

W.C. TAYLOR

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THE CANADIAN THRESHERMAN -AND- FARMER

CANADA'S FARM
MACHINERY MAGAZINE

WINNIPEG

CANADA



JANUARY - 1910



ANIMATION 1

H. H. Heath COMPANY Publishers

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 just any one plow with a wrench while the engine and gang are working. This saves time and is a most important feature.

Works with Coulters

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

Level Platform

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

Standard Sizes

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

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

ILLUSTRATED BOOKLET FREE

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

John Deere Plow Company, Limited

Winnipeg

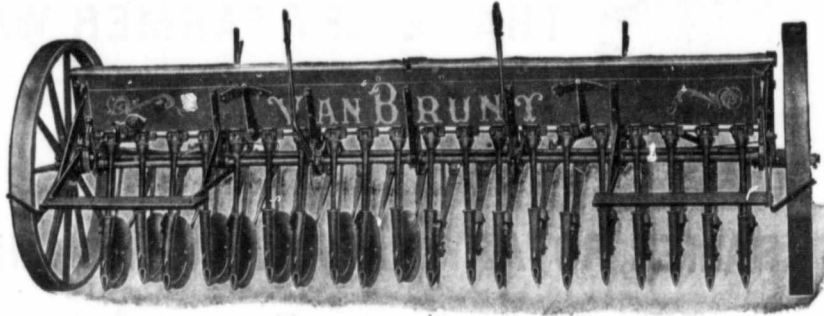
Regina

Calgary

Saskatoon

Edmonton

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 drills with stub axles and with pitch and gather in wheels. Pitch and gather in wheels is all right as they are on a thimble skein. 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 bother. 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 Tilting Lever is to 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. Gumbo, 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.

JOHN DEERE PLOW COMPANY LIMITED

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SASKATOON

LIGHT DRAFT JOHN DEERE GANG PLOW

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

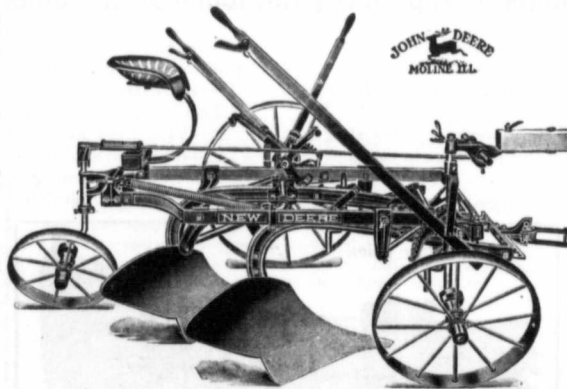
Plow quality does not improve with age.

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.



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.

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.

JOHN DEERE PLOW COMPANY LIMITED

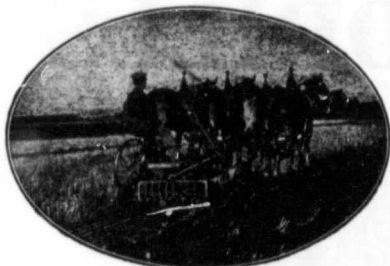
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HERE IS
**THE ONE IMPLEMENT
 THAT EVERY FARMER WANTS**

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.

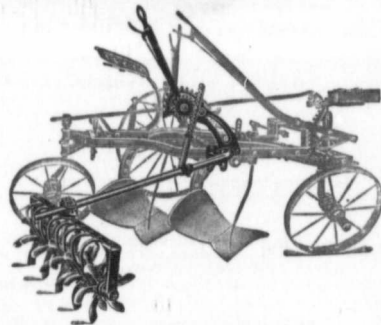
50,000 FARMERS ARE USING IT -- GET IN LINE. There will be 50,000 more users before the end of another year. It's too good a thing for you not to get the benefit of it.

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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THE
DAIN PULL POWER HAY PRESS

Has many points of superiority not found in any other Hay Press

No pitman for the team to step over or be crippled by. Compound leverage power makes light draft. Large feed opening and big hopper making it easy to feed and big capacity. Automatic Rocker tucker folds every overfeed, makes nice, smooth, square ended bales, the kind that pack close in cars and bring highest price on the market.

Bales can be tied from one side of the press, no getting down on knees or climbing over or running around machine to wire the bales.

Bales delivered in front out of dirt and chaff instead of in opposite direction like the pitman push power press does.

Can be coupled close together (telescoped) for moving.

Being built on the Pull Power Plan it can be set at the middle of a stack. One man less is

required on the stack to pitch the hay to this Press than to the push power press, which must be set at the corner of the stack. No heavy pitman to rebound or jerk the tongue—this press will not give your horses sore necks.

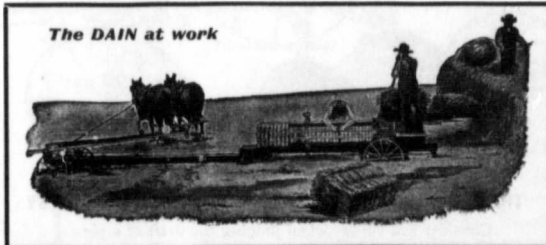
It is all steel and iron, simple and durable.

Full circle, two strokes to each round of the team.

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.

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

The DAIN at work



Write For Catalogue.

JOHN DEERE PLOW CO. LTD.

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**CANADIAN
PACIFIC**

WESTERN EXCURSIONS

Single Fare

Plus \$2.00 for the
Round Trip.

From all stations in
Ontario, Port Arthur and
West, Manitoba, Saskat-
chewan and Alberta, to

VANCOUVER

VICTORIA and

WESTMINSTER

Also to

OKANAGAN VALLEY

and

KOOTENAY POINTS

Tickets on sale Decem-
ber 16, 17, 18, 1909;
January 21, 22, 23 and
24; February 15, 16, 17,
1910; good to return
within three months.

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 want to take this occasion to take up the matter of renewals with our readers. This is the season of the year when we begin to carry out plans for our paper that we have been formulating during the year past. This is the season of the year when we take up new departments and enter into a discussion of new things which continue throughout the year, and unless our subscribers renew promptly there is always the possibility of missing an issue or two that contains a great deal of valuable information. It is an easy matter to let these renewals slip by. We notify everyone a month in advance of the expiration of their subscription, so that there is plenty of time for them to come back and have their name entered upon the list, so that they will not miss a single issue. If this matter, however, is delayed, it either means that they will not receive that particular issue or they will receive it a great deal later than they otherwise would. For example, when one of our subscribers was notified that his subscription expired in December, if he renewed at once, he would get the January paper immediately it was off the press, but if he let the matter go until the 18th or 20th of the month it would be sometime after January first before his name could be entered upon the list again and he would not receive his January paper until the latter part of January.

We simply tell these facts as an explanation to a number of letters that we receive from our subscribers, wanting to know why their paper has not arrived. The task of entering one name on the subscription list is not much, but when subscriptions are coming in by the hundreds the amount of labor to take care of these numbers is considerable and the names must of course be handled in their turn.

We want all our readers to renew promptly. We want to give every subscriber just the best possible service; but in order to do that it will require a little co-operation on the part of that subscriber as he in a sense is interested in the business with us. Do not put the matter off. Immediately you receive notice that your subscription has expired, the very next time you go up town send in your renewal and there will be no hitch whatsoever in the receiving of your paper.

We are still after your farm experiences. If every farmer in Western Canada would give us the history of his year's work it would prove to be such a valuable lot of information as would be worth thousands to this or any other publication. As we have said many times in these columns, every farmer at some time or other discovers some new method of doing certain things, or does many old things in new ways and he is benefitted thereby. It is just such things as these that we would like to have the farmers pass on to us. All we want are the plain facts. We do not care about the frills. Tell them to us just as you would tell them to your neighbor and we will do the rest.

We are offering some very valuable books for these experiences and all it will take is a small amount of your time with pen and paper to put them into shape to forward to us. We know that the majority of farmers do not care to write. It is with them a task, but we believe this matter of a task is more a prevailing opinion than a fact. It does not take long to sit down and fill two or three sheets of paper with something that you already know. You do not have to think it out. Just tell it to us as you know it. We want five hundred experiences for the month of January and won't you as you read these columns, be one of the five hundred?

What we may think of The Canadian Thresherman and Farmer and what others may think are opinions that perhaps do not always coincide. It is, however, a matter of considerable satisfaction to us when in the course of our correspondence, we receive hundreds of letters from our various subscribers whose opinions do coincide with our own. Here is what a few of them say:

E. H. Heath Co., Limited,
Winnipeg.

Wapella, Sask.

Dear Sirs:—

In reply to yours of recent date in which you state that I have sent in too much money for a year's subscription, but that you have applied it to an extension, will say that you could not have applied the money to better use. I get many useful hints out of every number of The Canadian Thresherman and Farmer. It is worth twice the subscription price.

Yours truly,

Charles Penwick,
Battleford, Sask.

E. H. Heath Co., Limited,
Winnipeg.

Dear Sirs:—

In sending in my renewal subscription for two years, I desire to express my appreciation of the quality of the articles in The Canadian Thresherman and Farmer and to say that your paper is a very valuable one, not only to threshermen, but to every farmer and ought to be found in every homestead in Canada.

Yours truly,
John Bridge.

KNOWLEDGE IS POWER



THERE is an old saying that "knowledge is power." It was true two thousand years ago when it was first uttered, and it is true to-day 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 Tractor 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.

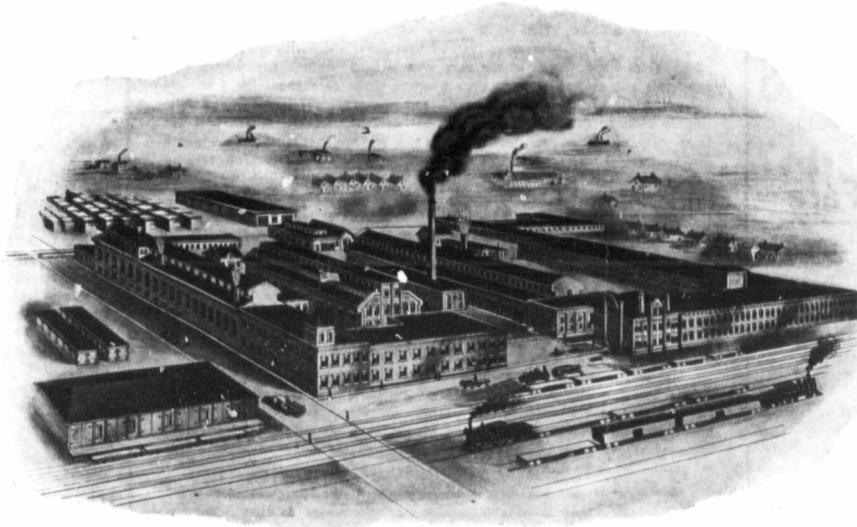
E. H. HEATH CO. Limited
WINNIPEG, CANADA.



Wishing You A Prosperous New Year



The Largest ENGINE and THRESHER Works in Canada



The SAWYER & MASSEY CO., LIMITED, Factory and Head Office, Hamilton, Canada, Established 1836,

Occupying 15 acres now nearly covered with modern steel, brick and stone structures, equipped with mammoth manufacturing appliances, capable of generating power and performing work equal to the largest plants in America.



¶ Here is a Trade Mark that for 74 years has stood for everything that is good and genuine in Thresher Goods.

¶ At this, the first of the New Year, 1910, we give our readers the above illustration of our Factory and Head Office to show them how, as a Canadian Industrial Institution, we have expanded and how well we are situated and equipped to give even better values than heretofore; values that cannot be reasonably given them by foreign concerns.

¶ When we say values we mean intrinsic values, not prices, for though some may beat our prices, they cannot beat our Engines and Threshers at the prices.

Mr. Thresherman, you will realize that Threshing and Plowing is only good business insofar as it can be performed thoroughly, quickly and economically.

¶ Now we assume that our customers will expect and demand this of us, and, rising to the occasion, we will not disappoint them. Our 1910 Engines will be found excellent to a degree as Threshers and Plowers, performing their work with minimum repairs, and our "Great West" Separator will be without question the best Separator and Cleaner found either in Canada or the United States.

¶ Send for our New Supplementary Catalogue and get in touch with the goods, as we will have them to offer you for 1910. Yours for Value,



ALWAYS ADDRESS
Sawyer & Massey Co.,
Limited

WINNIPEG



A MAGAZINE FOR THE FARM AND HOME



THE CANADIAN THRESHERMAN AND FARMER

Vol. XV.

WINNIPEG, CANADA, JANUARY, 1910.

No. 1.



1910 From The Farmers' Viewpoint

By E. S. W.



1909 was a banner year looking at it from any stand point you may. It was a year in which everybody and everything worked. The labor of man and the labor of nature went hand in hand with the result that a record crop was harvested. It was a glorious relief to a great many of our Western farmers, who after the rather hard years of 1907 and 1908 found that they were able to lift the mortgage and to clear off a great many debts that had been accumulated. The season itself was one in which it was a pleasure to work. Seed time came a trifle late, but when it did come it stayed and the growing season was all that could be expected. From harvest time until freeze-up the weather conditions were such that every day was a work day and every day saw its proportionate amount of the crop harvested, threshed and garnered into the elevators.

It is true that there are many thousands of bushels of grain in Western Canada still to be threshed, but this was not due to the weather, but due to the fact that the crop this year was so enormous that it was impossible to secure labor to garner it. One hundred and twenty million bushels of wheat alone is the record and this of such a quality that the wheat

importing world is clamoring for it loudly.

I wonder how many of our farmers ever stopped to think that when they are raising a bushel of wheat in Western Canada they are raising something that will supply the bread for the tables of the millionaires and of royalty and for which they are willing to pay the top market price. It is no

been stretched. While the wheat yield in 1909 is only 34 per cent. of the 1909 world yield, based on this calculation, Western Canada could produce four billion, five hundred million bushels of wheat in a single year; while the thirty-eight wheat growing countries of the world are producing in 1909 only three billions, two hundred and fifty millions. These are fig-

January morning, the farmer on 90 per cent. of the farms in Western Canada can survey his entire holdings. He can look away and beyond his quarter, half, or section of prairie; he can view his farm buildings; he can see his live stock; and he can make a mental note of just what the increase has been during the year past.

As he stands there musing, there doubtless come to him visions of the future built upon the mistakes and successes of his past labor and he resolves in his mind that 1910, nature willing, he will reap the largest harvest and will make the most money of any year of his life. He sees his land snow and frost bound, the pulverizing action of this same frost breaking up the clods and getting it into shape



A most excellent viewpoint for any farmer.

great satisfaction to raise the food stuff of the rich, but it is a satisfaction to know that the food stuff that you raise is something that the rich want.

