very much appreciate having a letter from you telling us why. If we have done something during the past year that you do not like we would like to know it. We cannot hope to get out a magazine that will suit everybody, but we want to come just as nearly up to that mark as possible and without the hearty co-operation of all our readers it will be an impossibility.

We are offering some big inducements this year in the way of prizes. We do this not so much for our old readers, although we are more than pleased to have them take advantage of it, as we are to induce those who have not been among our readers to subscribe. We know that if they take our magazine for a year that they will be more than likely to come back again and renew. We have got a big family of readers at the present time, but this is one point upon which we shall never be satisfied. We want everybody to get our magazine, every farmer and thresherman.

We know that you will be benefitted if you read it and we sometimes think we would like to give it to you for a year, but there are two reasons why we cannot do this. In the first place, the Postal Department says no; in the second place we know that you will not appreciate getting something for nothing, but we do not forget that renewal. Don't put it off until the busy rush of spring work compels your attention to other things.

We don't like to get letters in this office from people who say, "I used to take your paper, but I let my subscription expire, but I find that I cannot get along without it."

OF INTEREST TO EVERY THRESHERMAN

For the past three or four years we have been offering prizes to threshermen for their experiences during the past season in handling a threshing outfit. We have received a very large number of experiences in response to these offers, and while we have not been able to publish all of them we, nevertheless, like to hear from everyone who has owned and operated a threshing outfit.

We are going to continue these prizes for 1910 and offer you the valuable list below. We should have these experiences in not later than March 15th.

To each and everyone who sends in such an experience in addition to your chance of winning one of these valuable prizes, we will give you a year's subscription to our magazine. If you are already a subscriber we will extend your subscription for one year. Just give us the facts. Make it as long as you want. Tell us about how you handled your crew, any of the little short cuts that you found in the way of handling your business. Tell us some little experiences that you had in a mud hole, or an excellent day's run. Surely there is something in your fall's work that stands out more prominently than anything else. You will be amply rewarded for your efforts.

The prizes are as follows:

- 1st—Free Course in Heath School of Traction Engineering by correspondence.
- 2nd—Clipper belt lacing outfit.
- 3rd—No. 3 Injector.
- 4th—Lubricator.
- 5th—Speed indicator.
- 6th—Heath book for Threshermen.
- 7th—Farm Engines and How to Run Them.
- 8th—Rough and Tumble Engineering.
- 9th—Settlement book.
- 10th—One copy Campbell's Soil Culture Manual.

The Modest Bedbug

Being naturally of a retiring disposition, does not respond readily to any attempts to drag him into publicity. Gentle persuasiveness does not faze on him, and when in the darkness of night you suddenly spring a light on him, he hastily makes tracks to get under cover.

If he succeeds, you don't, and if you succeed there's a dirty splotch on the wall that doesn't look nice, so the result is disappointing either way.

No decent person likes vermin, and so you cannot reconcile yourself to "let him bide," but what in the world can you do to get rid of him?

Some of the worst infested buildings in the West have been cleaned out with our stuff, including Frame Houses, Log Houses, Old Hotels, Apartments, and Railway and Bush Camps.

Cockroaches will fall dead if they come in contact with it and vermin of every description either die or take an indefinite leave of absence if

"Vermin Death"

is used according to instructions on the label.

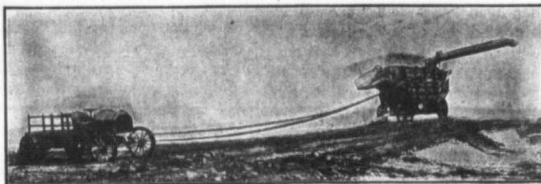
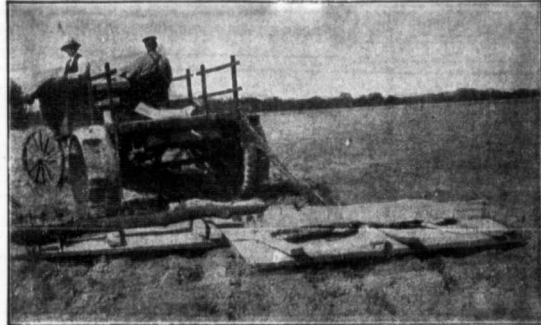
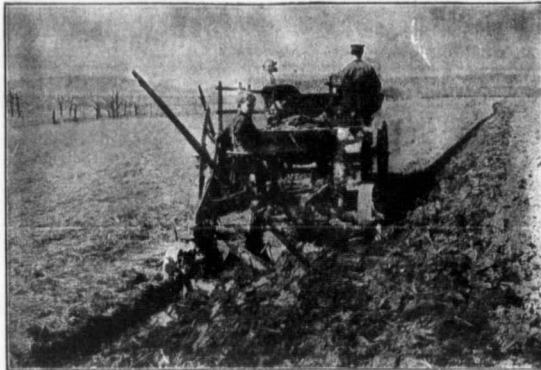
Ask your storekeeper or write direct to our Remedies Department.

The Carbon Oil Works Ltd.

Manufacturers of COWL BRAND Oils-Of-Tar Specialties

CHAMBERS OF COMMERCE
WINNIPEG CANADA

This Farm Tractor Free



The above illustrations, which represent an Avery Farm Tractor and which we have chosen to head our prize list, is perhaps one of the neatest as well as one of the most practical farm tools that has ever been put before the Canadian public. The first impression of this tractor is that it is an automobile, but this is far from the truth. It is a farm tractor in every sense of the word, designed and built so as to meet the demands of the average farmer who wants a machine of medium power combined with a maximum of possibilities as to general farm work. The machine itself is built of the finest quality of material. It weighs 4,600 pounds, and as demonstrated in the Winnipeg Motor Contest, it will haul successfully a load twice its own weight and this at a speed greater than can be accomplished by a team of horses. It will plow, it will harrow, it will disc, it will pull a drill, a harrow, will run a small threshing machine, and when the crop is threshed it furnishes the most convenient and best possible means to draw the crop to market. It is fitted with a 4-cylinder gasoline engine of the most approved type, and is so simple in its operation that a boy can handle it.

Any farmer who is lucky enough to secure this machine will be the happy possessor of a money maker. We have chosen it because we consider it one of the most practical farm machines that we could possibly give away.

2000 Prizes Free

To those guessing nearest to the number of kernels in 8 lbs. 8 and 7/16 oz. of No. 2 Northern Wheat. All that you have to do to secure an estimate is to subscribe for **The Canadian Thresherman and Farmer**, subscription price of which is \$1.00 a year. The contest is open to everyone in Canada except resident of Winnipeg. Subscribe for two or more years, or send in additional subscriptions, and you obtain more estimates. Remember you may win a prize for every estimate you send in.

The wheat used in the contest was procured from the Dominion Grain Inspector's Office, Winnipeg, and is partially cleaned. An ordinary gallon bottle was secured, and the wheat and bottle taken to the Dominion Weights and Measures Office, and the bottle filled right to the top with the wheat. After deducting for the weight of the bottle, the wheat was found to weigh exactly eight pounds, eight and seven-sixteenths ounces. The bottle was immediately sealed, photographed, and deposited with the National Trust Co. to be held by them until the contest closes May 31st, 1910.

Send all subscriptions to

E. H. HEATH COMPANY, Ltd.
WINNIPEG CANADA

You May Get More Estimates thus:

2 years' subscription and \$2 gives you 3 estimates	3 "	"	"	\$1	"	5 "
3 "	"	"	"	\$4	"	7 "
4 "	"	"	"	25	"	9 "
5 "	"	"	"	\$1	"	11 "
6 "	"	"	"	\$7	"	13 "
7 "	"	"	"	\$8	"	15 "
8 "	"	"	"	\$9	"	17 "
9 "	"	"	"	\$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 "
7 "	"	"	"	\$7	"	14 "
8 "	"	"	"	\$8	"	16 "
9 "	"	"	"	\$9	"	18 "
10 "	"	"	"	\$10	"	20 "

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 Indicator, \$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. Linoxol 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

SUBSCRIPTION BLANK—C.T.

E. H. HEATH COMPANY LTD
WINNIPEG, CANADA

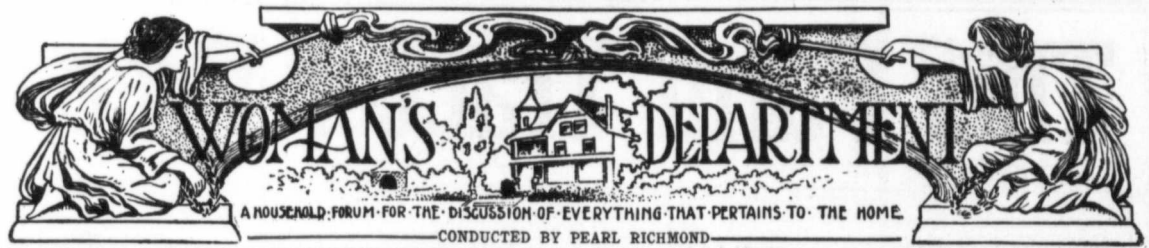
Date.....

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 and 7/16 oz. of No. 2 Northern Wheat is

1..... 2..... 3..... 4..... 5.....



NOBODY KNOWS.

Nobody knows the work it takes,
To keep the house together;
Nobody knows of the steps it takes,
Nobody knows—but mother.

Nobody listens to childish woes,
Which kisses only smother;
Nobody's pained by naughty blows,
Nobody—only mother.

Nobody knows of the sleepless care
Bestowed on baby brother,
Nobody knows of the tender prayer,
Nobody—nobody only mother.

Nobody knows of the lessons taught
Of loving one another;
Nobody knows of the patience sought,
Nobody—nobody only mother.

Nobody knows of the anxious fears
Lest darling's may not weather
The storm of life in after years,
Nobody knows—but mother.

Nobody kneels at the throne above
To thank the Heavenly Father
For the sweetest gift—mother's love;
Nobody can but mother.
—Author unknown.

Mother Lore

By Mary Morrison
Cloud and sunshine drift so fast,
Flitting over little skies,
Lest the cloudlets turn to rain,
Mother must be weather-wise—
Storms of passion turn aside
With a mother's gentle skill,
Show beyond the cloud's dark rim
Love's sweet sunshine, golden still.

Keen of eye to note each day
All the little body's need;
Deft of hand and strong of heart,
Never-failing, quick to heed,
Chef, physician, seamstress, nurse,
Mother must be, while she may;
Do not pause to wonder how
Mother-love will teach the way?

Mother-magic, mother-lore,
Simple wisdom, yet how wise!
With a knowledge born of love
In the heart of Paradise.
Falter not, nor fear, dear heart;
For your need shall strength be given,
Day by day and hour by hour:
Manna-like, 'twill fall from heaven.

The Mysterious Valentine

By PEARL RICHMOND HAMILTON

"Well I know she did it!"
exclaimed Mrs. Emma Jane
Chandling rattling the dishes so
roughly that I am sure some of
them must have cracked in several
places.

Mrs. Emma Jane Chandling
searched for a particular platter
till she found it. Meanwhile her
face reflected savage expressions
indicating a fierce battle going on
within.

John Chandling, her husband sat
with his feet in the oven warming
the stubborn toes that seemed to
chill through every time he
stepped outside.

Suddenly another slam at the
cupboard and a big water pitcher

fell to the floor, broken in a
dozen pieces. "There, now
you've done it," he exclaimed
looking up at his wife rather
dugusted at the display of her
wrath.