It has been said time and time again that Western Canada is the bread basket of the world and when we consider the fact that there are two hundred and twenty millions of acres of available first class land for cultivation in Manitoba, Saskatchewan and Alberta and that only 5% of this is under cultivation at the present time, we can realize that the truth has not

ures to ponder over. They are figures upon which to build the foundation of Western Canada's future greatness as an agricultural country. They are figures that should prove a guiding star to the hordes of immigrant farmers who are looking towards a place to build a home and a fortune.

NEW YEAR TIME FOR STOCK TAKING.

The New Year is always a good time for the farmer to take an inventory of what he has done. Standing in his barn on a crisp

for the spring seeding. He sees in his vision the frost going down, down, three, four, five or six feet to come up in the late spring and early summer in the shape of moisture to nourish the growing plants and to tide him over against a period of drought. He sees in his vision large things to be done and the blood courses through his veins at a quickening pace as he realizes that there is stored up for him in these same broad acres thousands of dollars and that the chance is his to get them.

BETTER METHODS OF FARMING.

There should come to this same farmer in his vision a full realization of what better farming means. Land is comparatively cheap in Western Canada and there is a tendency on the part of a great many of our farmers to-day to cultivate for quantity rather than for quality. "Let me turn over a section of land," says the farmer, "and I will reap a profitable crop;" while at the same

admiration, but is rather considered as a back number. It is the farmer to-day who sees in the farm machine something that he can use, and accordingly uses it, that gets the most comfort and the most profit out of his labor. The average farm equipment to-day on 160 acres of land will run up into the neighborhood of \$2000.00, whereas the farm machinery equipment a quarter of a century ago on that same piece of

a power that they can turn into considerable profit. They are alive to the fact that the plow and the harvester once looked upon as freaks have been the greatest civilizing agencies: the world has ever known and knowing this, they are not as skeptical as they might otherwise be towards traction cultivation. Traction cultivation is of such recent development that practically all things connected with it may be said to

us but students in this great school of Traction Cultivation and each and every farmer to-day is keenly alive to the fact that he must acquire all the information possible if he is to adapt this system to his own farm conditions. He has no definite rule to work by. There are a number of machines on the market to-day that have proven themselves a success, and there are scores of others that are being put out as purely experimental. They are all working towards a common end and that is to supply the farmer with something that will do the work of the horse; will do it more cheaply, more quickly and with more comfort to the farmer. As to whether or not traction cultivation as it stands to-day is a decided success can only be answered by making a canvass among the farmers that have tried it. Each and every one of them is in a sense an experimentalist in this line and he is working out his own problem in his own way. Just what the final results will be no one can predict. There is one thing, however, in connection with this traction cultivation proposition that should not be lost sight of and that is the sacrificing of intensive to extensive agriculture. There is a tendency on the part of the farmer who buys a traction engine in which he can develop a large amount of power, to get a quantity of work out of that engine regardless of the quality of work done. This sort of thing may not be so apparent where new land is being broken, but in a



Operation No. 1.—A sight to gladden the eye.

time he does not always stop to realize that a half section of land thoroughly tilled would bring him double the returns on half of the labor. To the average farmer it is plow and sow and harrow and reap with very little regard for how it is to be done, so long as the work is gotten through with. We have gotten beyond the age when we can tickle the earth with a crooked stick. We have reached that age in agricultural progress, when there is a method to be followed in every farm operation. Our Governments have spent millions of dollars in experimental work and in demonstrating to the farmers the absolute necessity of doing things in a certain way. They have proven that a method of cultivation that may be very beneficial to one kind of soil would be ruinous to another and they have proven beyond the question of a doubt that there is nothing for the farmer to sow but good seed. It takes the same amount of labor to cultivate 160 acres upon which poor seed is sown as it does to cultivate that same 160 acres and sow upon it good, clean seed, a maximum percentage of which will germinate. In the days of our forefathers, farming was pursued largely as a means of gaining a mere living, but in this day and generation, farming has become a business and must be carried out according to the most approved ideas and methods; otherwise there is a ruinous waste of labor and land.

FARM MACHINERY TO THE RESCUE.

During the past fifteen or twenty years, the revolution that has taken place in methods of farming is due largely to farming machinery. The man with the hoe is no longer a subject for

land would not run over \$500.00. We no longer speak of the areas under cultivation in terms of acres, but in terms of quarter, half, and sections, this being due to the powerful influence of farm machinery. One man can now do the work of five and with the powerful traction engine, either steam or gasoline, we have something that will do the work of from twenty to thirty horses. Most of our farm machinery to-day is being designed and built so as to do things on a big scale.

be new. Less than a decade has passed since the problem of plowing, harrowing, seeding, etc. by other than animal power, assumed importance and, relatively speaking, all methods of equipment are new and untried. Modern invention, however, has set such a pace that ideas are old as soon as heralded. Inventors are working overtime to mould theory, fact and experience into definite shapes of steel and castings and the final word cannot be said regarding anything along this line. Some



Ready for operation No. 2.—Safe from the changeable weather or other conditions

There is a full realization of the fact that the season is short, that hay must be made while the sun shines.

TRACTION CULTIVATION.

We have just entered upon an era of what might be known as traction cultivation. Five years ago, it was an entirely new thing, indulged in by those farmers who were on the look-out for a fad. To-day however, it is employed more or less extensively in every prairie country. The farmers have come to realize that there is in the modern traction engine

will fail and all will be subject to improvement before becoming lasting successes, but out of the mass of ideas there will undoubtedly in time crystallize a traction cultivation equipment which will enter into general competition with the horse. The latter in fact is about the only thing in connection with farm machinery that has retained his place throughout a century of marvelous development along these lines, largely because man has been unable to produce a dangerous all round rival.

We are each and every one of

few years when that land has been tilled, unless due care is exercised, the results of this extensive cultivation proposition will show themselves. The old Scotchman who took pride in the straight furrow, cut at an even depth and turned in a beautiful slice, was the man who got down close to the soil and who learned from it its innermost secrets, turning his knowledge to account in the production of the largest possible crops. The man who rides on a traction engine, which pulls six, eight, ten or fourteen plows, or who pulls



Operation No. 3.—The Dollars are all but in the farmer's pocket.

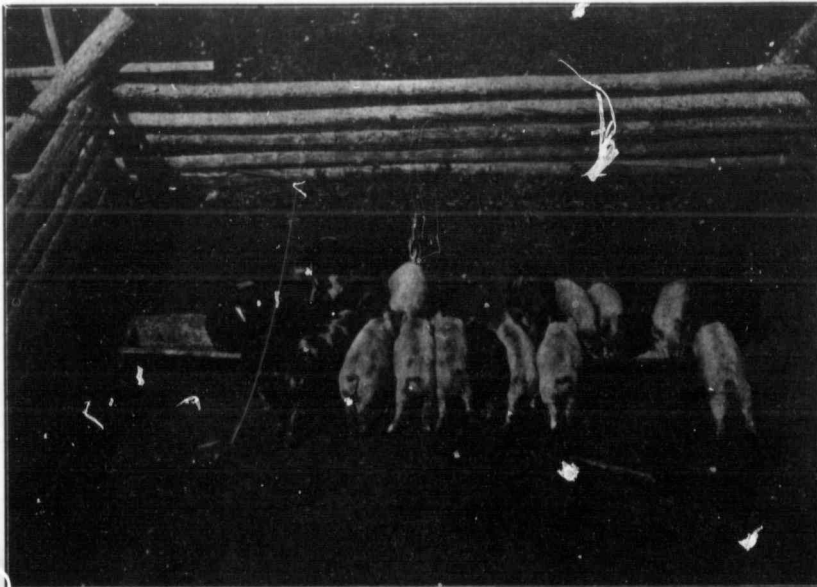
twenty-five or thirty feet of disc harrows or drills, is in a sense getting away from this close communion with nature, a thing that he cannot afford to do. This is not anything that should be a drawback to traction cultivation. It is only one of the side issues that requires careful watching.

THE HOME LIFE

The day of the log cabin and the ox team is doomed. The farmer has come to a realization that when he builds a home he must build something more than a mere stopping place. He has come to realize that there is a comfort side to the farm more than three good meals a day and a place to sleep. It means a nice house, a substantial barn, fences that are well kept, a lawn that is a pleasure to look upon, a piano, the gasoline range for the hot summer weather, etc., etc. He has come to realize that if he is going to perpetuate his farmstead and have it pass on to his children and his children's children, that he must provide for them a place wherein they can

enjoy a certain amount of social life. Human nature is much the same the world over, no matter in what station you may find it and a certain amount of social intercourse must be enjoyed if a natural craving is to be satisfied. This is especially true with the young people. They must have a place to which they can bring their friends, a place that they are not ashamed to call home. The storing up of the bank account is a very necessary and laudable thing for any farmer, but there are several kinds of bank accounts. One farmer with whom the writer was speaking sometime ago mentioned the fact that the \$2000 that he had invested in his automobile was paying him 25 per cent. upon his investment whereas that same money in the local

bank was paying him only 3 per cent. He said, "Every boy that I can keep on the farm is worth \$10,000 to me and I consider that my automobile has been a most valuable agency in keeping my boys happy and contented and willing to stay at home." Every farmer cannot enjoy an automobile, neither can every farmer enjoy a fine house and barns. We all have to make a start but as a star of success that every farmer looks to as his guidance, do not forget



A Happy Bunch that should gladden the heart of any farmer. Incidentally they will increase profits materially.

that the home life contributes no small part to its brilliancy.

THE FARMERS' ORGANIZATIONS

There is in every locality some form of Farmers' Organization. These are of many different kinds and ostensibly for many different purposes, but in the main they all have a common end, viz., the making of the farmer a bigger and a better man and a benefit to his community. There are the Farmers' Institutes, of which too much cannot be said in praise. These are held during the winter time when the farmer is not very busy and when he can spare a day or two without serious loss to himself or to his farm. In attending these institutes he arrives at just what his neighbor is doing in the way of better farming and he himself gives his experience along this

line. It furnishes food for thought and at the same time furnishes him with an opportunity of meeting his brother farmers in a social way. There is a constant exchange of ideas and a constant straightening out of many little tangles and difficulties that the farmer may have met with in the course of his daily work.

The seed fair is also a very valuable thing for the farmer to keep in touch with. The slogan of "Good Seed" is constantly brought to his attention and if the farmer be a thinking man he cannot help but fall into line sooner or later with the "Good Seed" array. The various Grain Growers' Associations are doing a most excellent work. They are bringing the farmer to a keener realization of the fact that if anything is to be done for him in the way of handling his grain crop to the best advantage, he must do it himself and that in this matter, as in

NEW YEAR RESOLUTIONS.

The New Year is always a time for the making of resolutions and the following three hundred and sixty-five days is generally a time for breaking them. Nevertheless, a resolution never made is a resolution never broken and the man who has not ambition enough to make them is little less than a dolt. It would seem to me that it would not be a bad plan for every farmer to lay down a code of resolutions at the beginning of each year. Some of them he may keep and a great many of them he may not, but if he keeps only a small percentage of them he has succeeded in doing at least something. Why not lay down a set somewhat after the following:

RESOLVED That I as a farmer will do my utmost to increase the profit on my investment.

RESOLVED That in 1910 I will sow nothing but good clean seed.

RESOLVED That in another year I shall make some provision for the housing of my farm machinery.

RESOLVED That in 1910 I will look carefully into the weed proposition on my farm and will do my utmost to keep all weeds under control.

RESOLVED That during another year I shall look carefully after the comforts of my family; that I will take an active part in the public life of my community and that I will lend a helping hand to the various farmers' organizations in my community.

RESOLVED That in 1910 I shall carry out the best possible system

of soil tillage and that I shall lose no opportunity to become more thoroughly acquainted with modern, up-to-date farm machinery and to investigate carefully the traction cultivation proposition.

RESOLVED, in short, That I will be a bigger and better farmer in every way in what promises to be the biggest year in Canada's history, 1910.

a great many others, "In union there is strength." Heaven helps men that help themselves and the man that is trampled on should never feel that the world is against him. In the farmer's case, as is the case with everyone else, it is the man that sets up a howl and howls so loud that everyone can hear him who generally gets what he wants.



The horse is no longer master of the observation situation. Miles of wheat look good from the Auto.



FARM WEEDS



The annual losses due to the occurrence of pernicious weeds upon farm lands, although acknowledged in a general way, are



WILD OAT—(*Avena Fatua*.)

Annual. The stems are smooth and erect, while the head forms a loose panicle with nodding and spreading branches. Wild Oats have a thick hairy chaff and long bent awn, covered with brown hairs, which distinguish them from the cultivated oat.

Time of seeding, July and August. An average plant produces 800 seeds.

far greater than is realized. These losses can be appreciably lessened, however, by treatment based upon an accurate knowledge of the nature of each weed.

Most farmers give little critical attention to the weeds growing among their crops. Some think that, because many of these plants are unfamiliar, the exact recognition of all of them is impossible. This, however, is not the case, and, as the different kinds vary greatly in their power of robbing the farmer, it is certainly advisable that more attention should be given to weed pests. Although several hundred kinds of plants grow wild in almost every locality, and many of these may appear among cultivated crops, comparatively few give serious trouble—not more than there are different kinds of crops grown—and every cultivator of the soil knows the difference between wheat, barley, oats, rye, peas, turnips, beans, etc. It is no more difficult to learn the names, nature and appearance of Stink-weed, Hare's-ear, Mustard, False Flax, Canada Thistle, Field Sow Thistle, Sweet Grass, Quack,

etc., than to recognize the familiar cultivated plants.

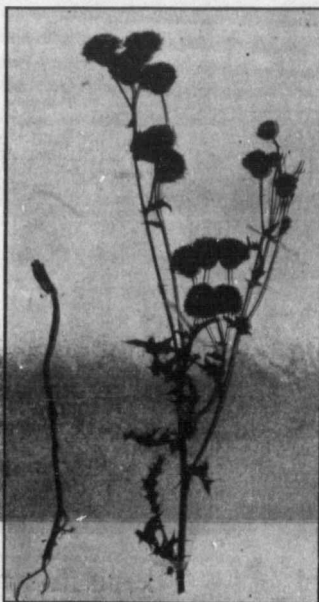
In the official bulletins which have been widely distributed during recent years the weeds have been named uniformly, though many of them have other local names. It is therefore clearly important that those for whose benefit the bulletins have been prepared should know the plants by the names officially recognized, so that they may be able to make the fullest use of the information.

The prevalence of some species in certain parts of the Dominion must be viewed with gravest alarm, for they have taken such possession of the land as

ous on their first appearance. Hence we have 'One year's seeding, seven years' weeding.' There are some weeds so noxious that if farmers knew their real character and recognized the plants on their first appearance, they would postpone all other business until they were destroyed. . . . Self-interest should be a sufficient incentive to farmers to destroy weeds if it is clearly shown that it will pay them to do so,"—H. Mackellar.

WHAT IS A WEED?

There are many definitions of the word, but perhaps from a farmer's standpoint the best one is, "Any injurious, troublesome or unsightly plant that is at the same time useless or comparatively so." As a general statement, it may be said that our most troublesome weeds have been introduced into



CANADA THISTLE (*Cirsium arvense*). Perennial. Very hardy weed, with running root stalks, which bear a large number of shoots. Common in fields, grain and pastures. Seeds July to September. An average plant produces 3,300 seeds.

to a considerable extent, probably from Europe. Such aggressive enemies are: Wild Mustard, Quack Grass and Canada Thistle in parts of almost every province; Ox-eye Daisy

in the Maritime Provinces; Field Sow Thistle in the Maritime Provinces, Quebec, Ontario, and the Red River Valley in Manitoba; and Stinkweed or Penny Cress, Ball Mustard and Hare's-ear Mustard in all the Prairie Provinces.

The increase of weeds is frequently due to the fact that through ignorance of their noxious nature and power to spread, farmers have neglected them.

Many of our farmers have only a limited knowledge of weeds and in many cases do not recognize those that are danger-

the soil and wasting it by evaporation.

2. Weeds crowd out more useful plants, being hardier and, as a rule, more prolific.

3. Weeds are a source of expense. From the time farmers begin to prepare their land for a crop, these enemies increase the cost of every operation—of plowing, harrowing, seeding, cultivating, cutting, binding, carrying and threshing as well as in cleaning, freighting and marketing the produce. Direct losses are the larger consumption of binder twine necessary when weedy crops are harvested, the extra wear and tear on machinery due to coarse-growing weeds, and the depreciation in the market value of the crops because of the presence of weeds in hay or of weed seeds in grain.

4. The eradication of the worst weeds is costly in labor, time and machinery, and frequently prevents a farmer from following the best crop rotation, or even compels him to grow crops which are less advantageous.

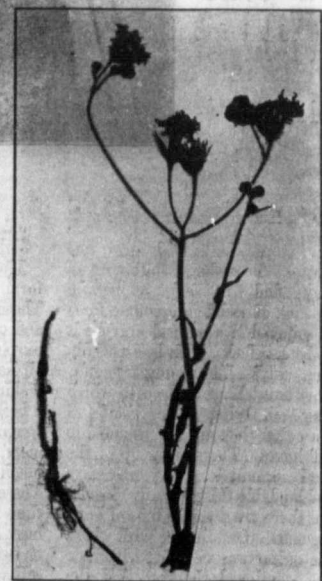
5. Many weeds are conspicuous and all are unsightly on farm lands. They thus, in a varying degree, according to their several natures, depreciate the value of land.

LOSSES DUE TO WEEDS.

It is impossible to determine ac-

curately the losses to the individual farmer, or to an agricultural district or country as a whole, from weeds growing upon cultivated land. In various ways they lower the yield, depreciate the quality and value of the crops, and add to the cost of production.

1. Weeds rob the soil of plant food and of moisture, thus increasing the effects of drought by taking up water from



PERENNIAL SOW THISTLE (*Sonchus arvensis*).

Perennial, with vigorous underground root stalks, and of milky-white juice. Seeds June to August. An average plant produces 300 seeds.

which taint milk. The horny or barbed seeds of some grasses as Porecupine Grass and Skunk-tail Grass in the Northwest, cause irritation or painful wounds by penetrating the flesh, particularly the mouth parts.

7. Weeds attract injurious insects and harbour fungus diseases.



Sweet Grass

Weedy stubbles or summer-fallows are breeding grounds for cut-worms, and the rust of small grains may pass the winter on several kinds of grasses.

HOW WEEDS SPREAD.

In the present age of easy communication with all parts of the country, and indeed with the whole world, there are frequent opportunities for the introduction of weed seeds into previously uninfested districts.

1. By natural agencies. The wind carries seeds long distances, not only in summer, but with drifting soil and over the surface of the snow in winter. Streams distribute them along their courses. They are also distributed by seed-eating birds and herbivorous animals, through the stomachs of which the seeds pass undigested; or they attach themselves by special contrivances, such as hooked and barbed hairs, spines, gummy excretions, etc., to passing animals.

2. By human agencies. New weeds are introduced on farms with grass, clover or other commercial seeds, and commercial feeding stuffs usually contain some vital weed seeds. They are spread from district to district through various transportation facilities, such as railways, and become disseminated within a locality in stable manure from towns and cities, and through threshing machines and farm implements. The illustrations of weed seeds on the last five plates of this volume will aid in the identification of impurities

common in commercial seeds and feeding stuffs.

WEED SEEDS IN THE SOIL.

The ability of the seeds of many species of plants to retain their vitality when embedded in the soil for a period of years is one of the principal factors which brings them within the category of noxious weeds.

It is commonly asserted by farmers that seeds of several species of the Mustard and other families will retain their vitality for an indefinite period. The apparent absence of mustard in old pastures, roadways or lands left waste during many years and the re-appearance of the plant when the land is brought under cultivation, forms the usual evidence to bear out such assertions. An examination of permanent pasture or waste lands that are known to have been polluted with mustard will, however, show occasional inconspicuous plants that give promise of ripening a few seeds.

Duval, of Washington, D C., in December, 1902, buried 112 different kinds of seeds in clay soil in earthen pots, to depths of six, eighteen and thirty-six inches, and compared their vitality with control samples kept in proper storage. When dug up in November 1903, practically all the seeds of cultivated plants were decayed, many of them having first germinated, even at a depth of thirty-six inches. The buried weed seeds showed a decided loss of vitality when compared with the control samples that were kept in storage. The latter germinated fifty-three per cent. on the average; those buried to a depth of six inches germinated twenty per cent.; eighteen inches, twenty-six per cent.; and thirty-six inches, thirty-one per cent.

Ewart, of the University of Melbourne, Australia, made exhaustive vitality tests of six hundred different species of seeds taken from a collection that had been compiled and stored in a dry, airy and dark cupboard by Prof. McCoy in 1856, and a large number of specimens of seeds, of varying ages, from the national herbarium and other reliable sources. In his deductions from the results of over 3,000 tests, Ewart gives a list of those relatively few species that may be expected under favorable conditions, to retain their vitality beyond fifteen years, nearly all of which species are included in the following botanical families: Leguminosae, Malvaceae, Myrtaceae, Nymphaeaceae, Labiatae and Iridae. Forty-eight specimens of seeds of the genus Brassica (the Mustard family) were tested. The fresh seeds gave a germination as high as eighty-six per cent. and one lot twelve years old gave a germination of thirty per cent. None of the Brassica samples

fifteen years old or more germinated, although six of them were less than twenty years old.

CONTROL AND EXTERMINATION OF WEEDS.

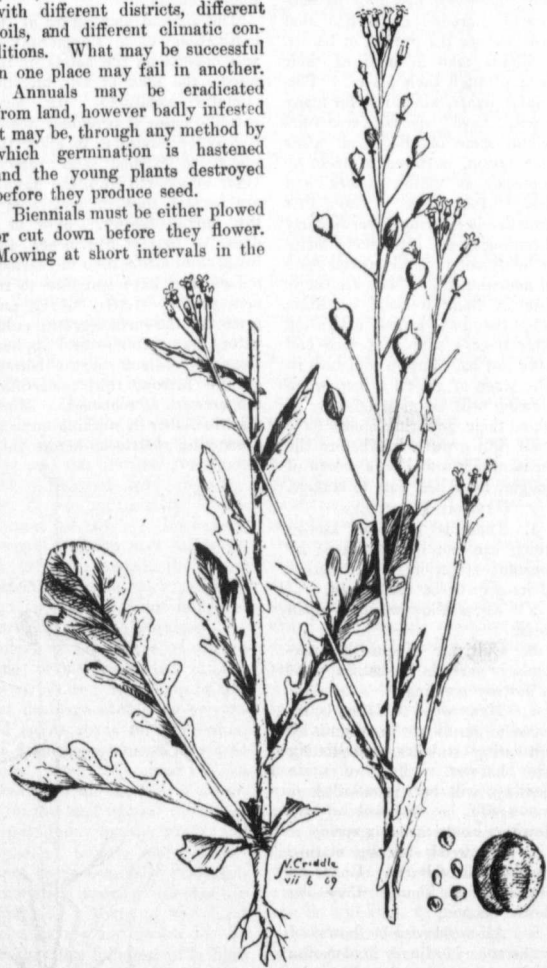
In adopting a method of extermination, the nature of the plant and its habits of growth must first of all be considered. Some experience is necessary to know the best time to work certain soils or to deal with special weeds, as well as to recognize them in all their stages. Some weeds, Russian Thistle and Stinkweed, for instance, have a very different appearance when young and when mature. No general rule can be given, as the treatment must vary with different districts, different soils, and different climatic conditions. What may be successful in one place may fail in another.

Annuals may be eradicated from land, however badly infested it may be, through any method by which germination is hastened and the young plants destroyed before they produce seed.

Biennials must be either plowed or cut down before they flower. Mowing at short intervals in the

instances the cultivation of special crops, to insure their eradication. Imperfect treatment, such as a single plowing, often does more harm than good, by breaking up the rootstocks and stimulating growth.

For shallow-rooted perennials, infested land should be plowed so lightly that the roots are exposed to the sun to dry up. For deep-rooted perennials, on the other hand, plowing should be as deep as conveniently possible. The nature of the land must determine the depth of plowing. In light or gravelly soils shallow plowing may be preferable as deep plowing might interfere with the mechan-



CAMELINA DENTATA.—The plant is natural size. Large seed magnified 8 times; small seeds twice natural size.

second year, so as to prevent the development of new seeds, will clear the land of this class of plants; but a single mowing will only induce them to send out later branches, which, if not cut, will mature many seeds. Where plowing is impracticable such plants should be cut below the crown of the root.

Perennials are by far the most troublesome of all weeds and require thorough treatment, in some

ical texture of the soil, which is so important in the storing of moisture.

The rootstocks of some perennial weeds are very persistent. Small sections or cuttings from them will quickly take root when they are distributed by plowing or cultivation. Where such persistent perennials have become well established, it is usually advisable to adopt the most convenient method of cultivation that



will bring the rootstocks to the surface. They should then be gathered and burnt or otherwise destroyed. Most perennial weeds will, however, succumb to continued thorough cultivation that will prevent the growth of leaves.

Plants take in most of their food through their leaves. Perennial plants, which live for many years, have special reservoirs where some of this food, after elaboration, is stored in such receptacles as bulbs, tubers and fleshy rootstocks. The first growth in spring, particularly flowering stems, is produced mainly by drawing on this special store of nourishment. Plants are therefore in their weakest condition when they have largely exhausted their reserve supply of food and have not had time to replenish it. The stage of growth, then, when plowing will be most effective is when their flowering stems have made full growth but before the seeds, which would be a source of danger, have had time to mature.

GENERAL PRINCIPLES.

1. There is no weed known which can not be eradicated by constant attention, if the nature of its growth be understood.
2. Never allow weeds to ripen seeds.
3. Cultivate frequently, particularly early in the season, so as to destroy seedlings.
4. Many weed seeds can be induced to germinate in autumn by cultivating stubbles immediately after harvest. Most of these seedlings will be winter-killed or can easily be disposed of by plowing or cultivation in spring.
5. All weeds bearing mature seeds should be burnt. Under no circumstances should they be plowed under.
6. All weeds can be destroyed by the use of ordinary implements of the farm: by the plow, the cultivator, the harrow, the spade and the hoe.
7. Be constantly on the alert to prevent new weeds from becoming established.

SUMMER FALLOWING.

The practice of summer-fallowing land to the exclusion of all crops throughout the season, whatever may be said against it, affords the best opportunity to suppress noxious weeds. For land foul with persistent growing per-

ennials, a thorough summer-fallow will usually be most effective and, in the end, the least expensive method of bringing the weeds under control.

The amount and nature of the cultivation of a summer-fallow will depend on the habits of the weeds, the kind of soil, and the climatic conditions. In some extreme cases of perennial weeds, it may be advisable to allow the plants to exhaust their reserve vigor by growth until the flowers are formed, then cut and remove the surface growth, plow to a depth of four or five inches, and bring the rootstocks to the surface before they have had time to renew growth. After cutting and removing the surface growth cultivators may, after several applications, be forced to the bottom of the furrow, thus unearthing the network of rootstocks. Much machine labor in working out and destroying rootstocks before they

ground vegetation can be unearthed. If perennials alone are to be dealt with, they may be treated as above directly after an early hay crop.

Periodical cultivation of the summer-fallow throughout the growing season is effective in bringing weed seeds to the surface, stimulating their germination and destroying the seedling plants. When the destruction of annual weeds is the chief purpose of cultivation, deep plowing two or three times during the summer, with surface cultivation each week during June and July and less frequently later in the season, should secure

plowing is apt to stimulate too rank a growth of straw and delay the ripening of the grain. The germination of weed seeds is stimulated most by cultivation during the early growing season, and summer-fallows intended primarily for that purpose should be brought under cultivation early in the season.

SHORT ROTATION OF CROPS.

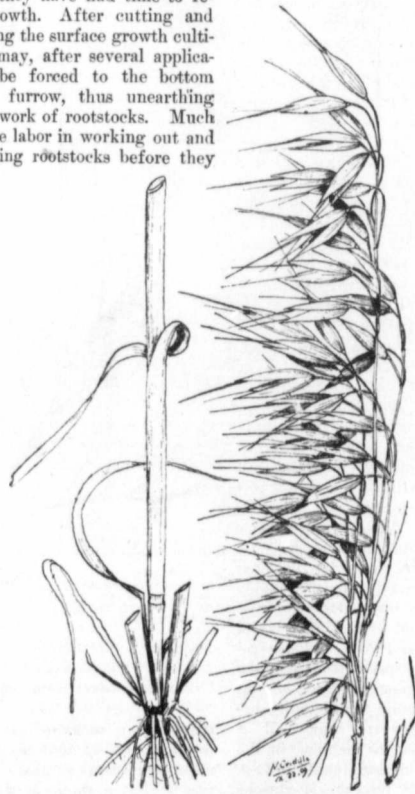
To keep farms free from weeds, few methods give such good results as a systematic short rotation of crops, with regular seeding down to grass or clover at short intervals.

Weeds are most in evidence in districts where the production of cereal grains predominates and where the systematic alternation of crops is not generally practiced. Many weeds ripen their seeds with cereal grains and the seeds are scattered during the harvest. When a cereal crop is followed by early clover, the weeds in the clover may be cut before they are mature. The hay crop of the second year after seeding is not infested with weeds because a fresh supply of the seeds has not been brought to the surface by cultivation. The removal of the hay crop of the second year affords an opportunity for a summer-fallow, preparatory to the production of a hoed or some other cleaning crop.