"Do hold your tongue, John
Chandling," shouted Emma Jane,
reaching nervously for the broom
to sweep up the glass. Anyone
could see that something very
unusual had happened in the
Chandling household; the red
table cloth hung down nearly to
the floor on one side, while on the
other it just reached the edge of
the table. The three big white
earthen-ware plates were placed
very irregularly on the table and
the steel knives and forks looked
as if they had been thrown from
across the room. At the far side
of the table great slices of bread
indicated careless cutting and
in fact everything on the table
suggested disorder to such an extent
that the breakfast was anything but
appetizing. Emma Jane moved
excitedly about the kitchen and
John after lifting, with difficulty,
his warmed feet out from the
oven shoved his chair up to the
table and soon began to shovel
potatoes into his mouth with a big
wooden handled knife. Presently
a young girl entered the room
and Emma Jane looked up at her
with such a piercing gaze that the
little girl shuddered as if sharp
daggers were being thrust
through her. Emma Jane looked
just like a gimlet.

"Jean, I reckon you can milk
the red cow while I harness the
team," commanded the head of
the house as he emptied hot
coffee from the cup into the
saucepan. Jean thereupon pinned
a little shawl over her head, took
the pail from the work table and
left the room in marked obedi-
ence.

"Seems to me you shouldn't be
so hard on that girl, Emma Jane,
Poor child, she's the best help
we've ever had—quiet, obedient,
and sort of sad like all of the
time."

"I'm sorry for her, I am!" and
he reached his fork across the
table for a slice of bread as
Emma Jane broke out in the
tempestuous storm that had been
brewing all morning.

"Now John Chandling, you
needn't take Jean's part any more

—I won't have it." Emma Jane
stamped her feet emphatically.

"I shall have that girl tried
before the Justice of the Peace
right away!" "I shall see that
that snippy girl will have her
punishment—this whole neighbor-
hood shall know she is a thief."

"I think the neighborhood
knows that pretty much already
—your tongue has been mighty
busy lately" remarked the
husband spreading a great slice
of bread with chunks of butter.
"Now you don't know for a fact
that Jean took that money," he
continued, between the bites.

"I do know for a fact that she
took the money. Didn't I put
it myself in the history of the
United States there at the bottom
of that pile of books?"

Mrs. Chandling had a habit of
secreturing her valuable papers in
books. The fact is the family
never read them and she thought
her important papers were per-
fectly safe.

"Did you see her take the
money," he questioned fully.

"Well—no I can't say I
exactly saw her take the money
but I know she did, besides she
has been carrying an envelope
in her dress waist ever since I
missed the money. I have seen
her feel for the envelope—it must
be valuable or she would not
carry it around with her all of
the time."

Then, too, the other day when
I went in the sittin'-room she
walks away from that pile of
books so sheepishly like that I
know she has stolen it.

I know it! I know it! I know
it!!!"

Emma Jane jerked the dish
pan down, and the nail on which
it hung fell with the pan. John
Chandling, tilted his chair back
on two legs and lighted his pipe.

"And to think that you and me
worked so hard to save that
hundred dollars for Sam to get
married on and we counted so
much on putting it under his
plate for a Valentine." Emma
Jane trembled and took the
corner of her blue print apron to
wipe a tear away. John Chand-
ling puffed like a locomotive at
his pipe.

Somehow a pipe is a real com-
fort to some men, for strange to

say, a raging temper effects the
muscles of the mouth and conse-
quently women scold while men
smoke. And then the effects of
the latter are not so dangerous as
those of the former. At any rate
Emma Jane scolded furiously as
she washed the dishes, and John
smoked.

"Poor Sam! and he wants to
marry Sarah Lane so bad and
if he don't soon, she'll up and
marry someone else 'cause her ma
says she's got to get her off her
hands soon as her sister Ann has
already begun beauning."

"She don't want Sarah to be an
old maid neither, 'cause it runs
in her father's family."

John said nothing, but filled
his pipe again. "I'm going to
town this very day to see a
lawyer. I'll have that huzzy
arrested for taking Sam's marry-
ing money."

"It's too great a sorrow for
me to bear," and Emma Jane
broke out in tears.

"Wouldn't it be worse if Sam
were dead" asked the husband
bringing his chair down on four
legs.

After this remark Emma Jane
wiped her eyes on the corner of
the towel, put on her hood and
went out of the house. Then
John knew the day was destined
to be a stormy one. Just then Jean
came quietly in and set the pail
on the table and went to the stove
to warm her cold reddened hands.
John noticed her eyes were swell-
en with crying. He looked out
of the window and saw Jean's
friend—Mary Jones going down
the road. Immediately he guessed
what had taken place.

"I wouldn't feel too badly
Jean, things may come out right
in the end."

"Oh, Mr. Wendling they can't,
I'm just broken-hearted." The
whole country side says I'm a
thief," exclaimed the girl break-
ing down completely.

Unconsciously she moved an
envelope in her waist that showed
its corners between two buttons.
John Chandling noticed this and
said no more. He put on his
coat and cap and walked out to-
ward the barn, from which
Emma Jane was just leading the
driving horse to the buggy.

They both hitched the horse
in silence. Emma Jane then
went into the house brushed past

The Edison!

The Latest Style EDISON Phonograph in Our New Outfit No. 10—this superb entertainer, Mr. Edison's latest, final improvement of phonograph—shipped

FREE!

Yes, free. I don't ask a cent of your money—I don't want you to keep the phonograph—I just want to give it to you on a free loan—then you may return it at my own expense.



Read the Offer:

I will ship you free this grand No. 10 outfit, Fireside Model, with one dozen Gold Moulded and Amber records. You do not have to pay me a cent C. O. D. or sign any leases or mortgages. I want you to get this free outfit—the masterpiece of Mr. Edison's skill—in your home. I want you to see and hear Mr. Edison's final and greatest improvement in phonographs. I want to convince you of its wonderful superiority. Give a free concert; give a free minstrel show, music, dances, the old-fashioned hymns, grand opera, comic opera—all this I want you to hear free of charge—all in your own home—on this free loan offer.

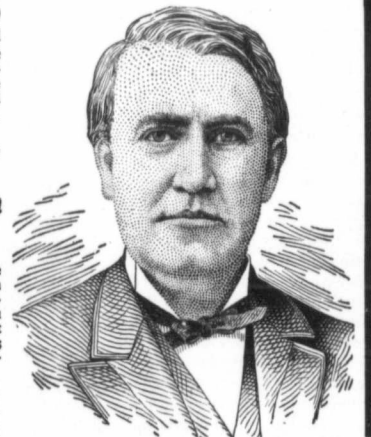
MY REASON—My reason for this free loan offer, this extra liberal offer on the finest talking machine ever made—see below.

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My Reason

I don't want you to buy it—I don't ask you to buy anything. But I do feel that if I can send you this great phonograph and convince you of its merits, of its superiority, you will be glad to invite your neighbors and friends to your house to let them hear the free concert. Then, perhaps, one or more of your friends will be glad to buy one of these great outfits No. 10. You can tell your friends that they can get an Edison Phonograph outfit complete with records for only \$2.00 a month—\$2.00 a month—the easiest possible payment and, at the same time, a rock-bottom price. Perhaps you, yourself, would want a Phonograph, and if you ever intend to get a phonograph, now is the chance to get the brand new and most wonderful phonograph ever made, and on a most wonderful liberal offer. But if neither you nor your friends want the machine, that is O. K.; I simply want you to have it on a free loan, and perhaps somebody who heard the machine will buy one later. I am glad to send it on a free loan offer anyway. I will make it as a favor if you will send me your name and address so I can send you the catalog—then you can decide whether you want the free loan. There are no strings on this offer, absolutely none. It is a free loan that is all. I ask not for one cent of your money, I only say if any of your people want to buy a phonograph, they may get one for \$2.00 a month, if they want it.



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the saddened girl and into the kitchen bedroom.

It took little time for her to prepare her toilet, and soon she appeared in a rusty black dress ready for her ride to town. Jean meanwhile put the kitchen in order and took down from the clock shelf the ink bottle and pen and went to her room to write to her mother who lived in an eastern state. Why is it when a girl is in trouble her first thought is of "Mother?" All that afternoon Jean scrubbed and cleaned and worked.

"Too bad, too bad," John said to himself after moving up to a well-cooked dinner.

"She's the best hired girl we ever had and Emma Jane works her to death."

An Iowa stock farm has its share of work, and Emma Jane prided herself on the amount of work she could get out of her girls.

About five o'clock Emma Jane drove into the yard and beside her was a man of the law. In about twenty minutes this man of the law and quiet little Jean climbed into the buggy and drove out of the yard. For several days the gossiping town was full of excitement—for a girl thief was actually in their midst awaiting her trial.

Mrs. Jack Fleming said "she always knew that meek looking castener was not out West for any good," and at the meeting of the Missionary Society that day postponed the programme in order to discuss the coming event. Mrs. Miller didn't say a word, because her only son had been very attentive to Jean and she felt as if she were the mother of a criminal.

"Seems as if some mothers don't care who their boys keep company with," Mrs. Fleming said looking at Mrs. Miller very sarcastically. Mrs. Miller kept on sewing on one of the towels which the society was planning to send to a mission. This society prided itself on the great amount of charitable work it did—but not one member offered a word of sympathy to the lonely stranger in their midst—the sad girl sat alone in a room that was her prison cell. Finally the day of the trial dawned—bright and beautiful as far as outward scenery was concerned but dull and heavy to the little Jean.

Farmer Chandling and his wife had employed a good lawyer and they had a goodly number to act as witnesses. But the young girl had no lawyer—no witness. No person had ventured to offer her any service or advice or help in any way. I have known of other country towns where evidence gained by gossip is likewise treated.

A crowded court room—really not a court room but a place used as such by the town Justice, waited long before the time of trial. At last John and Emma Jane with their flock of followers filed in very pompously. Then Tom Fleming almost bursting with importance as if he had a world renowned criminal under his guard, led in this trembling little lady of the east. Her large hollowed eyes bore evidence of sleepless troubled nights and the pale thin face wore anxious lines of worry. Jean—poor little Jean—carried a burden too heavy for her small shoulders. The trial began and the helpless prisoner nervously moved about in her chair, evidently fearing her death sentence. Witness after witness testified in favor of the worth of the Chandling family—they were honest people and their word was as good as law.

Emma Jane told very tragically the story about "Sam's marryin' money" that they had saved to give him on Valentine's day. She testified that she had actually seen Jean take it from the said History of the United States; constant dwelling on a thought produces such results. The expression on Jean's face changed alarmingly at the testimony and the lawyer noted this fact.

When Jean was called to the stand she seemed to gain strength, however, and held herself under good control, thus being able to answer every question clearly in few words. Finally when the lawyer asked about the envelope in her dress waist, she blushed and could not find words to reply. Emma Jane tilted her chin up two notches higher, John dropped his head and stroked his beard as if sorry the envelope question had been brought up.

All other eyes were riveted on the girl and Jean blushed, turned pale and trembled, meanwhile unconsciously fumbling at the envelope in her waist. A stamping of feet outside broke the silence and Sam Chandling surprised the interested spectators. He stood at the door as the lawyer repeated the question. Then he blurted out:

"That there's Bob Miller's love letter. She always carries his latest there in her waist till the next one comes and if Maw goes home she'll find that mysterious Valentine in the loose wall-paper behind the books. I slipped it in there myself one day when I found it in the History of the United States because I thought it would be safer there than in the book. I read of this affair in the county paper and have hurried my best to get here in time to shield that innocent girl who came out to this country for her health.