The following short rotation is recommended for the eastern provinces by J. H. Grisdale, Agriculturist of the Central Experimental Farm:—

“To destroy weeds, probably the best rotation possible is one of three years’ duration, including clover and mixed hay, followed by roots or corn, the land shallow-plowed in fall and sown to grain the next spring with ten pounds of red clover and twelve pounds of timothy per acre. (When the land is heavy or clayey, the ten pounds of red clover may be replaced by six pounds of red clover and two of alsike.) If a portion of the arable land must be used for pasture, then the land might be allowed to remain under grass or hay for two years instead of one year, the second being used for pasture, thus extending the three-year into a four-year rotation. The pasture land in the

(To be continued next month)



FALSE WILD OAT, STORM KING TYPE. Drawing by Norman Criddle.

have had time to renew growth after the first plowing will be most economical in the end. Perennial weeds having deep rootstocks may require a second and deep plowing before all the under-

the germination and destruction of the maximum number of seeds. On account of the soil and climate, one plowing of summer-fallow is favored in the Prairie Provinces. In a moist season a second deep

The road problem is not new neither is it one that is only of interest to civilized man, for we find that the savage tribes as well as animals of the lower order are prone to move from place to place by the route which offers the least resistance. After having established a route they continue to use it. The roads across many of the mountain passes or into the deep canyons were first made by mountain sheep or deer. The Indian on his hunting trips learned these trails and made use of them as roads in his travels, the trapper packed his furs over them, the frontier settler widened them out for his wagon, and not infrequently the locating engineer followed them with a railway line. Each in turn making and improving a highway that had originally served some animal as an easy route to pass from one feeding ground to another. A road in its earliest stages may be considered as a sign board to show the easiest route of travel between points. In prairie country these roads indicate a route which follows the high lands around swamps and lead to stream crossings. In mountain country, they avoid precipitous slopes, and lead to the more accessible passes. The load hauled over such a road is regulated by the knowledge of the road, the weight and amount of stock attached are fitted to the road. Hence in a newly settled country poor roads are to be expected and cannot be avoided. As a community improves the road requirements change, and the road is built to suit the load. The problem becomes one of constructing a road which will permit the hauling of a maximum load at a maximum speed with minimum motive power. Consequently the road problem is one of development. The game trail through the brush answers for the travel of the Indians, the prairie sod broken by a log dragged from the front wheels of a wagon, or a line of blazes through the timber answers the pioneer's purposes, but the best oil surfaced macadam road is scarcely satisfactory for the modern automobile, and the heavy loads of our well settled and highly intensified farming communities. Roads that a few years ago were considered almost everlasting, and good enough for any community are now a back number and inadequate on account of the increasing automobile traffic. With the steady improvement of automobiles and flying machines it is somewhat difficult to tell just what demands may be made on the road engineer by the end of another twenty-five years.

With this association which has met to consider rural improvement, it would seem to the writer

ROADS

By John T. Stewart, Agricultural Engineer, University of Minnesota.

Presented at the Third Annual Convention of The American Society of Agricultural Engineers.

that it is not necessary to consider roads in the early stages of development, as our agricultural districts have passed that stage; neither is it desirable to take up the higher class of construction which properly belongs to the highway engineer, and which will naturally follow in any community where there is a demand for them, after that community has learned the value of hard roads by the use of good roads. To my mind, our problem is to deal with the agricultural communities which have arrived at the stage of development where the roads should be made to suit the load, and to show these sections if possible, that their roads can be improved with the money and material at hand. In other words we should advocate the improvement of roads with the money and material available.

The qualities to be sought in a road are a flat grade with a smooth, dustless surface of a degree of hardness to withstand the traffic, and still have sufficient elasticity to prevent injury to animals and jar to vehicles when moving at ordinary speed.

The conditions to obtain these requirements will vary with the climate locally and funds available. In the arid region, the roads become dusty from continuous travel, in sandy regions soft from the nature of the soil. In the alluvial areas of the humid region they become soft from excessive moisture, and rough from being traveled while wet. As the road materials vary in each of these regions, the road problem becomes one of studying local conditions, material available, and funds at hand, and with these constructing a road which will approach as near as possible to the ideal qualification of a good road, which are the same under all conditions. In the greater number of localities it is not practical from a financial standpoint to secure the ideal road at once, where this is true attention should be given to future needs such that the work will not be entirely wasted by other improvements. Good locations should be selected, road beds graded and drained so that they will be satisfactory for any type of superstructure. If it is not possible to prepare the road bed entirely, it should be done in such a way as not to increase the cost of future improvement. A sufficient width of roadway can

be left, and the greater part of the earth for grading taken from one side, the other side to be completed at some time in the future. Too often grades are thrown up or ditches made that must be destroyed by future improvement at a greater cost than if they had never been made. Such work has a tendency to retrogression rather than progression. While it is true that the exigency of the case or the shortage of money may compel the construction of road work that may have no value in future improvement, it is very seldom that such work will add to the cost of future improvement if the future is considered at the time of construction.

Water is the natural enemy of roads, and seldom will a community be found in which the road builder will not have to combat this destructive element in some form. Even in the arid regions the sudden downpour of rain that occasionally occurs, renders long reaches of road impassable by erosion. Consequently drainage may be called the foundation of road improvement, and until the water has been provided for there is no permanent road improvement. In our prairie states where the most of us are interested, thorough drainage may safely be said to solve one-half the road problem. Hence work properly spent in draining is an improvement that will be required regardless of the nature of future traffic or materials used in the superstructure. In swamp or wet areas drainage should be encouraged before roads for the reason that drainage means an increased income from the land which makes the road tax less of a burden to the land owner. Drainage of itself improves the roads, and permanent bridges and culverts cannot be economically constructed until the drainage systems are completed. Many of the rural road men are not aware of the fact that the building of a high road grade across wet land is only a make shift for drainage, that a good rill or open ditch would remove the cause for the grade, that water standing along a road-grade saturates the foundation of the road to the level of the standing water, and then is raised by capillarity to the surface of the road and in the end destroys the road regardless of its surface covering.

To secure a road which has the required qualities it is necessary to have a solid foundation which will

not become soft by moisture or destroyed by erosion, and then an impervious covering that will shed the storm water and carry it to the side ditches. The securing of material for the covering is the bone of contention among road builders and is the problem that confronts many of our agricultural communities. It is here that local conditions should be studied and the agricultural engineer use his ingenuity and experimental abilities to find an hard material that will answer the purpose and be within the pocket book of the district. Various materials are now used and approach in a greater or less degree the ideal of road surfacing materials according to the locality where they are used and the care in construction and maintenance.

Common earth by developing its puddling properties and keeping it in good shape with the King road drag.

A mixture of sand and clay.

Burning clay on the road where fuel is plentiful.

Shells along the coast.

Gravel and coarse sand as it is found in natural banks.

Broken stone of the more common geological rocks.

Wood in the form of planks for clay roads, and sawdust, bark, straw, etc., for sand.

Oil and tar as a binder on sand, gravel and broken rock.

Such materials, while they are not what might be desired yet have proven satisfactory in many localities, but it should be clearly understood that the method of treating a road with any one of these materials in one locality may not be satisfactory in another. Consequently the necessity of careful experimental work with road surfacing material in new localities.

Another item of road education in the agricultural districts is a method of systematic and thorough maintenance, for roads like nearly all other works of man require constant repairs or they rapidly disintegrate. The success of many cheaper road surfacing materials depend almost entirely on the care with which they are maintained. If a community can be educated, to properly prepare a road bed by draining and grading and then, in a proper system of maintenance the road problem is practically solved, for the road will be surfaced by the best material obtainable, as rapidly as these is a demand for better roads than natural conditions afford.

To interest the agricultural communities in road improvement often appears a hopeless task. That better roads are needed is readily admitted, but how to pay for them is the stumbling block. After watching the road problem for a number of years, it is the

writer's opinion that many of the road enthusiasts are agitators make a mistake in advocating a

sudden change from a pioneer road to a high class macadam road at one step, with the result that the expense frightens the land owners. The average farmer listens to a description of an European or New Jersey road, compliments the speaker on making an interesting talk, considers the price of such roads beyond his reach and promptly forgets the whole matter. To get him interested, it is necessary to get him thinking over his own road conditions, and to do what is necessary to point out to him home facts.

Perhaps the first step in rural districts would be to replace the present labor system of making the road by a cash payment not that the labor system is wrong, but that it has served its time and should be replaced by a better method. The labor system has done excellent service in the improvement of pioneer roads, and is the only method that can be used in a newly settled country, but like the log house it should give way at the proper time to a cash system. When the time comes that the road should be built to accommodate the load there is practically no further improvement by the labor system, for different methods must be used.

The arguments against the labor system as summed up briefly are:

The roads are not worked at the proper season of the year, as the farmer cannot leave his field at the season when road work should be done.

There is no general plan of work, and as a result much of the work is of no benefit to the road.

A large amount of money is invested in machinery, as the work is nearly all done at one season, it requires a large amount of machinery which stands idle the greater part of the year.

Much time is lost by inexperienced persons using road machinery, the bringing together of strange horses for only two or three days at a time, using them on work to which they are not accustomed, and in moving machinery from one part of the road to another.

Repairs not made when



but on the land owners must come the burden of building the great mileage of our roads.

necessary—his is an essential feature for it often occurs, that if a break was repaired immediately it could be done in a few hours, but when let go two or three months, it will require several days.

The cost of supervision is high in the labor system owing to the time spent in calling out the farmers, showing them where to work, looking after machinery, etc. Records show that supervision under the labor system is seldom less than 40% of the total tax, while under the cash system it varies from 6 to 10%. In Ramsey and Hennipen counties, Minnesota, the tax under the labor system amounted to 40%, but since the adoption of the cash system it is only 7%. Hence, if the cash system could be adopted, and the money expended under proper supervision a surprising amount of good road work could be accomplished in a few years. The writer has one township in mind, that 15 years

ago when it changed from the labor to the cash system had almost impassable roads, that now has practically all its roads graveled without the expenditure of any funds outside of the ordinary road tax, and there were only two gravel pits in this political township, which is 6 miles wide, and 8 miles long. Many of the rural districts have become so accustomed to poor roads that they do not realize their real cost unless it is directly called to their attention. A farmer in the corn belt sold his corn for 50 cents to be delivered in February, his object in selling was to get the corn to market before the roads broke up, and the spring work began. On the day he was to begin shelling, it rained, the roads becoming impassable. When the roads again became solid so he could haul, it was in the middle of the oat sowing season. He had to stop sowing oats, haul his corn to town, and

sell it at 50 cents when the market price was 55 cents. He not only was on the road when he should have been in the field, but he lost \$80, as he had 1600 bushels of corn. He attributed his misfortune to the weather—if it had not rained the roads would have been good. It had not occurred to him to look at it in the reverse order—that if he had had a good road the rain would not have delayed him at the longest not more than a day. He could have held his corn till the price suited him without regard to the road. When the matter was presented to him as above, he felt he was paying a heavy tax for a poor road.

Road statistics, kept in Illinois, show that the travel was approximately 6 times greater in June than in March in districts where there were poor roads, while in districts where there were good roads the travel was a little greater in March than in June. This



alone would furnish a text for a long paper on the value of good roads. The country people could do their trading at periods when they could not work on the farm which would balance up trade conditions in the country towns, lessen the congestion on railways and in elevators thus causing farm commodities both bought and sold to be handled at cheaper rates between the consumer and producer, a part of this advantage coming to the farmer.

State and Federal aid in road building should not be advocated too strongly, lest the land owner become imbued with the thought that in the near future, good roads will be built without expense to the adjoining land. It is entirely within the province of the state and government to maintain road offices, to study methods and conduct experiments on road material, that they may give advice and instruction for various localities,

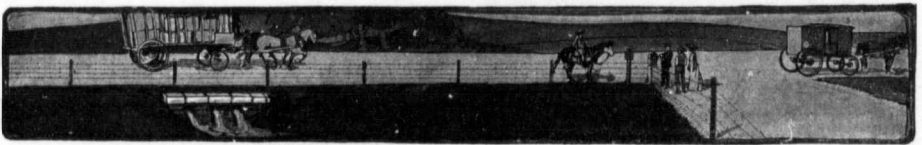
good drainage and eternal vigilance in maintenance.

The above paper while written in the United States and delivered before a United States audience contains a great deal that should prove of interest to the Canadian farmer and everyone interested in good roads.

In the hurry to cultivate land and to turn the virgin prairie into well tilled fields, we all are apt to neglect this important factor. We are very apt to look upon it as something that belongs to the future, something that we need pay very little attention to at the present time; but this is just where the average farmer is mistaken. The amount of profits that any farmer can make in Western Canada is in the majority of cases, the difference between the cost of production and the selling price and if road conditions are such that it would cost the farmer a great deal more to haul

his grain to the elevator than it would if he had good roads, his profits are reduced just that much.—Ed.

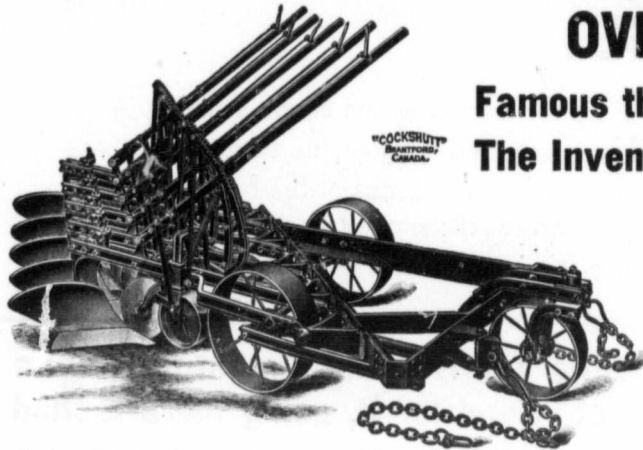
In conclusion: The history of road shows that they pass through a state of development, and ordinarily, this general development should be encouraged and not let come to a stand. The principles of road building should be clearly taught as adapted to local conditions. Drainage should be promoted before roads. The cash system should replace the labor system. Drainage as related to roads should be thoroughly explained. The farmer element should be taught that their roads can be bettered with the material and money at hand. Illustrations and facts should be used, that relate to that or similar localities without taking them from Europe or the older states in the east. The facts should be clearly brought out, that good roads can be had in nearly all localities by sandwiching some local material between eternal vigilance in maintenance.



Cockshutt Engine Gangs

OVER 800 IN USE

Famous throughout the whole world.
The Invention that revolutionized
Traction Plowing.



Five Furrow Engine Gang for Gasoline Tractors. Equipped with stubble bottoms and swivel rolling colters (Wood platform detached to show construction).

STILL THE ORIGINAL AND ONLY ENGINE GANG THAT HAS DEMONSTRATED ITSELF TO BE A THOROUGH SUCCESS.

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Buy What You KNOW is Successful.

Why 800 Traction Plowmen Prefer the "COCKSHUTT."

Notice the set screw on the top of each standard for adjusting the "suck" of the share, and leveling up the bottoms. The bolt holes in the standard are slotted, and by loosening the bolts and using the set screw each bottom can be adjusted to as fine a point as desired. The depth of plowing of each bottom is regulated separately by the levers and ratchets. Thus each individual plow can be adjusted to meet the conditions of its own path. This great adjustability and independent operation of each bottom has enabled our plow time and again to displace other makes. Ours will do perfect work under conditions that no other engine gang can possibly do good work. For instance the drive wheels of traction engines always sink into the ground, particularly in the spring. This depression is often three or four inches deep and the side of the engine tracks often comes in the middle of a gang of two bottoms with the result that one bottom is plowing deep while the other is scraping along in the engine track without plowing. With our independent plows, however, such difficulties are overcome easily as each bottom will plow the desired depth whether in the depression or not.

Notice the wide jaw where each individual plow is hinged to the frame. This with the extra heavy beams, absolutely prevents the bottoms from "winging." The furrows are of uniform depth and width.

We have demonstrated that straight beams are very much superior to arched beams for traction plowing. Our heavy straight beams cannot bend or get out of position. Arched beams are continually liable to become partly straightened under the great strain.

Each of the plows moves independently, either in its automatic adjustment to unevenness in the land or when controlled by its lever.

An obstruction is cleared by raising one plow only.

Number of plows used can be changed at a moment's notice.

Plowing can be finished straight at the ends.

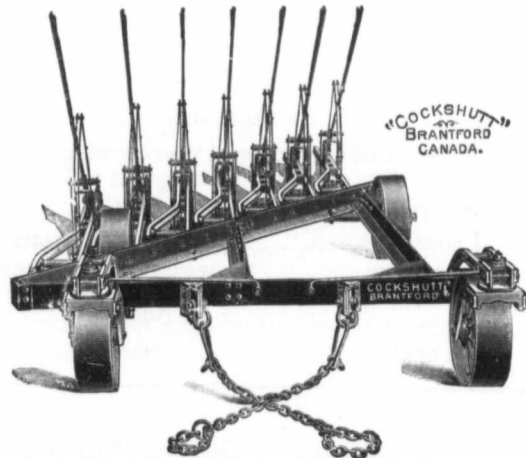
There is no trouble in turning or in getting into the furrow.

Gauge wheels are large and strong and furnished with steel compression grease cups. In breaking the gauge wheels are close to the points of the shares and protect the plows from stones and other obstructions.

Standards and shares are built strong enough to withstand the striking of immovable stones hidden in the ground. On striking same, the plows raise up and glance over.



Seven Furrow Engine Gang. Equipped with breaker bottoms, fin cutters and extra shares, or stubble bottoms and swivel rolling colters. Also made in 6, 8, 10 or 12 furrow sizes.



The plows have the weight necessary to stay with the hardest ground. There are no arched beams to keep one running to the blacksmith shop. If an inside plow gets damaged it is easily unbolted and replaced with an extra one or with a plow from the end.

It is operated by one man only.

It can be readily attached to any make of plowing engine.

Above all it has the strength necessary for heavy work. The angle steel frame, extra heavy double steel beams, strong standards, and heavy shares stand the shocks and strains of engine plowing without injury.

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Regina

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RUMELY PLOWING



BECAUSE :

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- Have large and spacious fire boxes.
- Have water on all sides of fire box -- which insures efficient water circulation.
- Are economical in the use of fuel and water.

Our 32-page Plowing, Hauling and Grading Engine Catalogue is a very interesting booklet. Send for it, using the attached coupon.

M. RUMELY COMPANY,
La Porte, Ind.

Kindly mail me a copy of your plowing engine catalogue and other data regarding plowing that will be of interest.

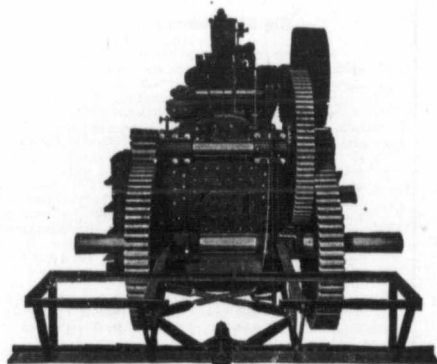
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I now own _____ separator _____ years old.

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Town or city _____ State _____



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CANADIAN DISTRIBUTING WAREHOUSES AT: Winnipeg, Man., Calgary, Alta., Saskatoon, Sask.

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FLOWING AT WINNIPEG

To Canadian Threshermen + Plowmen:

We guarantee against breakage for a period of one year following date of purchase, all gearing and shafting, including crankshaft, on our plowing engines. We will furnish new at Factory, free all such gearing and shafting broken during usual use of the engine, on receipt of broken parts during the period named

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By *M. N. Rumely*
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They are simple and powerful in construction.

The gearing is massive and made of special semi-steel -- master gears are interchangeable.

Of substantial design and above all RUMELY engines are free from expensive breakdowns.

READ OUR WARRANTY

COMPANY, REGINA, SASK.

The American Society of Agricultural Engineers

TWO years ago at Madison, Wis., a body of men assembled in convention for the purpose of discussing the proposition of establishing a Society for the discussion of Agricultural Engineering. Up to that time agricultural engineering had scarcely ever been heard of outside of the agricultural college, and then only in a few of the agricultural colleges throughout the United States and Canada. We had all sorts of engineering societies, but when it came to applying it to agriculture, the skeptical shook their heads and said that it had no application whatsoever.

The men who assembled at the first convention were largely professors of farm mechanics from the various agricultural colleges and while the meeting itself was little more than a start, nevertheless, some very good papers were read, constitution and by-laws were adopted and the organization was started on its way. That was in 1907.

In 1908 the Society met at Champaign, Ill., at the State University where a very successful meeting was held. At the Champaign meeting there were not only farm mechanics present, but there were a number of manufacturers who attended as well as a number of farmers. This showed conclusively that agricultural engineering had a mission and that both the farmer and the manufacturer realized that there was something in it for him.

In 1909 the convention assembled at Ames, Iowa, where a very successful meeting was held on December 28th and 29th. This meeting saw in attendance not only practically all of the professors of farm mechanics of the various agricultural colleges of the United States and Canada, but it also saw a large number of manufacturers and farmers.

The John Deere Plow Co., the J. I. Case Co., the Avery Co., the International Harvester Co., Hart-Parr Co., and Gaar Scott & Co., all had representatives at the meeting, in some cases the heads of the concerns being present.

The meeting was full of interest from start to finish. There was an excellent program provided and every number was filled. A great many of those in attendance had to come a long distance, some coming from as far as Ithaca, N. Y., and from Washington, D. C. Others came from Colorado, and each and everyone came with the idea of making it the best meet-

ing of its kind that had ever been held.

The following program was carried out:

Tuesday, December 28.
 Opening Session, 9:00 A. M.
 Agricultural Engineering Hall.
 Meeting called to order by..... J. D. Davidson
 Invocation..... Rev. V. J. Minchin
 .. Pastor Congregational Church ..
 Ames, Iowa
 Address of Welcome, Charles F. Curtis
 Dean of Agriculture, Iowa State
 College, Ames, Iowa.
 Response..... William Boss
 St. Anthony Park, Minnesota.
 Appointment of special committees.
 President's Address..... J. G. Wynn
 Madison, Wis.

Buildings.
 Address— "Concrete Construction
 About the Home and on the
 Farm."..... E. D. Boyer
 Atlas Portland Cement Co.,
 New York.

Tuesday, December 28.
 Farm Machinery Session, 2:00 P. M.
 Agricultural Engineering Hall.
 Paper—"Plowing and Tilling Ma-
 chinery"..... Frank D. Blake
 Deere & Company.
 General Discussion.
 Paper—"A Sprayograph,".....
 .. Howard W. Riley
 Cornell University

Discussion.
 Paper—"Land Rollers,".....
 .. H. B. Bonebright
 Colorado Agricultural College.
 Discussion by..... L. J. Smith
 Manitoba Agricultural College.
 Paper—"The Standardization of
 Farm Machinery,"..... A. O. Fox
 Madison, Wis.
 Farm Motor Session, 8:00 P. M.
 Agricultural Assembly, Agricultural
 Hall, Evening.
 Paper—"Traction Engines,".....
 .. W. F. MacGregor
 J. I. Case Co., Racine, Wis.
 General Discussion.
 Illustrated Address—"Tracting
 the Soil,"..... E. W. Hamilton
 Canadian Thresherman & Farmer
 Winnipeg, Manitoba.

Wednesday, December 29.
 Farm Motor Session (Cont.) 8:30 A. M.
 Agricultural Engineering Hall.
 Paper—"A New Six Stroke En-
 gine Cycle,"..... M. L. King
 Iowa State College.
 Discussion.

Farm Engineering Session.
 Paper—"The Disposal of Farm
 Sewerage,"..... Anson Marston
 Dean of Engineering Iowa State
 College.

General Discussion.
 Intermission.
 Paper—"The Capacity of Tile
 Drains,"..... E. W. Hamilton
 Iowa State College.
 Discussion by..... E. A. White
 University of Illinois.
 Paper—"Roads,"..... Jno. T. Stewart
 University of Minnesota.

Discussion by..... H. M. Bainer
 Colorado Agricultural College.
 Educational Session, 1:30 P. M.
 Agricultural Engineering Hall.
 Paper—"Method of Instruction in
 Agricultural Engineering as
 seen by an Agricultural En-
 gineer,"..... H. C. Ramsower
 Ohio State University.

Inspection of College Buildings and
 Laboratories.
 Business Meeting.
 Educational Session (Cont.), 8:00 P. M.
 Agricultural Assembly, Agricultural
 Hall, Evening.
 Illustrated Lecture—"Making and
 Selling Farm Implements,".....
 .. G. A. Ranney
 International Harvester Company,
 Chicago, Ill.

Banquet.
 Alternate.
 Paper—"Draft Apparatus for the
 Lecture Room,"..... C. K. Shedd
 University of Nebraska.

One of the principal things that

was taken up at the meeting was the standardization of farm machinery. Every farmer who has purchased any amount of farm machinery realizes the inconsistency in machinery ratings. It causes him a great deal of trouble and annoyance. For example, he buys a steam engine from one maker of a certain horse power and from another maker he buys another of the same horse power. When the two are put at tasks requiring the same amount of horse power, there is a large amount of difference.

The same thing holds true when it comes to making a comparison between the internal combustion engine and the steam engine. The farmer may purchase an internal combustion engine rated at 30 horse power. He has probably owned a steam engine rated at 30 horse power and when it comes to comparing the two, there is absolutely no way that a comparison can be made, there being no relation between their respective horse powers.

Another example; one manufacturer will advertise a manure spreader on the market. The farmer goes to town and he sees another manure spreader that is double the price and he wonders why there is this difference. These manure spreaders have never been gotten down to the proper basis of classification. There is absolutely no standard by which the capacity of a manure spreader is measured. It is true that manufacturers claim that machines have a certain bushel capacity, but have they? and until something definite is known the farmer must of necessity buy in the dark.

Another thing with regard to farm implements. The farmer buys a feed grinder, or a crusher or a chopper and he has no way of ascertaining how much horse power is required to run these various machines. The idea of the American Society of Engineers is to provide standards of horse power for these machines, so that the manufacturer can rate them in accordance with the amount of horse power it requires to run them and in this way the farmer will know just what capacity machine he should buy in order to suit the horse power he may have on hand or the amount of horse power he must purchase in order to run his various machines.

By standardization of farm machinery is not meant the standardization of design and construction. This is a thing that must always be left to the manufac-

turer; otherwise the development of farm machinery will stop. It is the carrying out of the various ideas of the different manufacturers that has brought about the wonderful development in farm machinery during the past quarter of a century. Our experimental stations and our agricultural colleges have been teaching the farmers for a number of years soil culture, animal husbandry, etc. etc., but the farmer has had little or nothing to guide him in the proper selection and use of his farm machinery equipment. When we stop to think of it, in a country like Western Canada, the various farm implements go to make up by far the larger share of the farmers' expenditure and this being true, everything possible should be done to enable him to get the most out of these farm machines.

This is the work that the American Society of Agricultural Engineers has started out to do. It takes time; it cannot all be done in one year, but the motive is a worthy one and a little hard work and careful organization will accomplish wonders.

The Society also has undertaken to lay down a stand-set of rules for motor contests. The contests which have been held in Canada during the past two years have developed the fact that there was a need for a good complete and comprehensive set of rules that would leave no loop holes for argument. The Society has this year drafted what it believes to be such a set of rules and it may be possible that the Winnipeg Contest in 1910 will be held under these rules.

The agricultural motor contest is becoming quite a popular affair. Information is at hand to the effect that there are a number of contests being planned in the United States for 1910 and unless all of these different contests are in a measure standardized they will mean little when it comes to comparing final results. Hold a contest at Winnipeg under one set of rules and hold a contest in Texas under another set of rules and in so far as the general public deriving any benefit is concerned, they had better not be held at all. Given one standard set of rules and have all these contests held under the auspices of a recognized body of mechanical men and the results of a contest in Texas and the results of a contest in Canada will bear a definite and intelligent relationship.

At the close of a general meet-

(Continued on page 29)

Practical Demonstrations of REEVES STEAM PLOWING SUPERIORITY



REEVES TIME SAVING.

ADAPTABILITY TO FIELD CONDITIONS.

TURNING A CORNER WITHOUT LIFTING PLOWS FROM GROUND A FEAT THAT SAVES TIME, POWER AND FUEL FOR REEVES OWNERS.

REDUCING THE LOAD BY TAKING OUT OF SERVICE A PORTION OF THE PLOWS WHEN TOUGH FIELD CONDITIONS ARE MET.

PROOF OF REEVES CONTROL.

PROOF OF REEVES UNIFORMITY OF WORK.

PLOWING A CIRCLE IN BUFFALO SOD IN WESTERN KANSAS. THE UNPLOWED CENTER BEING ONLY NINETEEN FEET IN DIAMETER.

PLOWING OVER A RIDGE IN SALT GRASS IN WESTERN KANSAS. NOTE THAT THE DEPTH OF THE CUT IS UNIFORM AND PLOWS AND FRAME ARE ACCOMMODATING THEMSELVES PERFECTLY TO THE UNEVEN GROUND.

ANOTHER PRACTICAL REEVES FEATURE.

STRIKING A ROCK WITH A REEVES PLOW SHOWS HOW PLOWS STRIKING SNAGS ARE AUTOMATICALLY RELEASED WITHOUT INJURY.