LOOSE TEA LOSES FRESHNESS

and flavour quickly and is soon quite unfit for use. It takes on the odors of other articles. It deteriorates by exposure to the sun and air. It is uncleanly—dust and dirt get into it.

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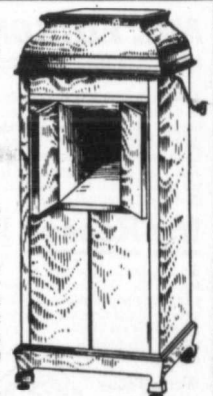
The Phonola comprises many new features, the chief of which is the absence of the objectionable horn. All moving parts are concealed in the cabinet. Our Combination Sound Box reproduces all records, needle or sapphire, in the richest and most mellow tones, true as life itself. The Phonola is made in three models, and is complete in every detail as regards convenience and utility. At the same time it has a strong attraction for the artistic, and makes a handsome addition to the furniture of any room.

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Poor Jean I guess Maw must have found her at the books—seems as if reading was the only comfort she had out here all alone—but she had to read when the old woman didn't know it. She always thought it was a sin to read. I hope after this Maw will let lawifying alone."

The young man then went up to the injured girl and kindly put his strong arm about her as he took her away from the gaze of the curious spectators and I've heard since, that "Sam's marryin' money was spent on the little eastern lady—Jean.

The Mothers' Corner

Baby's Skies.

"Would you know the baby's skies? Baby's skies are mother's eyes, Mother's eyes and smile together Make the baby's pleasant weather,

"Mother, keep your eyes from tears, Keep your heart from foolish fears, Keep your lips from dull complaining, Lest the baby thinks 'tis raining."

Birth.

God thought—
A million blazing words were wrought!

God will'd—
Earth rose, while all Creation thrill'd!

God spoke—
And in the garden love awoke!

God smiled—
Lo, in the mother's arms, a child!
—Frederick Lawrence Knowles.

A Little Baby's Love.

As pure as a drop of dew that rests
Within the heart of a rose
As warm as a beam from the golden crest

Of the sun in the east that glows;
As near to God as the sunlit stars
In the vault of blue above;
The sweetest and purest thing on earth
Is a little baby's love.
—V. A. Hondek.

The First Bath the Mother Gives.

Probably the most serious moment in the life of the young mother is when the first bath is due after the nurse leaves. The dear little mother's heart is running over with love, and her breath is coming short and quick with fear. Baby will surely break or melt, or some other dreadful thing will happen before the bath is finished!

Most carefully she makes her preparations for the bath. Each little garment she intends putting on the baby is hung near the stove or is warming on the radiator. A cake of pure soap, a cup, a box of talcum powder, some borax, some soft, old linen towels, a soft wash cloth, some absorbent cotton, and a basin of comfortably warm water, are put on the table. A rubber or tin bath tub floating a bath thermometer is beside the other things on the table. She brings a pitcher of boiling water, pins a small wool blanket on like an apron, and she is ready for the process of undressing.

It is a breathless, wide-eyed little woman who begins with much trepidation working the skirts up under the baby until they lie in a roll about the shoulders. The fastenings are opened, the arms are slipped out, and the slip and skirt are removed over the baby's head. She remembers the nurse moved baby as little as possible, and she tries very hard to work as nurse did.

When the clothes are all removed but the diaper, she tucks the blanket she is wearing as an apron around baby, and proceeds to wash the face. Very gently and carefully she works

over the tiny face. First with soap, then washing it off with clean water, carefully drying as she goes. The head and neck get a pretty liberal lather, quickly removing the soap with clean water, and drying as with the face.

The ears receive the same careful attention. Still keeping the baby under the blanket, she soaps the body well all over, rolling baby over on its face to wash the back.

The thermometer in the bath tub registers only 92. The young mother adds water from the pitcher until the mercury rises to 98. If she had no thermometer, she would bare her arm above the elbow. If it were comfortably warm she would know it was the right temperature for baby. She would not test the water with her hands, because the arm at the elbow is much more sensitive to heat.

The temperature of the bath just right, the mother wets the head of the babe with moderately warm water to prevent congestion, then, with a very determined expression on her face and a heart throbbing with fear, slipped the left hand under baby's head and shoulders. The right hand she clasped under the knees, lifted baby from the blanket, and lowered her into the

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water. She, after a little time, removed the right hand, letting baby rest in the bottom of the tub, and dashed the warm water over the little one's body. The baby kicked a little, gurgled and smiled. The warm sensation pleased her. The mother was radiant, but she kept an anxious eye on the clock. At the end of three minutes she slipped the left arm well under the body, brought the right arm over the baby, clasping it close with the right hand. It is a breathless moment until the wet, slippery baby is out of the bath.

A soft, warm towel is wrapped around baby, and the blanket is folded over the towel for a few minutes.

The scared little mother can hardly realize that the ordeal is over, and the baby is whole in her lap. Confidence is crowding out fear, and she begins to think that she is doing just as well as nurse.

After this it was comparatively easy. The little body was dried and powdered without being exposed to the air.

The band was an alarming length, until the mother remembered that it must be double and perfectly smooth over the abdomen. She has seen nurse sew it, but she knows she could not, so she used small safety pins, putting them in horizontally, that they might not hurt baby when she doubled over on them. Then she put on the diaper, pinning it to the band in front and at the back.

The little skirt was slipped over the feet and worked up to the neck, so it would not be necessary to twist the arms when they were put into the sleeves. The slip and the petticoat went on together in the same manner, which is much better than tumbling and turning the baby to get its clothing on over its head.

The socks hid the pink toes, and the dressing was finished. Not so the washing. Some of the water from the pitcher, only warm, and just the right temperature by this time, is poured into a cup, and a little borax is added. Into this is dipped a piece of absorbent cotton, and the eyes are washed. A fresh piece for each eye is used.

A small piece of cotton is wrapped around a toothpick, and most carefully the little mother washes out the baby's nose. If she were not very cautious and careful baby would be seriously hurt.

Exercising the same care, the mouth was washed with a piece of cotton over the finger. All the corners and behind the gums were cleaned, the little mother was so anxious to keep her baby from getting sore mouth.

She knew, too, that the eyes must be kept perfectly clean else they could not be healthy.

In the institution for blind children, in Philadelphia, are many inmates who are blind because the eyes were not washed perfectly clean after birth. Many times impurities are permitted to remain around the edges of the lids. They set up an inflammation, which rapidly increases with disastrous results. The only safe course to pursue with baby's eyes is to keep them absolutely clean, beginning with the first washing after birth.

After being bathed and dressed baby was tired, so was the mother, but she knew 'twas better for baby to have her bottle before she slept. While taking her meal she dozed off two or three times, but the wise mother roused her by shaking gently until she finished. The little body cuddled down soft and warm in the mother's arms, and she wanted to hold her while she slept, but instead she laid her in her crib.

Sitting beside the crib, she watched the regular breathing of the precious little sleeper for a moment. Her face was radiant with mother-love, and she was thinking of the blessed privilege of giving her babe a bath every morning.—From the Mother's Magazine.

Keeping the Baby Dry.

The baby must be kept dry. Many times bowel and febrile complaints result from wearing wet stockings and diapers. The nervous system can be permanently affected by a painful irritation of the skin about the groin and buttocks caused by wet diapers. The under clothing should be frequent-

ly examined, and wet clothing immediately be changed for dry and clean garments.

Cleaning the Mouth.

A baby's mouth should be cleansed several times a day with a soft rag dipped in clear water. This is especially important during summer and while the child is teething.

Fresh Air.

The little baby needs fresh air, plenty of fresh air. The windows should be open a generous space. A screen can be so arranged that no draught of air reaches the bed, and windows can be opened so that there is no draught through the room. Two windows on opposite sides of the room, open, would let a gale of wind through. Two windows on the same side, open, will make no draught. A dark screen is a good investment. It often saves the child's eyes from the glare.

Noise.

If a child is not shut up and kept absolutely quiet while sleeping, it can be trained to sleep well and soundly in noisy places. The mother who hushes the family into silence while baby sleeps, is foolish and is preparing the way for future tribulations. A baby born in a busy, sensible family is fortunate. It does not receive too much care.

Clothing.

The bandage should be cut the selva-ge way of the material, and must be in one piece. It is just as well, or perhaps much better, not to hem the band. The flesh of the young babe is so tender that a seam or hem is likely to hurt the little body. Knitted bands are excellent. They should be six or seven inches wide and made of Saxon yarn or zephyr worsted, using the plain stocking stitch.

A knitted band is strong enough to give the necessary support, and elastic enough to yield to every breath of the baby. A knitted skirt of Saxon yarn should be worn except in the hottest months.

Smiles for the Fireside

An Irishman, in order to celebrate the advent of a new era, went out on a lark. He didn't get home until three o'clock in the morning, and was barely in the house before a nurse rushed up and uncovering a bunch of soft goods, showed him triplets. The Irishman looked up at the clock which said three, then at the three of a kind in the nurse's arms, and said: "Oi'm not superstitious, but thank Hivens that Oi didn't come home at twelve."

A green Irishman was sent by his employer to take charge of a Jewish funeral, and upon making his report to his "Boss," Pat says:

"That's a curious custom the Jews have of placing a \$20 gold piece in the right hand of the corpse."

"Why, that is to pay his way over the river Jordan."

"Well," says Pat, "if that's the case, that Hebrew will have to swim, because I swiped the \$20."

At a recent Jewish wedding the father was leading the bride to the Rabbi, at the same time he was sobbing and moaning which greatly surprised the bride, and the following conversation took place:

The Bride—"Father, why do you weep?"

The Father—"Because I must give you away."

Irishman—"Three cheers for home rule."

Scotchman—"Three cheers for hell."

Irishman—"You are right; ivery man should stick up for his own country."

"What became of that girl you made love to in the hammock?"

"We fell out."

"Were you bashful the first time you called on a girl?"

"Yes, but her father helped me out!"

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"What beats a good wife?"
"A bad husband."

"My girl's father is an undertaker—he uses an automobile hearse. Folks are just dying to ride in it."

Probably the happiest combination in the world, during these merry winter days, is half a mince pie with a boy around it.

Father—"What is your favorite hymn, Clara, my darling?"
Clara—"The one you chased away over the fence last night."

EXPERIENCE EXTRACTS.

People with poor digestion should drink no water with meals, but take a glassful half an hour before, and drink plentifully an hour or so after each meal.

Never waken a child suddenly, and never carry a baby immediately into a glaring light when he wakes up, the sudden impression of light is very bad for the eyes.

To Prevent Rust on Clothes
G.N.B.

Clothes that have been boiled in water in which soap has been chipped often have rust spots appear on them after being blued. I have learned that tiny particles of the soap clinging to the clothes cause the rust spots by the chemical action of the bluing on them. I now merely drop one large piece of soap into the boiler or washer, and have no further trouble.

Toothache can be relieved by bathing the gum and cavity in boiling vinegar as hot as can be borne.

It is not easy to breathe through the nose at first, but it is remarkable how this simple remedy may be quickly acquired.

Once a day is quite enough for the average woman who has reached the age of forty to eat meat. Most women eat far too much as they get on in years, and as a result lose complexions and their figure.

A simple and infallible remedy for heartburn is to take half a tumblerful of cold water into which has been added half a teaspoonful of carbonate of soda; squeeze the juice of a small piece of lemon and drink while effervescing.

Old Hot Water Bags.

Mrs. M. S.

Old hot-water bags should not be thrown away as they make excellent linings for sponge cases, or for bags in which to carry bath or tooth brushes, soap, etc., when travelling, if covered with any bright material. Small pieces of the rubber cut three and a half by one and a half inches and sewed with white thread make nice finger-stalls to put on when paring fruit and vegetables.

A New Use for a Button

Mrs. E. W.

Always having difficulty in keeping the cork from slipping inside salt and pepper shakers, I took a common white button a size or so larger than the opening in the bottom of the shaker, sewed it through the cork, and since have had no trouble. This not only keeps the cork in place, but also looks much better—the white button resembling the china more than an ugly cork does.

When Hanging out Clothes in Freezing Weather, dip the corners of towels, napkins, etc., in strong salt water so the pins will come off easily and the clothes will not be tightly frozen to the line. This will save many an article from getting spoiled by tearing.—M.E.H.

A Simple Way of Cleaning Silver is to place a quantity of sour milk in a shallow pan, lay the article in the pan and let them remain until they are bright. Wash in warm water to which

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has been added a few drops of ammonia, and the silver will be beautifully clean.—Mrs. C. C.

When Cake is Taken from the Oven set the tin at once on a wet cloth for a few seconds, then turn it out.—Mrs. A.M.S.

Milk will Extinguish the Flames from Gasoline or any form of petroleum quickly and effectively, since it forms an emulsion with the oil, whereas water only spreads it.—"Pilgrim."

Hints for a Valentine Party.

A very good way to entertain a party of young people Valentine evening is to hand each a sheet of blank paper and pencil and offer a prize for the best original valentine in drawing accompanied by a verse.

Another amusing game is to give each a sheet of paper and scissors and ask each one to cut a comic face—give prizes for the best face.

I found this fortune contest very amusing for a party.

I cut a large heart out of paste board and drew lines from the center to the edge.

Then I wrote a fortune in each division and pinned the heart to the wall. I cut arrows out of ordinary writing paper and when the guests were gathered I gave each one an arrow with a pin and then each one in turn was blind folded and pinned the arrow on the heart.

The fortune in the place where the arrow was pinned was that individual's fortune.

Games like this are popular.

Fashion Hints.

The ever-increasing fulness of skirt and sleeve is, of course, a matter of vital importance to the student of fashion. The flow of the sheer materials of summer foretells a season of drapery, although the fabrics worn in colder weather will look entirely different, even when made in the same way. Skirt yokes and cuirasses are a sort of compromise, which keep the material unpleated around the hips and waist.

By the way, the women "not so thin" must be very careful in having their frocks made up. The short woman with the cuirass and the pleated skirt looks like a caricature, but how much worse does her fat sister look in the Princess gown of walking length with the low neck line, full sleeves and the hip yoke! Any length of line that such a figure does possess will be broken by such a combination, yet like a sheep she copies. She models her clothes after those worn by her slimmer sisters and relies upon the fact that she is up-to-date to pull her through.

Stout people cannot put too much thought on the designing of their gowns. They should study every line and endeavor to lengthen it by cut and trimmings. Ornamentation and tucks should be placed lengthwise, and skirt should be cut with a long, unbroken sweep. White dresses should be tabooed. Each individual requires different treatment, yet this will serve for general advice.

Nets of all kinds are among the novelties of the season, and net bands handsomely embroidered in floss or straw, when on a waist of the same color, look as though the pattern were done on the waist itself. Another device is flowers embroidered in dull colors here and there on ecru lace. Old rose, delft blue and green are seen on the same design.

Winter Neckwear Novelties

Pleated lace-edged frills of mill or swiss, which are worn in waterfall effect down the front of silk, batiste or even woolen waists, are shown in many varieties in the shops. Stiff linen collars, accompanied by the tailor-made bow of taffeta or crepe de Chine, are making their appearance for wear with the winter tailor-made. This mannish-looking linen collar has given way for several seasons to the dainty Peter Pan or other confection in embroidered linen or muslin, and the tight-fitting collar of dotted swiss muslin; but this winter will probably see the revival of the stiff linen collar, accompanied by a neat little tie.

The Peter Pan collar, though extremely dainty, is only becoming to a few women with almost perfect necks. The Empire frill, too, did much to eclipse the stiff linen collar, but this frill has entirely disappeared.

The return of the waistcoat may be said to be responsible for the revival of the linen collar, for the waistcoat can hardly be worn with anything but a severe collar or stock.

The tie may be a picturesque knot of soft wide satin, or it may have long jabot ends of pleated muslin, with trailings of Valenciennes, but the collar to accompany the waistcoat must be of stiff linen.

Some of the ties for wear with the linen collars are in moire, made up into the stiff little bows something after the style of a man's evening tie, while others are in crepe de Chine in a variety of pretty colorings, with embroidered ends in a darker shade of silk.

Doesn't it seem good to meet a person who has no tale of woe to tell?

Some people are charitable to the extent of giving their old clothes away.



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JACK FROST.

Oh, merry Jack Frost is abroad tonight,
And a tricky sprite is he!
As he binds the streams with an icy
chain
That they may not reach the sea.

Now here, now there, on his sparkling
wings

That glitter with hoar-frost bright,
He speeds on his way over hill and dale,
Through the hush of the winter night.

The stars have lighted their lamps of
gold

To guide him upon his way,
Through the busy town, o'er the moun-
tain lone.

Till the dawn breaks chill and gray.

He freezes the cream on the dairy shelf,
He pinches the milkmaid's cheek,
He turns the lake to a sheet of ice.
As he skims o'er the marshland
bleak.

He draws strange scenes on the window-
pane,

To the children's great surprise,
When they see fair castles, and trees,
and flowers
Appear to their waking eyes.

He hangs his icicle jewels bright
From the edge of the cottage eaves,
And traces his sign in filigree
On the shining ivy leaves.
—Maud E. Sargent.

A Day in Valentine Land. A FAIRY STORY.

BY PEARL RICHMOND HAMILTON.

IT was during the first week of February when we came to the flowery fairyland of love. All of the little cupids in the world live there you know and every one was at home. Saint Valentine had called them all in after the first of the year. It was the most beautiful experience in the world to come into this land of song and color and sunshine.

A group of the dear little fellows met us and led us in through the gate of the enchanting land and right up to the mansion of the great St. Valentine. All of the blessings of hundreds of years seemed to be centred in the person of this grand old saint. The little cupids took us up to the very top of the mansion where we had a view of St. Valentine's entire possessions.

There were flowers—flowers every where and fairy breezes brought us rich perfume from every one. It seemed as if the busy little cupids all over the place were pressed for time.

They were you know because it was only a short time before

Valentine Day and they were oiling their arrows in the petals of roses, violets, pansies, and thousands of other flowers, for strange to say every flower known blossomed in St. Valentine's Land all of the time.

The little cupids had used their arrows a whole year and some were very rusty and needed the fairy oil to make them smooth enough to pierce the hardened hearts of some people that they had failed to pierce during the year just passed. Several cupids had worn out their bows and they were making new ones from a special kind of tree that grows in Saint Valentine's Land.

I really saw two wicked little fellows cutting arrows from the wood of a weeping willow tree. Now I think that was terrible and I believe those two little cupids are the cause of many broken hearts.

Well any way there were hundreds of cupids making arrows out of the right kind of wood. Then there were little artists, busy as busy could be, painting from nature flowers so beautiful that they seemed to give out their very fragrance. As soon as their paintings were finished other cupids carried them away to a fountain of scented ink surrounded by golden pens, and there—well you should have just seen their little fingers fly over the paper.

"What are you writing?" I asked one tiny little penman.

He looked up quick as a wink, and lisped, "Love letters," and then he wrote and wrote and wrote. He must have noticed I was curious because he said as he put the letter aside:

"You know this is the birth-place of love letters. They all originate in the land of Saint Valentine."

"Some of the people in my country write love letters," I ventured to remark.

"That is all very true but they copy our thoughts. Only cupids create love ideas."

"The fourteenth of February is our harvest time. Thousands of sweet-hearts are chosen on that day."

"There are some sour maiden women and crusty old bachelors that we must mate on that day or give up because if they wait another year they will be beyond our power." Then one after another plunged into the work as he thought of a new way in which to express the oldest emotion in the world. It really was thrilling to watch them—the atmosphere was so full of love that we seemed to absorb some of the overflow. There were thousands of Valentines piled one on another and while we stood there a feathery cloud gathered over our heads and showered envelopes by the millions and something else that we could not understand.

"These are love seals," remarked one little cupid stooping to pick them up and placing them very carefully in a golden basket.

"These seals are most important parts of love letters. Each seal contains the beautiful soul of a flower"

"You know the souls of flowers find their heaven in the love of two united hearts."

After this remark we felt that we were treading on sacred ground. Cupid's land is full of miracle of resurrection, growth and loveliness. Then we walked about among the flowers where even the little leaf nerves seemed to thrill with love and joy.

"You have even the birds mate on Valentine Day," I overheard one little fellow remark to his neighbor as he thrust the tiniest of tiny arrows into some lilies of the valley. "I presume those were the arrows for the little birds and do you know they were actually made of gold.

Just then a golden cloud gathered in the West and quickly spread till it reached Cupid Land.

What do you think that cloud was?

Why just millions of yellow canary birds and they hopped all about the magical fountain surrounded by golden pens. After resting one minute each one took a Valentine in his mouth and flew away, and they will all be mailed on St. Valentine's Day.

Cousin Doris Letters

Cousin Doris will give a prize of a book to the boy who will write the best letter describing his favorite game and a prize book will also be given to the girl who writes the best letter describing her favorite game. Let us have many letters from our boys and girls.

In this way our cousins may learn new games.

Girl's Prize Letter

Dear Cousin Doris:—I have read so many of the boys' and girls' letters that I thought I would write one too. And I hope to see it in print, and if I don't I shall be very much disappointed as this is my first attempt.

My brother takes the "Canadian Thresherman" and I always like to read the letters sent by the boys and girls.

I live with my mother and four brothers and three sisters. Their names are Lida, Zachariah, Edward, Marjorie, James, Clara, Colin and myself, Florence. I stay at home and go to school. I tried my Entrance last June and I passed. I am thirteen years of age.

The school I go to is about one mile and a quarter from home. The school is situated on a lovely hill. We have a large school-ground. Our teacher's name is Miss Burns.

We live about two miles from a little country village, named Molesworth. There are two stores, a post-office, a blacksmith shop, a cheese factory, a shoe-maker, and about a dozen houses.

I leave for school about 8:30 a.m. and return home at 4:30 p.m.

I go for the cows, and mother milks them. We have eight altogether. We have about forty head of cattle, ten horses, about twenty geese and turkeys, four ducks, seventy hens. For our pets we have a collie dog named Towzer, and two kittens. The dog is my little brother Colin's. He is seven years old. The kittens are one black and the other white. Their names are Dickie and Snow-ball.

I was away for three weeks in my holidays this summer to Muskoka. I was on Lake Muskoka, Lake Rosseau, Lake St. Joseph and Lake Gull. I had a lovely time.

I hope my letter is not too long and I hope it will escape the waste basket. I wish your paper every success. I remain, yours truly, Florence McCallum, Molesworth P.O., Ont.