PROOF OF REEVES FLEXIBILITY.

PLOWING ON A RIDGE IN GUMBO SOD, IN WESTERN KANSAS. NOTE SHARP DEPRESSION TO THE LEFT AND HOW PERFECTLY THE FLEXIBILITY OF THE FRAME PERMITS THE PLOWS TO FOLLOW THE IRREGULARITIES OF THE SURFACE.

Those contemplating investment in steam plowing outfits will profit by a careful study of this photographic testimony showing how the six most troublesome phases of steam plowing are met and overcome with a REEVES steam plowing outfit.

Don't invest in a steam plowing outfit that cannot do these things. Inability to do them means an unprofitable outfit. Write today and we will send you letters from hundreds of satisfied buyers who are making big money with REEVES steam plowing outfits and get in on the handsome profits that accrue to REEVES owners.

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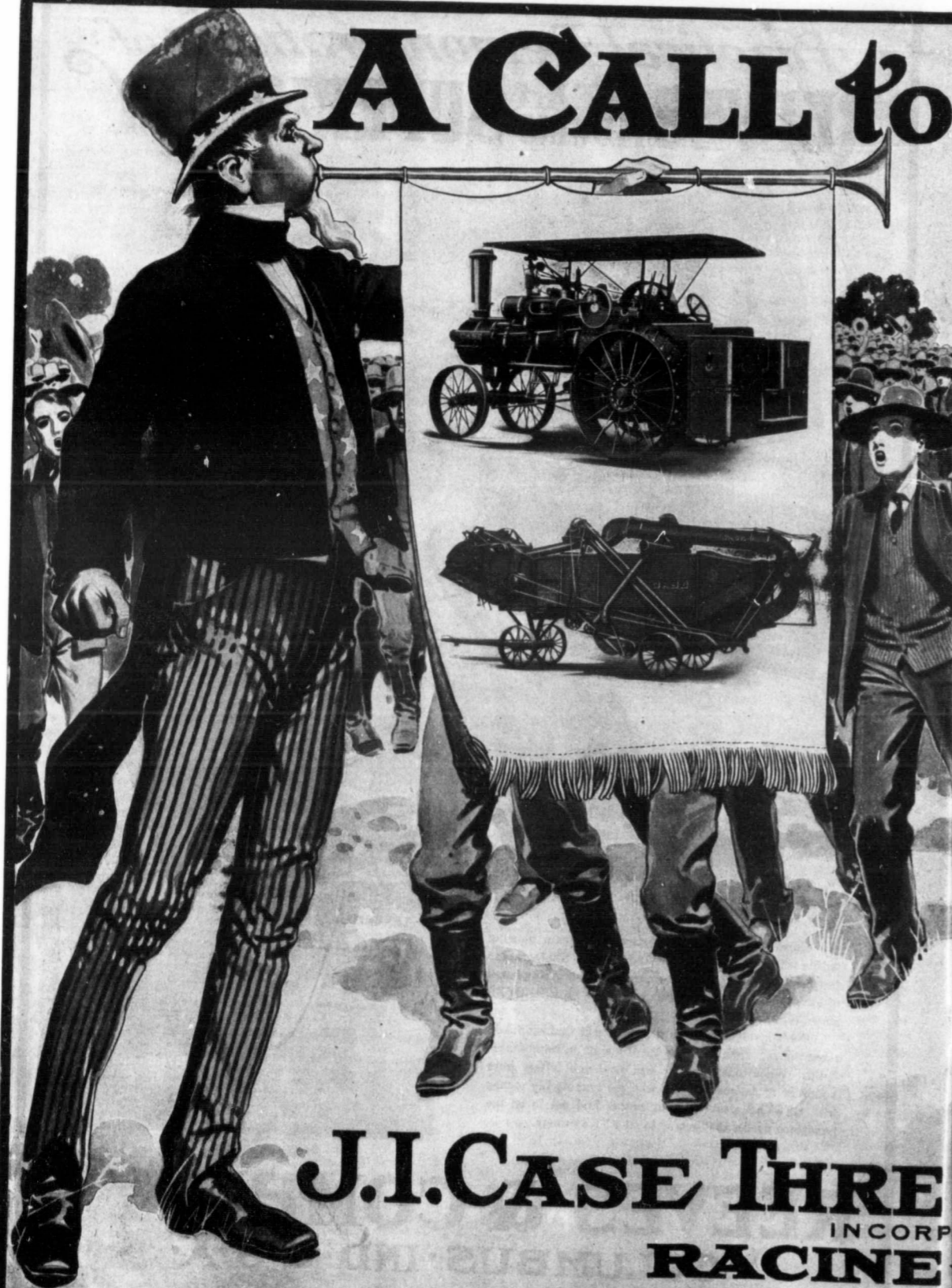
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TORONTO, WINNIPEG, REGINA, CALGARY.

Chicago
1910

JAN.

THE CANADIAN THRESHERMAN AND FARMER

CANADA'S FARM MACHINERY MAGAZINE

Published Monthly by
E. H. HEATH COMPANY, LIMITED,
WINNIPEG - CANADA.



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E. W. HAMILTON - Editor
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1910

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The Canadian Thresherman and Farmer extends the wish to every one of its Readers that the Year 1910 may be the Happiest and Most Prosperous Yet.

IN the State of Illinois there has been formed among the farmers a Society known as the Outdoor Improvement Society. This organization is a purely voluntary one and has for its purpose the beautifying of farm and home and country side. The farmers of that State seem to have come to a realization of the fact that there is nothing that will so improve the value of their land as beautiful home surroundings and while the organization is a new one and its work has not been of sufficient duration to become effective, it nevertheless it is a very laudable proposition and should receive the support of every farmer in the State.

The work of this organization has a particular application to the farmers of Western Canada. Canada West is a new country and practically everything is in the making. Very few of our farmsteads have been fitted up and handed down from father to son, or from one farmer to another. The average farmer buys a piece of raw prairie, picks out what he considers a most suitable building site and proceeds to erect temporary buildings to last him until such time as he can get a few acres under cultivation and yielding a crop. Once this is done and the farm begins to support itself and its owner, the farmer next turns his attention towards bet-

ter buildings, more fences, etc., etc., and at this point the work of an Improvement Society has considerable application. Travel through the country today by team or in a railway train and when you pass through a section of the country that has well kept buildings, shade trees, good fences, well kept lawns, etc., etc., you generally say to yourself that here is a prosperous community, that the soil must be productive and the value of land is high. This may be true and it may not be true, especially in the case of the productiveness of the soil, but from the fact that things look prosperous leads the observer to believe that there is something back of the prosperity. Prosperity is a thing that is not always on the inside. There is a great deal of it on the surface and appearances in the case of the farm as in the case of practically everything else, count for a great deal. It is a thing that no farmer beginning a farm should lose sight of. It will add to the value of his property and at the same time will give to him no small amount of comfort and satisfaction.

That the farmer is keenly alive to the matter of organization for the purpose of handling his farm products in order to realize their full value to himself, is being made more and more evident every day. At the seventh annual convention of the Manitoba Grain Growers' Association which was held in Brandon during the week of December 15th, the formation of a Farmers' Joint Stock Company along lines of the Grain Growers' Grain Company, for the purpose of establishing public markets, abattoirs, and cold storage, as a remedy for the conditions of the marketing of beef and for farm products, was given considerable discussion. These discussions and movements on the part of the farmer are an indication of progress, in fact there is nothing so indicative of the growth of business acumen on the part of our agriculturist as the fact that they are beginning to pay attention to the marketing of their produce as well as to the raising of it. The business man buys his stock in the cheapest possible market, the buying of this stock being in a sense the same as the crops and produce which the farmer raises. The next move of the business man is to market what he has bought in the best possible manner and at the best possible price to him, the difference in the buying and selling price being his profit. The cost of production of the farmer's crop and produce is in a sense his buying price and that which he received for his crop and produce is his selling price, the difference being his profit. The farmer may or may not have always gotten his just dues along this line at the hands of the middleman and if he has not gotten them it is high time that he has. In the majority of cases, discussions of this kind have never gone further than a friendly chat between two or more farmers at the post office or the country store and these discussions have in the main amounted to but little in so far as general results were concerned, but when the farmers as a body rise up and demand something, there is not the slightest question of a doubt but that they can get just what they want and herein lies the danger. These actions on the part of the farmer are of necessity somewhat

of a revolution. Our systems of doing business have been growing upon us for years and the commercial world has already well adapted itself to these particular systems. Now supposing that the farmers come along and demand something entirely new and entirely different, it will take some very careful handling and some very wise management to bring about the change and still not revolutionize a system of marketing that has taken years and years to perfect. This is by no means a reason why the things should not be done, only it should not be done in such a way as to work to the detriment of the farmer himself. It is true that the markets in a great many cases are in the hands of the middleman. He has built them up and he saw in the building, a business for himself, out from which he could make a nice profit.

It is almost a natural law that you cannot get something for nothing or in other words deliberately take it and if the farmer comes along and takes these markets, he must give something else in return. Just what that something else will be it is for the men who are handling these Farmers' Organizations to determine. The farmers of Western Canada during the past two or three years have shown more activity along this line than ever before and so far the results have warranted the effort. We have the utmost confidence in the farmers of Western Canada and in their ability to handle this matter and to carry out the proposition in a way that will not only be of benefit to themselves, but which will redound to the good and prosperity of the country as well.

Here are two ideas in contrast. Nobody can work harder or get more done than the interested farm owner, but if he devotes every day of his time to the regular work of the field hand he will be sure to neglect many things that should be seen and planned and done. He will leave his men as a manual laborer and follow the tradition of the old time successful farming.

The other idea is not to escape hard work but to work for much higher wages, to work a great deal more with his brain and somewhat less with his hands. If one does not actually figure out some of the losses he can prevent and the prolonged inconvenience of neglected tasks and the wrong construction in a building or yard or gate, and of the slow work and poor work that will be done by men and animals than machinery that are not given special and considerable attention, it may seem to him that he cannot afford to spend his time riding around or sitting down with a pencil and paper and thinking out the best way to do things; but on a large farm such as we have in a great many cases in Western Canada, good management will pay a far greater return than a man could possibly make with a team in the field.

Another question is that one who works physically almost to the limit of his strength every day during the busy season will be so tired and mentally sluggish that it will be impossible for him to think clearly and thoroughly about his practical farm problems. This is not a question of hard work, but of the kind of work and kind and amount of returns. Work with the hands is very necessary and in the case of the new beginner, there is really no other course for him to take but it is a principle of all successful business enterprises that a man really begins to make money only when he gets someone else working for him. It is a thing that it is well for every farmer to keep in mind in planning his work and it is a thing that will yield him many profitable results if rightly planned.

Every thresherman by this time knows just what his profits for the past year were. He knows whether he played a winning or losing game and if he has followed his work carefully he should know just why he has won or why he has lost.

It is a pretty good proposition to give this matter considerable thought and to lay out plans now for another year. If you were one of those who cut rates during the past season and you have figured it out that your loss was just the difference between the cut rate and what you should have charged, then of course you know what to do another year. If your old rig bothered you and your repair bill was exceptionally high, you know what you should do another year and if your percentage of bad debts was exceptionally large and your losses were in proportion to these bad debts you know what to do another year.

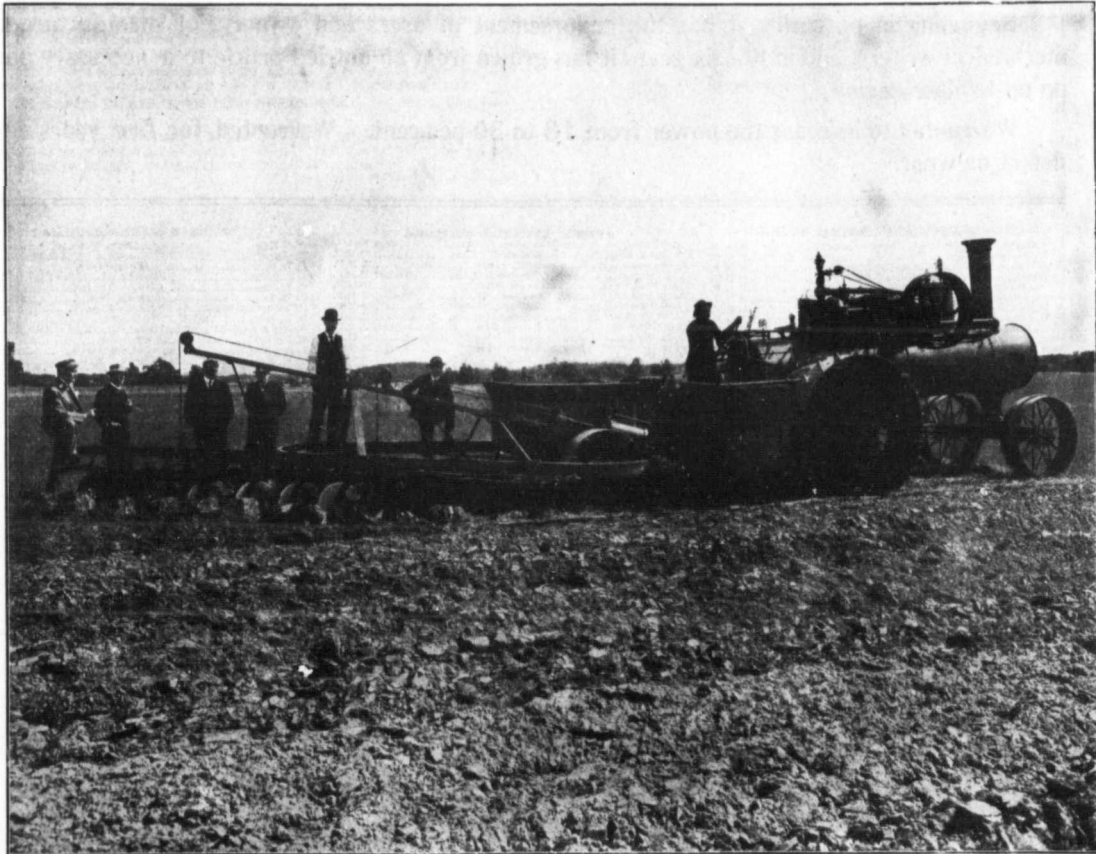
Don't forget that threshing is a business proposition in every sense of the word and don't try to fool yourself into believing that you can run it by any other rule.

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 the advertiser in the advertisement in writing to the advertiser, stated that his advertisement was seen in "THE CANADIAN THRESHERMAN AND FARMER."

Nichols-Shepard Plow Engine

The Nichols-Shepard 30 H. and 35 H. Plow Engines will Plow Cheaper,
Better and Deeper than can be done in any other way.