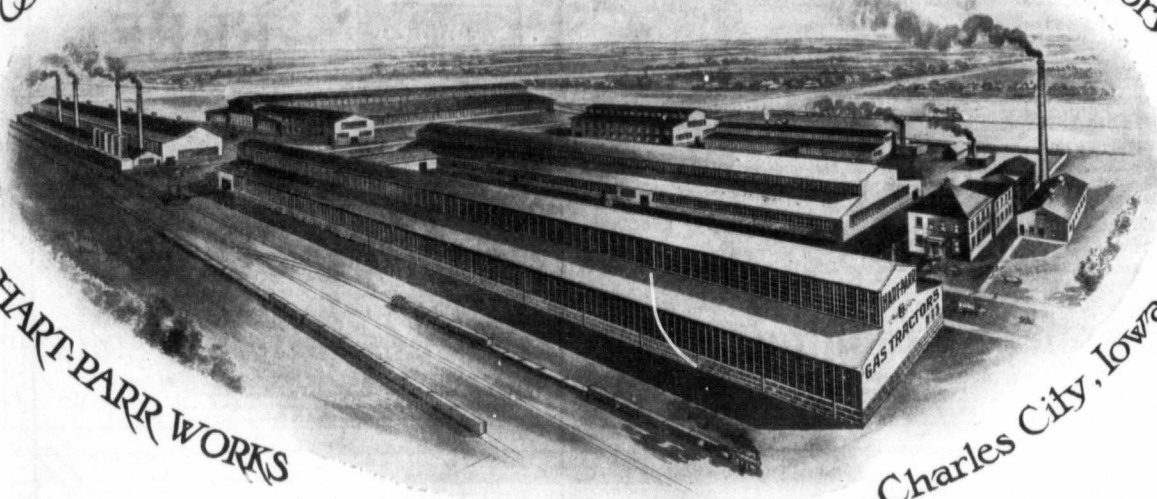
Dear Cousin Doris:—As I have read over a dozen times the first girls' lesson I thought I would try and answer some of the questions. I am not very good at answering questions but hope to get some of them right because I would like to have another prize book. Will answer the first, I think: which is the most nourishing, the carrot or tomato? Ans.—tomato. When are they poisonous? Ans.—Some before they are ripe. Poultry? Plymouth Rock. Housekeeping? And because some have hired girls and do nothing; some have no hired girls and have to work with all their might from day-

The Worlds Largest

Gas Tractor Factory

HART-PARR WORKS

Charles City, Iowa



The above represents the latest view of the Hart-Parr Works, Charles City, Iowa, beyond question the largest gas tractor works in the world. The buildings are all fire-proof in construction, being made entirely of concrete and steel, even the roofs being of reinforced concrete. The machine shop is 85x523 feet; the erecting shop is 100x600 feet; the grey iron foundry 60x143 feet; a power and testing building 65x150 feet; a heating plant 65x150 feet; the store building 70x151 feet, two stories high; a pattern shop 30x50 feet, besides an office building 32x60 feet, two stories high. Next year a new grey iron foundry will be erected. The whole is equipped with the most modern tools and appliances, and at the present time nearly seven hundred men are employed, and the capacity for 1910 is twelve hundred "Modern Farm Horse Tractors," which now go to every part of the world. Such is the great concern which eleven years ago went begging for capital in the city of Madison, Wisconsin, and sought more friendly quarters in an enterprising little Iowa town, which it has builded to a great city. The annual product reaches way over a million dollars.

light till dark, while men are poor and wealthy.

Because God made some men to be wealthy and some to be poor. Well, it is now half past nine in evening and time to go to bed.

Would like a prize book. Hope my letter will escape the wastepaper basket. Wishing your paper every success, I remain, yours as ever, your cousin, Olga Letrud. Box 31, Young, Sask.

P.S.—I am now learning to sew a quilt; like it fine.

The Boy Who Knew How.

BY F. LOVELL COOMBS IN ST. NICHOLAS.

ONE afternoon Alex Ward, the son of the station agent at Bixton, returned from school to find his father and mother packing his own suit case.

"Why, what's up, Dad?" he exclaimed.

"You are off for Watson Siding in twenty minutes, to take charge of the station there to-night," said his father. "The regular man is ill, the despatcher had no one else to send and asked for you, and I told him you'd be delighted."

"Delighted. Well, rather!" cried Alex, gleefully, and throwing his school-books into a corner, he dashed up-stairs to change his clothes.

Needless to say, Alex was a proud boy when shortly after

seven o'clock he reached Watson Siding, and at once took over the station for the night. For it is not often a lad of fourteen is given such responsibility, even though an expert in sending and receiving messages.

Alex was soon to learn that the responsibility was a very real one. The first hour passed pleasantly enough, but owing to a steady rain during the last two days, a heavy spring fog had set in, and shortly before ten o'clock Alex found, to his alarm, that he could not make himself heard on the wire by the despatcher. Evidently there was a heavy escape of current between them, because of the dampness.

Again the despatcher called, again Alex sought to interrupt him, failed, and gave it up. "Now I am in for trouble," he said in dismay. "If anything should—"

From apparently just without came a low, ominous rumble, then a crash. Alex started to his feet and ran to the window. He could see nothing but fog, and hastily securing a lantern, went out onto the station platform.

As he closed the door there was a second terrific crash, from the darkness immediately opposite, and a rain of stones rattling against iron.

"The bank above the siding," cried Alex, and springing to the tracks, he dashed across, and with an exclamation brought up before a mound of earth six feet high over the siding rails, with a considerable "spill" on the main track.

As he gazed Alex felt his heart tighten. The west-bound Sunset Express was due to take the siding in less than half an hour, to await the Eastern Mail; he saw that if the engineer misjudged the distance in the fog, and took the siding at even moderate speed, there would be a terrible calamity.

And suppose the cars were thrown onto the main line track, and the Mail crashed into them! And, apparently, he could not reach the despatcher, to give warning of her danger.

What could he do to stop them? Helplessly Alex looked at the lantern in his hand. Its light was smothered by the fog within ten feet of him.

Running back to the operating room he seized the key and once more sought to attract the attention of the despatcher. It was useless. The despatcher did not hear him.

But he must attempt something! Determinedly he sprang to his feet. A lantern was use-

less. Then why not a fire? A big fire on the track? Hurrah! That was it! But—he gazed at the coal-box, and thought of the rain-soaked wood outside, and his heart sank. Then came remembrance of the big woodshed at the farm-house were he boarded, three hundred yards away, and in a moment he had recovered the lantern, and was out, and off, running desperately.

On arriving at the house Alex found all in silence, and the family retired, but without a moment's hesitation he rushed up to the front door and pounded on it with his fists.

It seemed an age before a window was raised. "Mr. Moore," he cried, "there has been a landslide in the cut at the station, and there is danger of the Sunset running into it. May I have wood from the shed to make a fire on the track?"

"Gracious! Certainly, certainly!" exclaimed the voice from the window. "And the boys and I will be down in a minute to help you. You run around and be pulling out some kindling."

Alex darted about to the woodshed; there the farmer and his two sons soon joined him, and each catching up an armful of wood, they were quickly off for

the railroad, Alex leading with the lantern.

Reaching the tracks, they hurried east, and a quarter-mile distant halted and began hastily building a huge bonfire between the rails.

"There," said Alex, as the flames leaped up; "that ought to stop her."

Then the three hastily secured shovels and more lanterns at the depot, and soon were hard at work on the gravel covering the main track.

They had been digging some ten minutes when suddenly Billy paused. "Listen," he said. "There's a horse comin, on the run."

"It must be something urgent to make a man drive like that in the dark," said Mr. Moore.

There was a sound of scrambling and plunging, and out of the darkness came a man's excited voice: "How near am I to the station?"

"Right here below you!"

"Thank heaven! Run quick and tell the operator there has been a landslip in the big cutting just beyond the river! My son discovered it when coming home by the track from a party."

For a moment Alex stood speechless at the futher calamity, then once more dashed for the station. To reach Zeisler, two miles west of the cut was the only hope for the Mail.

Rushing in to the instruments, he in feverish haste began calling "Z. Z. Z!" he whirled. "QK! Z, Z, WS!"

There was no answer. "Z" heard him no more than did the dispatcher.

A feeling of despair settled upon the boy. But again returned the old spirit of determination and contriving, and, spinning about in his chair, he cast his eyes around the room for some suggestion. They halted at the big stoneware water cooler.

On'y a few hours before, during an idle moment, the similarity of the big jar to a gravity cell had occurred to him, and the speculation as to whether it could not be turned into a battery if need be.

Could he really make a battery of it? If he could, undoubtedly it would be strong enough to so increase the current in the wire that both Ziesler and the dispatcher could hear him.

He ran to a little storage closet at the house that afternoon where there was enough bluestone! But no copper or zinc.

As though directed by Providence, his gaze fell on the floor-board of the office stove. It was covered with a sheet of zinc! And even as he uttered a glad "Good!" there came the remembrance that at the new house that afternoon he had seen a fine new wash boiler— with a thick copper bottom.

"That's it," cried Alex, again catching up the lantern and darting for the door.

A short distance from the depot Alex was sharply halted by a long, muffled whistle from the east. "The Express!" he exclaimed, and in keen anxiety waited the next whistle. Would it be for the crossing this side of the bonfire, or—

It came, a series of quick, sharp toots. Yes; they had seen the fire!

"Good! good! she's safe at any rate," said Alex at once running on.

A few minutes later he suddenly appeared in Mrs. Moore's kitchen.

"Mrs. Moore, where is your new copper-bottomed boiler? I must have it quick," said Alex.

"What! My new wash boiler!"

"Yes; the copper-bottomed one. It's a matter of life and death!"

The astonished woman hesitated, then wonderingly, pointed toward the outer kitchen; Alex ran thither, and quickly appeared with the fine new boiler on his shoulder.

"And I must have that kettle of boiling water," he added, on a thought. "I'll explain later." And catching it from the stove, he rushed away.

As he ran Alex further formed his plans, and once more at the station, he placed the kettle on the office stove, emptied the bluestone into it, and poked up the fire. Then, with a hammer and chisel, he attacked the copper bottom of the boiler.

He was still pounding and cutting when presently there was the sound of hurried footsteps without, the door flew open, and a voice exclaimed: "For goodness sake, young man, what are you doing? Why are you not at your wire, trying to stop the other train?"

It was none other than the division superintendent of the road, who had been aboard the Sunset.

Only pausing a moment in his work, Alex replied: "I can't reach anybody, sir, the wire is so weak, and I am making a battery of that water-cooler, to strengthen it. It's the only hope, sir."

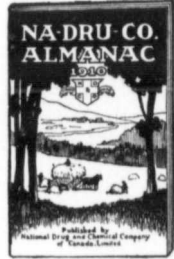
The superintendent uttered a horrified exclamation, then quickly added; "Here, can't I help?"

"Yes, sir," replied Alex, promptly: "Lift up the stove and slide out the floor-board. I must have the sheet of zinc off it."

And a few minutes later a group of passengers from the stalled train, seeking the cause of delay, paused in the doorway to gaze in blank astonishment at the spectacle of the division superintendent of the Middle Western, his coat off, energetically working

Continued next month

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1909 has been the most successful year in the business of THE GREAT-WEST LIFE ASSURANCE COMPANY. The following are the essential figures for the year:

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Business in force, December 31st, 1909	45,990,686
INCREASE for the Year	6,124,900
Business Paid for in 1909	5,936,769
INCREASE for the Year	1,457,382
Interest received during 1909	392,970
INCREASE for the Year	75,134
Total Assets, December 31st, 1909	6,866,725
INCREASE for the Year	1,269,513
INCREASE in Surplus to Policyholders	271,059

The year's business is yet another argument in favour of insuring with
THE GREAT-WEST LIFE ASSURANCE COMPANY
Head Office - Winnipeg

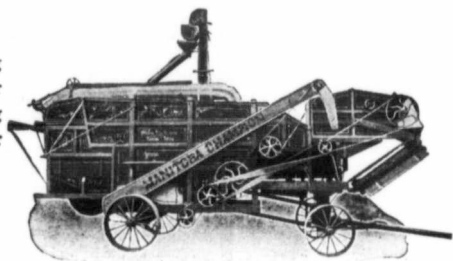
60 YEARS IN BUSINESS - - OUR DIAMOND JUBILEE YEAR

Results are what Count

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Our 60 years' experience in the building of Threshing Machinery has enabled us to overcome all of these difficulties, and we build to-day a Separator which heads the list as a producer of **GOOD RESULTS.**

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60 YEARS IN BUSINESS - - OUR DIAMOND JUBILEE YEAR

60 YEARS IN BUSINESS

60 YEARS IN BUSINESS

It's Quality That Produces Results.



At no period in the history of the Canadian West has there been so much advancement agriculturally as in the past few years.

So much depends on the outcome at harvest that the quality of the seed sown is becoming a matter of great concern by every practical farmer and gardener.

Experience of experts prove conclusively that high yields are in proportion to the quality of the seed used.

We question if many farmers (unless they are growing Pedigreed Seed) appreciate the care, time, cost and enormous task of growing pure seed.

There can be no doubt about the advantages and profits that

accrue to our farmers and gardeners from growing acclimatized Seeds. For this reason, notwithstanding, the well known seedsmen, A. E. McKenzie Co. Ltd., have an enviable reputation from Coast to Coast. We believe but few of our readers realize the magnitude of the Seed industry as carried on at Brandon by this institution.

Early recognizing the absolute need for good seed, and strong believers in heredity they located right in the heart of the greatest and richest farming country in the West, where every opportunity to secure, experiment, test, prove, studying existing conditions, out, grow, develop, and im-

provements in every locality, they have through their intelligent application of the principles of plant improvement, established types that are peculiarly adapted to the varied climate and soil conditions of this Western Country.

We question if any commercial enterprise demands the rare abilities of competent management as the seed business.

In addition to being practical, business men they are experts in the knowledge of seed selection, plant breeding, climatic environment and cultivation.

As an organization they have every facility and perhaps one of the best systematized institutions

in the West enabling them to care for correctly and with dispatch, their enormous business, which in this day of advanced commercialism means everything.

As the importance of seed selection and the origin of growth is of vital importance to every seed user the policy of this house in issuing a magnificent illustrated catalog affords every opportunity of the consumer dealing direct.

In sending out to every merchant their attractive seed boxes it enables the vast foreign population to make their selection and secure the seeds particularly adapted to their locality.

Aside from the immensity of the institution and its thoroughly equipped organization the one thing that especially impressed our representative during his visit was the painstaking care exercised from the smallest subordinate up, that every seed be of the highest standard and must sustain the integrity and reputation of and be everything their name implies.*



JUST CHAFF

He who is displeased with everybody is much more unhappy than he with whom nobody is pleased.

The man who is careful not to lose two things—his temper and his head—will find it difficult to escape becoming a million ire.

At the end of the game the king and the pawn both go into the bag.

Don't stop the plow to catch a mouse.

A hasty man drinks his tea with a fork.

May we be happy when alone and cheerful when in company.

Some people are lazy in getting to work and slow after they do get to it. Probably they wrap themselves up in the same mantle of self-complacency as the Irish laborer did when the section foreman accused him of allowing his pick to remain too long in the ground at each successive stroke of the implement. "Sure, and don't I be after letting it stay as long up in the air to make up for it?"

A man in a Dublin restaurant called a waiter to him and said: "Waiter, look here. Isn't this a cow's hair in my butter?" The waiter took up the butter, examined the hair, and then replaced the plate before the patron with a nod of satisfaction. "Yes, sir," he said, "that's a genuine cow's hair. We serve them with our butter, sir, to show that it isn't oleo-margarine."

The length of this line indicates the ton of coal as dug by the miner
 This one indicates the ton shipped to the dealer.
 The small dealer gets a ton like this.
 This is the one you pay for.
 This is the one you get.
 The residue is:
 Cinders and
 Ashes.

And this line will give you some conception of the size of the BILL.

It is easy to shout when everyone is shouting, but who will shout by himself.

He who stumbles twice over one stone deserves to break his shins.

To have a thing is little, if you're not allowed to show it,
 And to know a thing is nothing, unless others know you know it.

If a donkey brays at you, don't bray at him.

The love of glory, the fear of shame, the design of making a fortune, the desire of rendering life easy and agreeable, and the humor of pulling down other people, are often the causes of that valor so celebrated among men.

Beware of paint," whether on walls or on women.

Under some circumstances it may not be disagreeable to have a jealous wife, for she will always be talking of what pleases her husband.

People who love in glass houses should pull down the blinds.

It is not what we can earn but what we can borrow that makes some of us rich.

Be good and you'll be happy, but you won't get your name in the papers so often.

If wisdom's ways you'd wisely seek,
 Five things observe with care
 Of whom you speak, to whom you speak,
 And how, and when and where.

It takes nine tailors to make a man and one woman to break him.

"Go to father," she said when I asked her to wed,
 For she knew that I knew that her father was dead,
 And she knew that I knew what a life he had led,
 So she knew that I knew what she meant when she said
 "Go to father."

Money talks but nobody notices what kind of grammar it uses.

In these days when all would be teachers, scholars must be coaxed.
 Women have so much heart that they don't need any conscience.

If You Had Confidence
 in some man to select a piano for you
 would you buy your piano by mail ?

I have figured for some time how I could make a satisfactory offer to those who cannot come to the city to select their piano and I am now in a position to make a proposition that should appeal to all.

Is there anyone more qualified to judge an article than the man who makes it? Is there any place that a choice can be made from a number of that article more satisfactorily than the place in which it is made?

Knowing Mr. Harry Durke, the proprietor of The Mendelssohn Piano Co., to be a piano maker of ability, and one who is interested in every piano that leaves his factory I wrote asking if he would consent to personally select pianos for our mail order customers and received the following reply:

"Lindsay Piano Co., Ltd, Winnipeg
 Gentlemen,

We are in receipt of your letter of the 15th Inst., and our Mr. Durke will be pleased to personally select all pianos ordered to be shipped direct under your mail order offer. We have a number of style E pianos under way at present, and will take special care in finishing these instruments in anticipation of several orders next month. We feel sure a number of your good people in the West will take advantage of your very liberal offer.

Yours very truly,
 MENDELSSOHN PIANO COMPANY.

You will notice the style E piano is mentioned. This is the style which, by record of sale, has proven to be the most popular with our customers.

With the assurance that Mr. Durke will select each instrument personally, I am confident that I can supply you with a piano that will give you perfect satisfaction and I make you the following offer knowing that I have the ability to fulfil every part of it.



Mendelssohn
 Style E

Mahogany and Walnut

4 ft. 6 in. high
 5 ft. 1 1/2 in. wide
 2 ft. 3 in. deep

I will have a piano of this style, especially selected for you by Mr. Durke of The Mendelssohn Piano Co. shipped direct from the factory delivered free at your station for \$300 (\$50 less than the regular selling price). You pay on arrival \$15 cash, and \$10 per month until paid in full, or I will arrange terms to suit you, covering a similar period.

If the piano is not perfectly satisfactory to you on arrival, you can ship it to Winnipeg at our expense and it will cost you nothing.

I can make you this exceptional offer because I have confidence in Mr. Durke's ability and desire to send you a perfect piano, and because if you buy by mail I save the salesman's salary and expense. Will you write me about it.

NORMAN J. LINDSAY,
 President Lindsay Piano Company, Ltd

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NICHOLSON & BAIN, Agents
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Acquitted

Continued from page 61

engaged in a down-town department store, only to lose the chance by too truthfully giving his name.

The little wife at home was making a hard struggle. They had moved into the back part of their small home, and a card, "Rooms to let," hung in the window. She had even advertised for and secured sewing; but seeing her sitting at night with red eyes and stooping shoulders made the evenings a torture to the man across the little centre table.

And then one day he got work. The strike on the traction lines had left the company crippled, and there was work for any one who had courage enough to run the gauntlet of stones and abuse from the union men. Carter's knowledge of the work was nil, but his courage and resolution were dauntless. He took the car once over the route, with a brawny Irishman to show him, and then went out bravely alone, coughing always, dodging a brick occasionally, looking the other way sometimes, to avoid forcing a recognition from former acquaintances.

He took the car out for a week, wearing a blue coat much too large over his black trousers, and going home at midnight with blistered hands and aching feet. At the end of the noon run on the seventh day he was called into the superintendent's office at the power house. He waited a moment there, standing back from the window, for along the curb across the street a half-hundred strikers were watching the office. When the superintendent came in he held a placard in his hand and his face was apoplectic with rage.

"Look what those hell-hounds have been doing," he snarled. He held up a card for Carter to read.

"The Public, Attention! Through ill-treatment and violation of contracts the Empire Traction Company has lost its skilled employees. Now it is insulting the public by filling their places with the scum of the city jails. They can't deny it."

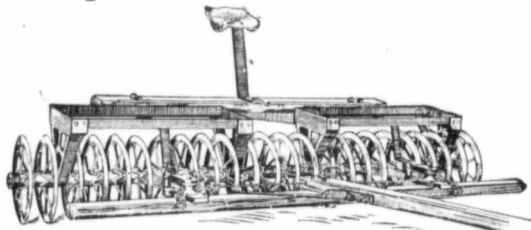
Carter's hands clenched as he looked at the jeering crowds across the street.

"The—puppies!" he said. Mr. Williams, you know the story; you know that I have no redress. Is there any chance for me anywhere in God's world?"

The superintendent shook his head.

"I don't like to do it, Carter. Under other circumstances I'd keep you on; but there's been a good bit of talk about our new franchises, and if the public gets the idea into its head that we're trusting our cars to ex-convicts, there'll be a howl. Maxwell

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20 Wheel. Width, 9 ft. 7 in. Weight, 1400 lbs. Patented June 27th, 1909.
24 Wheel. Width, 12 ft. Weight, 2300 lbs. Manufactured in Winnipeg.

Several hundred of Western Canada's most progressive farmers have purchased and are using this implement which was formerly sold as the Brandon Sub-Surface Packer, and the result from fitting the soil with it has proved to them, beyond a question of doubt, that a strata of well packed soil several inches thick will produce a better crop than soil that is not packed at all, or only slightly packed on the surface. Improvements have been recently made and added to the old machine making it more complete and better than ever as a soil packer. Catalog and testimonials furnished. Our new facilities for manufacturing this machine enable us to turn out a better implement and at a considerable reduction in price over the old machines. You get more packer quality for less money. Get our prices before purchasing a packer of any make. We can save you money.

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518 Somerset Block Winnipeg, Canada

Alex. Naismith, Pres. Wm. Paterson, Vice-Pres. C. D. Kerr, Treasurer

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A. F. KEMPTON, Secretary-Manager

Amount of Insurance in force Dec. 31st, 1907	\$20,355,303.00
Assets over Liabilities	269,273.10

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Over 16,316 Farmers Insured. The Largest Agricultural Fire Insurance Company west of Lake Superior. Agents wanted in unrepresented districts

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over there has your envelope."

As Carter left the office he had a bad paroxysm of coughing, which left him trembling and covered with perspiration. With a sudden resolution he took the dime which usually bought his noonday soup and rolls, and going down the steps to the basement dispensary of the hospital in then next square, dropped it into the fee box.

He sat a long time in the waiting-room among a motely crowd of Slavs and Lithuanians, half the women with babies. The place reeked with iodoform and carbolic acid, and having had nothing to eat since early breakfast he was faint and nauseated when his turn came.