Nichols & Shepard 30 H. Engine pulling 10 14-in. Plows

The Double Cylinders apply the power steadily.

The Boiler Shell is one half inch thick, giving rigidity and strength.

The Gearing is extra strong, all main and counter shaft pinions being cast steel, all other gears semi-steel.

The New Spur Differential Gearing is unbreakable. Main and Counter Shafts extra large.

Brackets and Boxes larger and stronger than found on any other engine.

Main Shaft runs constantly in oil.

Traction Wheels extra wide and extra high. Large steel spokes and steel rims reinforced on both edges.

Large Water and Fuel Tanks.

Engineer can take on water while moving.

Unbreakable Plow Hitch will attach to any make of plow.

Write for catalogue and special circulars.

Nichols & Shepard Company

Battle Creek ————— Mich.

Canadian Branches: WINNIPEG, Manitoba; REGINA, Sask.

THE GOLD BALANCE VALVE

express their gratitude to their 6,000 customers of the United States and Canada for their generous response to inquirers asking information, for their readiness to show the working of the valve on their engines, and for their part in helping to make the Gold Balance Valve an engine necessity.

Beginning in obscurity, it has the endorsement of users and owners, of manufacturers and mechanical writers, and in the six years it has grown from an untried article to a necessary part of an up-to-date engine.

Warranted to increase the power from 18 to 30 per cent. Warranted for five years against defect or wear.

ADVANCE ENGINES.

Name.	Post Office.	State.	Size.
W. H. Lovewell.....	Aron, Ill.	.....	20 H.P.
E. S. Tringe.....	Weston, Kans.	.....	16 H.P.
E. Baumgartner.....	Leesburg, Ind.	.....	16 H.P.
Warren Kirby.....	Hayward, Iowa	.....	16 H.P.
George Johnson.....	Hock, Dak.	(Compound)	25 H.P.
A. L. Mark.....	McLouth, Kans.	.....	16 H.P.
M. E. Allbaugh.....	Thurston, Neb.	.....	16 H.P.
W. H. Frank.....	Kelona, Iowa	.....	16 H.P.
Chas. A. Hummel.....	Decey, Ill.	.....	16 H.P.
John J. How.....	Kellogg, Minn.	.....	16 H.P.
Frank Taylor.....	Homer, Minn.	.....	16 H.P.
D. C. Eitwein.....	Beaver Creek, Minn.	.....	19 H.P.
E. D. Agnew.....	Newtown, Tenn.	.....	12 H.P.
J. E. Colby.....	Cynthiana, Ky.	.....	16 H.P.
Wm. C. Kellman.....	Pindary, Ill.	.....	15 H.P.
N. E. Corning.....	Winford, S. Dak.	.....	15 H.P.
Repp Bros.....	Hartford, Kans.	.....	12 H.P.
C. P. Hall.....	New Munderk, Kans.	.....	20 H.P.
J. L. Harns.....	Parbury, Neb.	.....	16 H.P.
Henry Colas.....	Bradford, Ill.	.....	16 H.P.
Walbert Holman.....	Wellburg, Iowa	.....	16 H.P.
Henry Belden.....	Centralia, Kans.	.....	16 H.P.
R. B. Quicke.....	Tangier, Okla.	.....	16 H.P.
G. W. Carr.....	Spangie, Minn.	.....	22 H.P.
David Lucas.....	Chiles, Kans.	.....	12 H.P.
Haugen Bros.....	Pinecreek, Wis.	.....	15 H.P.
M. E. Heag.....	Landa, S. Dak.	.....	22 H.P.
Roy Smith.....	Lidgerwood, N. Dak.	.....	22 H.P.
Myers Bros.....	Bowell, Alta.	.....	22 H.P.
T. M. French.....	Grochan, Kans.	.....	22 H.P.
A. Butler.....	Chamron, Kans.	.....	16 H.P.
J. J. Noel.....	Denmore, Kans.	.....	16 H.P.
H. E. Smith.....	Weldon, Iowa	.....	16 H.P.
Adam Armstrong.....	Minto, Man.	.....	16 H.P.
W. F. Clifford.....	Waukon, Wash.	.....	22 H.P.
Jack Corrigan.....	Courtnay, N. Dak.	.....	22 H.P.
Frank Talbot.....	Gifford, Ill.	.....	16 H.P.

AMERICAN ABEL ENGINES

John H. Stewart.....	N. Henderson, Ill.	.....	30 H.P.
W. D. Brown.....	Yorkton, Sask.	(C. Com.)	28 H.P.
C. McKinnon.....	Napinka, Man.	.....	18 H.P.

AULTMAN & TAYLOR ENGINES.

A. P. Shaver.....	Concordia, Kans.	.....	12 H.P.
Paul Sipe.....	Junction City, Kan.	.....	12 H.P.
C. G. Gurney.....	Riolo, R. No. 3, Neb.	.....	16 H.P.
C. A. Crider.....	Mt. Jackson, Va.	.....	18 H.P.
Sam Doty.....	Marysville, Texas	.....	16 H.P.
C. H. Glazer.....	Cheyen, Kans.	.....	16 H.P.
Arnold Buhner.....	Chapman, Kans.	.....	20 H.P.
J. B. Hart.....	Carrolltonville, Iowa	.....	12 H.P.
H. B. Chandler.....	Argonia, Kans.	.....	25 H.P.
Peter Hallinger.....	Duncombe, Iowa	.....	16 H.P.

AVEY ENGINES.

F. A. Edell & Sons.....	Mellett, S. Dak.	.....	20 H.P.
Chris. J. Brown.....	Ahliene, Kans. (Undermounted)	.....	22 H.P.
Joe Weber.....	Grinnell, Ia. (Undermounted)	.....	15 H.P.
L. A. Schaffer.....	Princeton, Iowa	.....	18 H.P.
Theo. Holberg.....	Hotland, N. Dak.	.....	20 H.P.
J. B. Gould.....	Wheatland, S. Dak.	.....	20 H.P.
A. W. Reising.....	Cherterfield, Mo. (Undermounted)	.....	22 H.P.
Nuse Bros.....	Gilman, Ia. (Double)	.....	18 H.P.

AVEY ENGINES-Continued

Nathan L. Wasters.....	Grainfield, Iowa	.....	20 H.P.
S. G. Carl.....	Bett, Iowa	.....	20 H.P.
A. F. Ahrens.....	Woodbine, Kans.	(Double)	18 H.P.
W. E. Hamrick.....	Canton, Kans.	.....	20 H.P.
Henry J. Lutz.....	Peosco, Ill.	.....	20 H.P.
Chas. Fosson.....	Radcliffe, Iowa	.....	14 H.P.
Victor Reedholm.....	Gowrie, Ia. (Double)	.....	18 H.P.
Hugh McClung.....	Harper, Kans. (Undermounted)	.....	22 H.P.
O. La Day.....	Colby, Kans.	.....	20 H.P.
F. W. Grover.....	Harmon, Ill. & 22 H.P.	.....	22 H.P.
F. H. Krafa.....	Valparaiso, Neb.	.....	16 H.P.
H. L. Brooks.....	Larned, Kans. & 22 H.P.	.....	22 H.P.
Frank Erleben.....	Waynes, Neb.	.....	20 H.P.
John Bruven.....	Elbow, Sask.	.....	25 H.P.
G. E. A. Malcher.....	Cleburn, Ala.	.....	15 H.P.
H. A. Kennedy.....	Fruit, Kans. (Undermounted)	.....	20 H.P.
A. J. Oidaker.....	Geddes, S. Dak. (Double)	.....	22 H.P.
John B. Smith.....	David City, Neb.	(Double)	18 H.P.
W. G. Hays.....	Renassaw, Neb.	.....	22 H.P.
John Mayhew.....	Bryant, Iowa	.....	20 H.P.
E. A. Williams.....	Cathay, N. Dak.	.....	22 H.P.
H. H. Bronson.....	Labelle, Mo.	.....	20 H.P.
R. R. Sfyert.....	Johnstown, Neb.	(Undermounted)	20 H.P.

BAKER ENGINES.

Frank P. Roberts.....	Bangor, Wis.	.....	20 H.P.
C. L. Keyse.....	Clyde, Ohio	.....	16 H.P.
Herman Fry.....	Polo, B. No. 1, Ill.	20 H.P.

BEEVILLE ENGINES.

F. E. Tanner.....	Bethell, Ill.	15 H.P.
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BUFFALO-PITS ENGINES

Frank D. Morrill.....	Janelville, Minn. (Double)	27 H.P.
J. H. Keller.....	Milan, Ohio (Double)	18 H.P.
William Brown.....	Triton, Ill. (Double)	.....	18 H.P.
John Fry.....	Elmendale, N. Dak. (Double)	.....	12 H.P.
Chas. W. Bell.....	Rugby, N. Dak.	.....	25 H.P.
John Labor.....	Sykeston, N. Dak.	.....	22 H.P.
John Nye.....	Elmendale, N. Dak. (Double)	.....	12 H.P.
Martin Nelson.....	Clifford, N. Dak.	.....	16 H.P.
Chas. Granger.....	Starkweather, N. Dak.	.....	18 H.P.
Albert Viny.....	Beas, Wis.	.....	18 H.P.
John L. Hodges.....	Sullivan, Ill.	.....	18 H.P.
Wm. C. Clark.....	Rosheng, Ore.	.....	18 H.P.
Hervey & Moore.....	Poplar Grove, Ill.	.....	18 H.P.

CARS ENGINES.

R. F. Gaines.....	Bloomfield, Mo.	.....	15 H.P.
W. A. Price.....	Beas, Mo.	.....	15 H.P.
Fred Davis.....	Creamfield, Mo.	.....	15 H.P.
J. A. Stowell.....	Dumuth, N. Dak.	.....	25 H.P.
J. H. Jurgens.....	Armour, S. Dak.	.....	25 H.P.
Leroy P. Baxter.....	Blair, Neb.	.....	15 H.P.
G. Binder.....	Campbell, Neb.	.....	15 H.P.
Peter Lash.....	Portal, Sask.	.....	20 H.P.
Chas. Spencer.....	Aylesburg, Sask.	.....	25 H.P.
Rayner Bros.....	Foote, Sask.	.....	15 H.P.
John Tammann.....	Holbrook, Neb.	.....	20 H.P.
T. H. Reid.....	Holbrook, Neb.	.....	20 H.P.
Geo. W. Edmonson.....	Portmatilda, Penn.	.....	12 H.P.
Walter E. Richards.....	Portmatilda, Penn.	.....	12 H.P.
L. J. Ester.....	Monticella, Wis.	.....	15 H.P.
A. W. Zeigler.....	Wheatland, S. Dak.	.....	12 H.P.
Daniel W. Long.....	Roberts, R.F.D., Mont.	.....	15 H.P.
H. H. Senke.....	Covington, Okla.	.....	15 H.P.

CASE ENGINES-Continued

Daniel Miller.....	Tower City, N. Dak.	.....	25 H.P.
E. F. Frank.....	Tunkara, Ia.	.....	20 H.P.
J. T. King.....	Sentinel, Okla.	.....	20 H.P.
C. W. Thrun.....	Cathey, Alta.	.....	22 H.P.
G. M. Decker.....	Centralia, Mo.	.....	15 H.P.
Frank Stropolsky.....	Giasco, Kans.	.....	15 H.P.
N. G. Logan.....	Waco, Neb.	.....	15 H.P.
Narval & Beeson.....	Harmon, Ia. & Kans.	.....	15 H.P.
Simon Blair.....	Craig, Sask.	.....	25 H.P.
Taylor Bros.....	Cic Ethm, Wash.	.....	20 H.P.
G. F. Field & Son.....	Fallmyr, Wash.	.....	20 H.P.
R. M. Fry.....	Nye, Mont.	.....	15 H.P.
A. M. Urmil.....	Gaira, R. No. 2, Kans.	.....	25 H.P.
R. M. Conroy.....	Lovans, Kans.	.....	25 H.P.
R. H. Silverwood.....	Supply, Okla.	.....	15 H.P.
Geo. Becker.....	Board, Ky.	.....	15 H.P.
W. P. Wilson.....	Amesino, Neb.	(C. C.)	15 H.P.
Win. H. Miller.....	Grant, Alta.	.....	25 H.P.
Eph. Orr.....	Franklin, Man.	.....	15 H.P.
A. H. Derrick.....	Fanger, Okla.	.....	15 H.P.
C. A. Rust.....	Chancellor, S. Dak.	.....	15 H.P.
Joseph Hancy.....	Hort Comers, N. Y.	.....	22 H.P.
M. T. Omer.....	Newberry, S. Car.	.....	12 H.P.
Donald M. Gerow.....	Beatty, Sask.	.....	20 H.P.
A. S. Olsen.....	Montford, Mont.	.....	25 H.P.
John W. Sherrill.....	Ava, Okla.	.....	20 H.P.
Joseph Taron.....	Frida, Texas	.....	15 H.P.
Joseph Strobel.....	Campbellport, Wis.	.....	20 H.P.
W. S. Wise.....	Beard, Ky.	.....	15 H.P.
W. E. Knab.....	Dovra, Kans.	.....	15 H.P.
Wm. Beaumont.....	Mansum, Okla.	.....	15 H.P.
G. E. Springer.....	Owatonna, Minn.	.....	25 H.P.
Arnold G. Gent.....	Cockeysville, Maryland	.....	15 H.P.
Henry Grogan.....	Fort Dodge, Iowa	.....	15 H.P.
Cesar Brasseur.....	Guardian, Ia.	.....	20 H.P.
John Moy.....	Mound, Wis.	.....	20 H.P.
G. E. Wier.....	Shenandoah, Iowa	.....	15 H.P.
P. A. Nelson.....	Dolliver, Iowa	.....	15 H.P.
F. W. Taylor.....	Brownlee, Sask.	.....	15 H.P.
H. B. Millhouse.....	Olney Springs, Co. Co.	.....	25 H.P.
Iver B. Ansbry.....	Thief River Falls, Minn.	.....	16 H.P.
Henry Grogan.....	Oxford, Neb.	.....	15 H.P.
John E. Latham.....	Oakland, Ill.	.....	20 H.P.
C. W. Safford.....	Fort Dodge, Iowa	.....	15 H.P.
John Forrest.....	Camden, S. Dak.	.....	20 H.P.
John Eickhoff.....	Pala City, Neb.	.....	15 H.P.
Goodall Bros.....	Canos Camp, Pa.	.....	12 H.P.
John Rowan.....	Atia, Kans.	.....	20 H.P.
B. H. Kuder & Bro.....	Kellerton, Iowa	.....	12 H.P.
Wm. Campbell.....	Colgate, N. Dak.	.....	25 H.P.
B. A. Jaros.....	Conway Springs, Kans.	.....	20 H.P.
Carl Blomquist.....	Relatton, Minn.	.....	20 H.P.
Jama Devin.....	Valley Jet, Iowa	.....	12 H.P.
H. P. Bartels.....	Campbell, S. Dak.	.....	20 H.P.
Milo Brown.....	Duncan, Iowa	.....	15 H.P.
H. E. Lindsay.....	Elba, Neb.	.....	15 H.P.
Geo. H. Towns.....	Atia, Kans.	.....	20 H.P.
F. P. Mercer.....	Conway Springs, Kans.	.....	20 H.P.
J. A. Leonard.....	Conway Springs, Kans.	.....	20 H.P.
A. Lemon.....	Hill City, Mo.	.....	12 H.P.
Louis Augustin.....	Springfield, Minn.	.....	12 H.P.
G. A. Edwards.....	Springfield, Minn.	.....	12 H.P.
H. C. French & Son.....	Montezuma, Ill.	.....	15 H.P.
John Hunter.....	Hocia, S. Dak.	.....	20 H.P.