The doctor in the little, pen-like consulting room was thorough and conscientious. He sounded Carter carefully over the chest, and listened to his breathing. Then he wrote the prescription and handed it to him. "You're anaemic, run down," he said. "Haven't been getting out enough in the air. Occupation, clerk, I suppose?"

"Something of the sort," Carter said evasively. "For two years I have had very little chance for air and exercise."

"Well, the lungs are not bad—yet. But there's a bit of solidification in one, and—I suppose it's no use to tell you you'd be better off, say, in Arizona."

"No use at all, sir; but thank you." Carter got up stiffly and turned to the door.

"Sleep with all the windows open," the doctor called after him, "and come again in a week."

He stumbled home, and finding the house empty threw himself on a sofa, too weary and wretched even to think. There his wife found him, late in the afternoon, sound asleep, with little drawn lines of suffering around his mouth; and realizing something of what had happened, she kissed him softly and darkened the room.

She took unusual pains with the supper that night, but little was eaten. Then, after putting Edith to bed, she went out to take home some sewing. Left alone, Carter sat for a time, his chin on his breast his hands gripping the arms of his worn leather chair. After a bit he got up, and began systematically to go over his papers—if the doctor was right they would need be in order. He laid out files of rent and tax receipts, grocery and gas bills, lodge notices—there was little of importance. He fingered his revolver lovingly. It offered an easy solution, albeit a cowardly one—just to his temple like this, and there would be his insurance. Ah, his insurance!

Some one had been ringing unheard at the open front door. Now

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seeing the light, he came in, to stop, startled, at the tableau before him.

"Put that down, Carter!" he said sternly.

With a start Carter turned, to see Mr. Walcott in the doorway. He rose to his feet a trifle dizzy with surprise.

"I wasn't going to kill myself, Mr. Walcott. I might have; but, heaven above, man I can't even die! My insurance was put up as collateral two years ago to pay my lawyers."

He put the revolver in his desk and closed the drawer. Mr. Walcott was unpleasantly conscious of the tragedy in the other man's voice.

"Have a cigar," he said, proffering one and lighting his own. But Carter did not care to smoke. The two men sat down, Walcott impressive and expansive, the other shrinking and crushed.

"I've been thinking things over a little," said Walcott; "the firm had not thought of your not finding another position easily. We had filled your place, and in our estimation that ended the matter. But it seems Mrs. Carter's been doing some sewing for a friend of my wife, and so the story came to me."

Carter flushed. "I wouldn't wish my worst enemy the humiliation of having his wife work to support him.

"And so," went on Walcott pompously, "as we've decided to start a San Antonio branch, I am authorized to offer you the position as manager down there. You're the best man we know for the place; you know the business from the ground up."

Carter got up, his small, worn figure proudly erect, his hands clenching nervously.

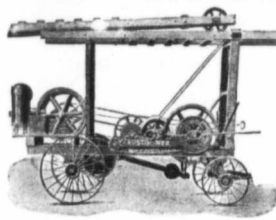
"You're offering me more than that Mr. Walcott. You're giving me back my pride, my self-esteem. Thank God, I can be a man among men again!"

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Some one asked when the first threshing machine was made and although I cannot answer that, I can tell when the first one was made and operated in this vicinity. In 1828 my father, J R. Davis, built the first stationary thresher that was made in western New York, in the town of Hartland, Niagara country. It was first made with a wooden cylinder, which, proving unsatisfactory, was replaced the next year by a metal one.

After drawing the grain to the thresher, the farmers were obliged to draw it to Rochester, that being the nearest point where it could be grown or marketed, the distance being, I believe, between fifty and sixty miles.—Mrs. L. Wakeman.

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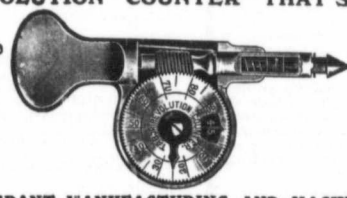
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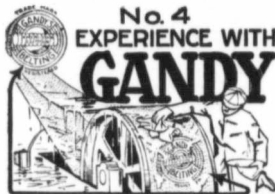
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This belt has been running for several years, and working under the unfavorable conditions it does, we have no fault to find with it.

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(Signed) F. A. Lazenby, Pres.

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New York Office 189-90 Reade St.

My First Jumper

Continued from page 53

where the fire was burning brightly.

When he saw my eyes open he heaved a great sigh of relief. "Well how do you feel now," he inquired as he assisted me to a sitting position in the bed. "Not too bad," I answered, for I really didn't, I could feel my back was still sore but it was bandaged, and except for a severe headache I felt fairly well.

"Could you wait here for half an hour," he asked me, "and I'll go and get the deer." "Get the deer" I replied. "Did you get him after all?" "No you got him yourself," he replied. "Just you sit quiet and I'll tell you all about it, and then you can lay down and sleep till I get supper and we'll go home in the morning."

"As soon as I saw you knocked down I left the horses and ran to see if you were hurt. On the way I saw you try to get up and knocked down again. Hurrying as fast as I could, I managed to reach your rifle which I saw you drop. It was laying with a shell in the chamber. When I turned to shoot the deer, he was already laying down almost dead from the loss of blood. I called to you, but as there was no answer, I ran over and shot the old buck in the head, to ensure no further trouble. Then I walked over and looked at you. You were unconscious, so I brought you home and bound up your sore spots, so now just roll over till I get supper ready."

I soon fell asleep dreaming of the adventure. In the meantime Walter got the horses and drew home the deer. Then he prepared supper, choosing some of the tenderest of the animal's carcass for meat. When he had the meal ready he came over and woke me. "How do you feel now, old sport," he asked, "strong enough to swallow a cup of tea?" I tasted the preparation, then looked up and grinned. "Beef tea?" I inquired. He nodded. It sure was a cup of beef tea stewed from My First Jumper.

Few words have so remarkable a history as the word "bankrupt." The money lenders of Genoa, Venice, and Florence, had benches or stalls, in the bourse or exchange, in former times. At these benches they conducted business. When any of them became insolvent, his bench or bank was broken, because he had no further use for it, and the name banko root, or broken bench was given to him.

When the word first came into England, it was nearer the Italian than it is now, being "bankerout," instead of bankrupt.—East and West.



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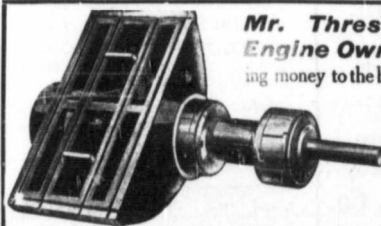
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Making The Canadian Thresherman and Farmer

Concluded from page 34

can perhaps form some idea of the large staff required to take care of them. Every name must be handled as if it were the only one on the subscription list and handled just as carefully and even with all the care that is exercised things will sometimes go wrong.

The last operation before the subscriber receives his paper is the wrapping of the papers. This is done by boys who are experts in the business and who can wrap several thousand in a day. The wrappers, however, after they are addressed must be all sorted into Post Office routes in order to enable the Post Office Department to handle them quickly so that each subscriber may get his paper within the proper time.

We have gone into this brief description merely to show our readers some of the work necessary to get out a publication and we extend a cordial invitation to each and every one of our readers at any time they are in the city to call on us at our new offices, 302 Enderton Building and we will be pleased to show them in detail the working out of a magazine such as ours.

Farmers Meetings at Saskatchewan.

The Saskatchewan Department of Agriculture is now engaged in the arranging of circuits of farmers' meetings throughout the province, at which lecturers on agricultural topics will speak. Lecturers are provided by the department to address meetings in Saskatchewan, and are sent free of charge to districts that undertake to provide accommodation and work up a good meeting.

The meetings held during the winter months are confined as far as possible to the lines of the railway in order to avoid difficult and disagreeable drives during the cold weather. During the summer, however, courses of meetings are arranged at places in the newer districts where it is impossible to hold them during the winter.

Last year about 150 agricultural meetings were held under the auspices of the Saskatchewan agricultural department, and this season it is expected that the number will be increased. To this educational work as well as to the favorable season, a measure of the success that our farmers experienced may undoubtedly be traced. It is reasonable to assume that by the adoption of the most approved methods of cultivation the production of any district may be increased, and this is one result that the department has

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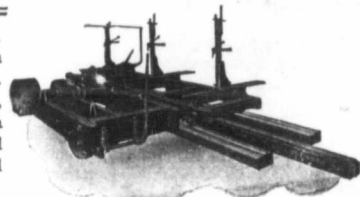
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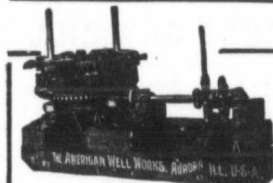
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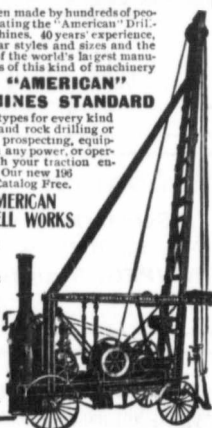
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this year by the department include such capable and well known farmers as Superintendent McKay of the Indian Head Experimental Farm, Norman M. Ross, Superintendent of Tree Planting Division, Indian Head, A. P. Stevenson, a well-known horticulturist of Manitoba, Matthew Snow, Assistant Warehouse Commissioner, Winnipeg, Duncan Anderson, Orillia and William Newman, Lorneville, Ont., John A. Mooney, formerly of Valley River, Man., but now of Regina, John Millar, Indian Head, J. H. Fraser, Qu'Appelle, P. M. Bredt, Regina, A. B. Potter, Langbank, as well as members of the agricultural department Regina, including Hon. W. R. Motherwell, Commissioner of Agriculture, W. J. Rutherford, Deputy Commissioner of Agriculture, W. A. Wilson, Superintendent of Dairying, T. N. Willing, Chief Weed Inspector, also Professor A. R. Greig of the College of Agriculture, Saskatoon.

The speakers will begin their circuits immediately after the Agricultural Societies' Convention, which will be held at Regina during the last week of January

Why Does a Watch Spring Break?

One of the unanswered questions, according to a writer in the Scientific American, is: "Why does a watch spring break?" Sudden electrical disturbances, extreme change of temperature and other causes for broken main springs, have been observed but, lacking these, why a watch spring should suddenly snap in twenty pieces when the watch is reposing quietly in its owner's pocket, is a mystery. We read:

"This spring is a piece of tempered steel, usually about twenty inches long, coiled in a barrel between the upper and lower plates of the movement. It is the motive power of the watch. It is made in degrees of strengths, widths, and thicknesses suitable to the watch is subjected to varying conditions from that of highest tension when fully wound to that of comparative rest when the watch is run down, and as it is constantly undergoing a change in resistance as its coils unfold, it seems to be the only part of the watch, subject to casualties, against which even careful use cannot always provide.

Some people would refuse to take advice if it were offered to them in sugar-coated capsules.

The heart is usually willing, but the pocketbook is weak.

Nature has saved some women the trouble of making a fool of a man.

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WANTED—One good Hart-Par plowing engine. State price and terms.—JOS. PATEL, Somerset, Man.

SOUTH AFRICAN SCRIP FOR SALE.—Cash and terms with good acceptable security to farmers in Alberta and Saskatchewan.—Address A. D. MARRY, Saskatoon, Sase.

ONE R. F. FIREMAN can learn locomotive fring for \$20.00 cash. Write to G. S. GEDMUNDSON, Frances, Man.

VALUABLE.—Farm for sale at a bargain if bought at once. All necessary buildings new, excellent location. Creek at stable, richly wooded, excellent pasture, good fences, near Regina, Saskatchewan. For further particulars, write A. K. C. O. M. W. KAPPELL, Pilot Butte, Sask.

FOR SALE.—South-African Scrip. Two years' terms to farmers with acceptable security.—ROMERIL-FOWLER & Co., Prince Albert, Sask.

FOR SALE.—One Avery Steam Plow, 1906 make, with an breaker and stubble bottoms and steam lift complete, at Elm Creek, Manitoba. For further information, address—WALTER M. GAMES, Nokomis, Ill., U.S.A.

WANTED—Second-hand Cockshutt engine and plow, 8 or 10 furrows. Lowest price, F.O.B. railway, JAS. W. MITCHELL, Arrow River, Man.

Widower will exchange Helmtzman 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 5079, 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 Specimens to the trade and direct, post up large bills, 7 feet wide and 9 feet high, back of a 45 H. P. Hart-Par Gas Traction Engine.—J. F. CROSSY, Hanlan, Sask.

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FOR SALE.—One dozen of our hardy, improved Bush cherries, prepared to any address in Manitoba, Alberta or Saskatchewan for two dollars. Perfectly hardy. Good cooking fruit. Catalog free. BUCHANAN NURSERY CO., St. Charles, Man.—Catalogue free.

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One 15 H.P. Case Traction Engine, with or without 28 x 50 separator. For sale or exchange with Gasoline Traction Engine.—WILLIAM BRANTHAY, Kelso, F. O. Man.

FOR SALE

One 50 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.

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Give these bargains your attention.
Four Case Portable Engines at \$1,500; two Minneapolis Tractors, \$600, 18 and 20 H. P.; one Advance Traction \$900
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.
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For price, terms, and conditions of any of the above engines write us. Our rebuilt engines are bargains.
J. I. CASE THRESHING MACHINE CO.,
Winnipeg, Manitoba.

FOR SALE

Two four bottom Mo'ine engine gangs with breaker bottoms and extra shares, price, \$150.—J. Hansford, Fairlight, Sask.

ENGINEER—Wants position on plowing outfit coming season in Manitoba, Saskatchewan, or Alberta, Saskatchewan certificate. Strictly temperate. Downy pairing. References furnished.—Edward Winchaster, Melia, Man.

Traveller Wanted.—Energetic, experienced Traveller wanted to sell Threshing Machinery in Manitoba and Saskatchewan. Address, Box 878, Winnipeg.

Farm Machinery -- Its Development.

Continued from page 10

have been known since 1836, but they are now much improved and built to cut from 16 to 40 feet.

British and American practices in threshing machines are radically unlike. The original Scottish thresher contained a drum with beaters acting upon the grain in the sheaf which was fed between rollers. This was afterward improved by making the beating drum work in concave, the grain and the straw being rubbed between the two and then carried to the shaker. "The Western improvement upon this apparatus," says a high authority, "consists mainly, besides numerous details which secure speed, lightness and effectiveness in having upon the drum spikes or teeth which pass between fixed spikes on the concave; the English still adhere to the flat beaters like narrow wings or slats placed longitudinally, with edges projecting outwardly from the drum."

HAYING TOOLS.

The tedder is another form of implement which was first patented and used in England; but the English tedder was too cumbersome for Western farmers and our inventors soon produced the light and efficient implements now employed. The horse rake was invented about the beginning of the nineteenth century. In its crude state it was estimated that it did the work of six men. Patents were granted for hay rakes as follows. A flop-over rake in 1822, spring-tooth rake in 1839, dumping sulky rake in 1848. In very recent years there have been numerous patents for side delivery and other improved forms of horse rakes. Machines for baling hay and straw date from 1853. The continuous press was invented in 1872, and is now in quite common use among farmers, especially in its mounted form, wherever it is desired to prepare hay and straw for long distance shipments. Hay presses at first operated by horse power are now moved by steam or gasoline engines. A later improvement in this connection was the self-tying device, which contributes to the elimination of labor.

DRY FARMING!

Dry Farming just a few years ago meant sure crop failure.

Today all through the great semi-arid belt where in 1880 to 1895 thousands of husky, ambitious men with their families were forced to give up their homesteads in poverty and despair, and millions upon millions of eastern money vanished because of continued crop failure from drought. A marvelous change has come, not by accident or because of climatic changes, but

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Yes, H. W. Campbell, the world wide recognized Father of the Great Revolutionizing Process of tilling the soil, known universally as the Campbell system of soil culture, has spent over 30 years farming in the West observing and directing soil tillage experiments.

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Farming the world over is now being moved by this CRANK.

Twenty years ago Campbell said the whole semi-arid belt could be successfully farmed, others agreed with great disgust.

Today it is being successfully farmed and all are smiling with great pleasure.

Five years ago Campbell said the average yield of the farms in every state in the Union could be doubled by Science in Soil Culture. He is proving it. Are you interested?

No matter where you farm, Texas, Canada, California, or Indiana, with irrigation or without, you can learn how to increase your crop from Campbell's Science for Farmers. Sample copy, latest issue, 10 cents. Yearly subscription, \$1.00. A postal card will bring free circulars describing the Text-Books, Map, and other publications. They are interesting.

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The most perfect and superior remedy or method known, with greater power to penetrate, absorb and cure than anything discovered in veterinary medicine or practice. Besides being the most luscious, "Save-the-Horse" is the most satisfying of all known remedies. It is effective and safe for all ages, making a blister, or leaving a particle of after effect.
Armstrong, Mo.—Enclosed \$5. Please send me bottle of "Save-the-Horse." I used your medicine three or four different cases with the results hoped for. I gladly recommend it. Ship on cons and collect. Yours truly, GIBBOW W. LEBLANC, Route 1, Allen, B. C.—Last year, with one-half bottle only of "Save-the-Horse" Spavin Cure, a customer of mine treated a sprained tendon of four years' standing in a horse had practically become useless. Many other cures had been applied without result. "Save-the-Horse" effected a complete cure.
Yours truly, C. H. BOURNE, Drugs and Stationery,
\$5.00 a bottle, with signed guarantee or contract. Send for copy, booklet and letters from business men and trainers on every kind of case. Permanently cures Spavin, Thoroughbred, English and Foxhounds, Curb, Spavin, Capped Hock, Windpuffs, Shoe Blisters, Favored Tendons & All Lamenesses. No cure or loss of time. Free circulars. Write for Free Circular. THEO. WINDMILL CO., 146 Van Horn St., Toronto, Ont. and Birmingham, N.Y.

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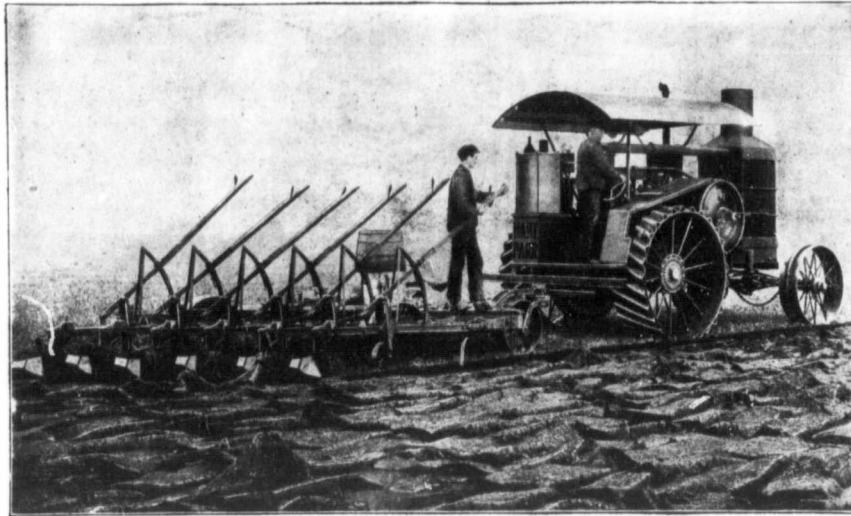
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The Hart-Parr Gas Tractor

A Reliable and Dependable Substitute for Horseflesh

With a big tract of land to be cultivated and with only horses to do the work, the problem of getting the most done in the shortest possible time is a serious one. Then, too, there is the question of reliable farm labor, always hard to get and always expensive.

Wouldn't a farm tractor that will do the work of FIVE MEN AND TWENTY-TWO HORSES, INTEREST you, when all that is required to operate it is one man and a supply of gasoline or kerosene?

The above is a sample of what the **Hart-Parr Gas Tractor** will do. Its success on hundreds of Farms has demonstrated that it is more than a substitute for the horse.

We would like very much to tell you about our Engine, for we are confident that we can put you in the way of doubling the output of your Farm in 1910 and at the same time decrease your operating expenses.

Would that mean anything to you as a Farmer? If so, write us and we will cheerfully tell you what this "**Modern Farm Horse**" can do for you and your Farm.

Results are what count—read the following

Nanton, Alberta, November 15th, 1909.

We, the undersigned, certify that the following work, most of which was done for us by Messrs. Bowser & Patterson, with a 22 H.P. Hart-Parr gasoline traction engine, from April 9th to October 28th. The work was done to our satisfaction.

957 1/4 acres breaking in 47 days, at \$3.00 per acre,	\$2872 50
Having pulled packer behind plows on 536 acres of above breaking at 50c. per acre,	268 00
408 acres stubble plowing in 17 days, at \$2.50 per acre,	1020 00
541 acres double discing and harrowing, at \$1.25 an acre,	676 25
77 241 bushels of grain threshed in 25 1/4 days	4223 40
Two buildings moved at 5.00 each,	10 00
Total,	\$9072 65

Greatest number of acres plowed in one day,	34 1/2
Greatest number of acres broken in one week,	147
Greatest number of miles travelled in one day,	38
Greatest number of bushel oats threshed in one day,	5118

Plowing was done with a six bottom 16-inch Emerson Engine gang. The Threshing was done with a 36 x 56 Aultman Taylor Separator.

Name	Address	Occupation
J. R. Eckert.	Nanton.	Agent for S. Development Co.
A. H. Maryland.	Nanton.	Farmer.
Oscar Lind.	Nanton.	Farmer.
L. Rue.	Nanton.	Farmer.
H. A. Brown.	Nanton.	Farmer.

We have not had the least bit of trouble with our Hart-Parr, and it has been working every day the weather would permit, pulling seven 14-inch Cockshutt Plows with perfect ease, lots of the land being heavy gumbo and every plow cutting from fifteen and a half to fifteen and three quarter inches at a depth of three and a half to four inches. Some days we broke over 25 acres. The Hart-Parr will never need a gold medal to sell it. Wishing you success, we remain,

Yours very truly, SWERDFEGAR BROS.

W. Gordon Smith of Eyebrow, Sask., broke 1,200 acres, disced 1,200 acres. Net profits, \$1,350.00.

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Today St. Valentine holds sway
He rules the land from sea to sea
He calls at every home today
I wonder what he'll have for me!

Perhaps a dainty missive sweet
With postmark from some foreign land
Or maybe something trim and neat
Bearing the stamp of Uncle Sam.

I only wish that some young miss
Would send a tip pointing the way
(Instead of lace or e'en a kiss)
To some good business that would pay.

Ah! I hear the postman now
Here's mother coming, smile on face
It's big—and it's for me I vow
I do declare it's marked "From Case"!

Mother, "I'll write to Case today
It's the "threshing business" for mine
That catalogue showed me the way
Its my prosperity
Valentine

J.I. CASE THRESHING MACHINE CO.

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