Prices Quoted on Application.

GOLD BALANCE VALVE KELOGG,

The Biggest Engine.

It was told in the caboose after an ordinary day's threshing, the boys were all laid in the bunks enjoying themselves and it came about in this way. We had for an engineer a new settler, but an ordinary enough engineer, in most ways, and likewise a separator man, a newcomer also, about the same calibre and, any good day's threshing, good piece of roading,

day's plowing, or large crops, or fine horses and especially big engines and separators—why it didn't matter what it was or who said it, but it would be from either one of 'em, "Aw, that ain't too bad, but you should ha' seen what Hank and I done with Old Man Lo. Lo's outfit way down someplace and way back in the nineties, that was goin' some? eh Hank," who would chip in, "you betcher," and none of us could

mention anything big, but one of these fellows had seen something someplace that would put us all in the shade, and the boys all got plumb sick of it.

Well it wasn't a hundred miles from Winnipeg, and it so happened that the gang was picked up around home, all neighbors, most of them were farmers' sons out as much for the fun as anything else, and these two fellows were the only strangers in the bunch.

When we had got about half through the run, we got to a place, darned good place too, and the Boss went by the name of Old Bill, who, by the way was an old thresherman himself, and a good one too and he could tell a first class story, and when he came out to meet us and show us where to pull for the night he naturally looked the bunch of us over and saw most of his friends of past days present, and in due course

E COMPANY

Read the Testimonial signed by hundreds of our Customers:

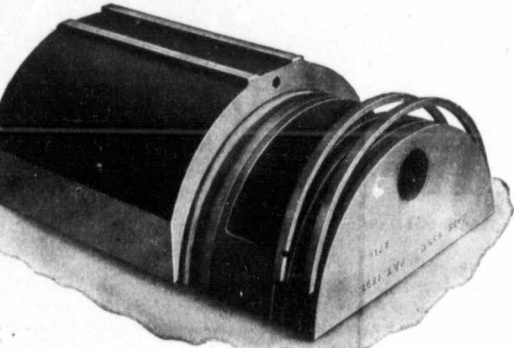
We, the undersigned threshermen of the United States and Canada, do hereby declare over our signatures to our brother threshermen, that the Gould Balance Valve purchased by us from the Gould Balance Valve Company does exactly what the company warrants it to do. It fulfills every condition of their printed warranty.

It is easily handled; it saves wear on valve gear and gives increased power.

It is the most valuable attachment on our engines. It is worth more than the price asked, and is one of the best investments we ever made for that amount of money.

The Company has been square in its dealings with us and has fulfilled every promise made.

If you desire more information a personal visit to our homes will demonstrate the truth of our statements for we are in a position to back up what we say; or you can write us and we will give you any additional information required.



CASE ENGINES—Continued

Name	Post Office, State	Size
H. A. Dorothy	Colgate, N. Dak.	25 H.P.
Fred Schaefer	Grafton, Wis.	15 H.P.
Nundand & Peterson	Shawley, Ala.	15 H.P.
H. P. Tarkington	Shawley, Ala.	15 H.P.
Spencer Bros.	Charleston, Ind.	20 H.P.
Will Hawley	Stonell, Ill.	20 H.P.
W. B. Baker	Ainsworth, Neb.	20 H.P.
Sidney L. Mohr	Pomeroy, Ind.	15 H.P.
J. H. Huber	Argers, N. Dak.	25 H.P.
Wesley Schuler	Harrah, Okla.	15 H.P.
H. W. Bunt	Downs, Kans.	15 H.P.
Fred Slesensicker	Twain Springs, Mo.	15 H.P.
Henry Miller	Martinsville, Ind.	15 H.P.
A. W. Freeman	Groesley Center, Neb.	15 H.P.
F. M. Murphy	Kilgore, Neb.	15 H.P.
J. E. Wickens	Bennet, S. Dak.	20 H.P.

CLYDE ENGINES

W. N. Harmon	Savannah, N. Y.	13 H.P.
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COLEMAN ENGINES

Jacob L. Christman	Huntington, Ind.	(Doubt) 20 H.P.
Chas. Osborn	Joslin, Ill.	25 H.P.
Max L. Grobe	Liston, N. Dak.	25 H.P.
E. H. Foster	Bolette, N. Dak.	25 H.P.

FRICK ENGINES

Chas. Applegate	Hopkins, Mo.	10 H.P.
B. E. Shuckie	Hampton, Neb.	20 H.P.
Geo. W. Floyd	American, Kans.	20 H.P.
George Rutherford	Hampton, Neb.	20 H.P.
Geo. Gahmer	Marion, Ind.	20 H.P.
Isaac Roney	Kirwin, Kans.	20 H.P.
John F. Bisher	Ramona, Kans.	20 H.P.
John Bode	Osage Bend, Mo.	20 H.P.
J. W. & D. C. Martin	Tarkio, Mo.	20 H.P.

GAAR-SCOTT ENGINES

H. J. McNair	Wacamey, Kans.	20 H.P.
James Dilla	Urga, Ind.	13 H.P.
Wm. Finter	Pleasant Hill, Mo.	16 H.P.
A. W. Hunt	East Peru, Iowa	13 & 22 H.P.
J. H. White	Grange, Mo.	13 H.P.
W. A. J. Radtke	Eckelson, N. Dak.	22 H.P.
W. L. Huser	New Vienna, Ohio	20 H.P.
F. H. Hallock	Ashmore, Ill.	18 H.P.
Geo. H. Hallock	Kansas, Ill.	16 H.P.
John Deiter	Sumner, Ia.	13 H.P.
P. H. Hammen	Pomeroy, Iowa	13 H.P.
Elmer Brown	Charleston, Ill.	16 H.P.
Harry Bradley	Duburg, Ind.	18 H.P.
C. W. Busch	Canon, Ill.	13 H.P.
James L. Burns	Perth, Kans.	16 H.P.
P. H. Hallock	R. No. 5, Okla.	20 H.P.
Ed. Dubrava	Monroe, Neb.	22 H.P.
H. S. Swagart	New Providence, Iowa	13 & 15 H.P.
R. H. Hartman	Coliar, Va.	18 H.P.
Wm. T. Hartman	Quincy, R. No. 1, Ill.	18 H.P.
C. N. Seaman	Charleston, Ill.	16 H.P.
Clay Powell	Charleston, Mo.	16 H.P.
A. A. Berg	Kiron, Iowa	15 H.P.
Ira A. Rhodes	Macopin, Mo.	16 H.P.
Adolph Nieber	Washburn, Wyo.	16 H.P.
Chas. W. Gresham	Bucklin, Kans.	13 H.P.
S. G. Deason	Franklin, R. No. 7, Tenn.	13 H.P.

MURPHY ENGINES

Name	Post Office, State	Size
J. M. Walker	Milan, Kans.	15 H.P.
Chas. L. Volmer	Port Clinton, Ohio	16 H.P.
John Cooper	Marvill, Kans.	6 H.P.
Geo. R. Crist	Converse, Ind.	20 H.P.
Albert Powell	Converse, R. No. 26, Ind.	18 H.P.
Robert Zielow	Great Bend, N. Dak.	20 H.P.
Frank W. Chase	Redven, Saska.	18 H.P.
T. S. Storms	Kempston, Ind.	12 H.P.
Adams Bahman	Wheaton, Minn.	15 H.P.
Walter Hanson	Spearsburg, S. Dak.	12 H.P.
Samuel Brantly	Rockdale, Wis.	16 H.P.
Nels Wangs	Pampa, Texas	25 H.P.
A. A. Friesen	Moede, Kans.	16 H.P.
J. W. Chas.	St. Clair, Minn.	25 H.P.
Hott Bros.	Converse, Ind.	18 H.P.

MINNEAPOLIS ENGINES

John Tripp	Kanawha, Iowa	16 H.P.
C. Brewer	Dallas Center, Iowa	18 H.P.
G. Rutsch	Alton, Iowa	18 H.P.
F. W. Green	Lewistown, Mo.	16 H.P.
Lynch Bros.	Trospota, S. Dak.	25 H.P.
John Wunderlich	Rarow, N. Dak.	22 H.P.
M. D. Dutton	Cozad, Neb.	25 H.P.
H. M. Wilson	Wiprud, N. Dak.	22 H.P.
Harve A. Thompson	Stafford, Kans.	22 H.P.
Arthur Rhine	Sweet Water, Neb.	16 H.P.
Ed. C. Rosendahl	Madock, N. Dak.	20 H.P.
J. O. Lutz	Allen, Neb.	20 H.P.
Ben H. Wiggman	Larchwood, Iowa	20 H.P.
C. E. Boyce	Larved, Box 581, Kans.	22 H.P.
R. Farrell & Son	Irwin, Iowa	16 H.P.
G. A. Gundersen	Walton, N. Dak.	35 H.P.
August Bessel	Coffa, Wash.	18 H.P.
Hertel Bros.	Hanston, Kans.	25 H.P.

NICHOLS & SHEPARD ENGINES

J. O. Stewart	St. Paul, Neb.	16 H.P.
E. A. Phillips	Chemun, Ill.	15 H.P.
H. W. Smith	Edgar, Neb.	15 H.P.
F. L. Steward	Two Rocks, S. Dak.	25 H.P.
H. C. Paulsen	Armour, S. Dak.	20 H.P.
J. E. Carlson	Chilhowee, Mo.	13 H.P.
John Carter	Martinsville, Ohio	16 H.P.
John J. Monk	Tell Rapids, S. Dak.	25 H.P.
William Baker	Waldron, Mich.	16 H.P.
Ole Olson	Valley City, N. Dak.	22 H.P.
J. W. Buller	Hillsboro, Kans.	16 H.P.
Martin J. Thompson	Pelican Rapids, Minn.	20 H.P.
Wm. H. Ernst, Jr.	Grat, Neb.	16 H.P.
Frank Jacoby	Elma, Iowa	16 H.P.
Stanley & Stewart	Claxton, Mo.	20 H.P.
Frank Chesterman	Crawfordsville, Ind.	16 H.P.
C. E. Rowton	Trivoli, Ill.	16 H.P.
H. M. Abbas	Manfield, Mo.	15 H.P.
W. A. Gossay	St. John, Wash.	30 H.P.
A. L. Sprout	Ackley, Iowa	16 H.P.
John H. Rindl	Langdon, Kans.	16 H.P.
Stanley & Stewart	Portland, N. Dak.	25 H.P.
John S. Rindl	Claxton, Mo.	20 H.P.
A. B. Clark	Royal, Neb.	15 H.P.
J. M. Lefever	Andrews, Ind.	18 H.P.
Jacob A. Rosholt	Scandia, Wis.	18 H.P.

NICHOLS & SHEPARD ENGINES—Continued

Name	Post Office, State	Size
Geo. N. Miller	Clear Lake, S. Dak.	20 H.P.
W. E. Keller	Reedhouse, Ill.	20 H.P.
Joe Thomas	John, Kans.	15 H.P.
E. C. Benton	Wichita, Kans.	25 H.P.

NORWEST ENGINES

W. R. Armstrong	Rising City, Neb.	25 H.P.
D. C. Ettrich	Beaver Creek, Minn.	25 H.P.
Chas. A. Sorenson	Dunnsborg, R. No. 1, Neb.	12 H.P.
C. A. Rogers & J. E. Jacobson	Brown, N. Dak.	51 H.P.
Frank Miller	Wesawaga, S. Dak.	25 H.P.
C. L. Gebhardt	Green, Kans.	25 H.P.
R. M. Hanks	Gering, Neb.	13 H.P.
Ole Oppen	Whalak, Minn.	20 H.P.
Ole & Eddie Larson	Geddes, S. Dak.	18 H.P.

REEVES ENGINES

R. G. Bycroft	Greenfield, Okla.	(C. Com.) 25 H.P.
Leo Vukott	Welcome, Mo.	20 H.P.
Geo. Keister	Dixon, Ill.	16 H.P.
A. F. Pollard	Gotham, Wis.	20 H.P.
S. F. Brown	Hickman, Dela.	16 H.P.
Emil Sobota	Schuyler, Neb.	16 H.P.
T. S. Rickell	Jamestown, Mo.	13 H.P.
A. J. Kesting	Gilmore, Mo.	20 H.P.
P. K. Derr	Tiwo Park, Texas	(C. Com.) 22 H.P.
Nersen Bros.	Maple Plain, Minn.	(C. Com.) 20 H.P.
Olio Durow	Leocompton, Kans.	(C. Com.) 20 H.P.
A. G. Stoum	Ensign, Kans.	20 H.P.
J. H. Rose	Seward, Kans.	20 H.P.
F. W. Dolobek	Chamron, Kans.	22 H.P.
T. L. Schmitt	Delhi, Iowa	16 H.P.
W. P. Shulker	Wild Horse, Colo.	32 H.P.
G. M. Olson	Beach, N. Dak.	20 H.P.
Geo. S. Stillman	Goodland, Ind.	16 H.P.

ROBINSON ENGINES

E. G. Myrah	Spring Grove, Minn.	22 H.P.
F. A. Wentt & Bro.	Harvard, Neb.	20 H.P.
August Voss	Leviusburg, Ohio	14 H.P.
J. F. Hipsley	Hariland, Ohio	18 H.P.
F. C. Miley	Monroe City, Mo.	16 H.P.
Theo. Saltzman	Guydan, La.	14 H.P.

RUMELY ENGINES

J. W. Parsons	Louisiana, Mo.	12 H.P.
F. A. Wentt & Bro.	Harvard, Neb.	20 H.P.
Max C. L. Krummel	Rice, Kans.	20 H.P.
White Water Thresher Co.	Whitewater, Mo.	15 H.P.
Frank E. Nelson	Bedford, Ill.	16 H.P.
Henry J. Thomas	Abhton, Ill.	16 H.P.
E. A. Byrd	Geneva, Ind.	10 H.P.
M. Garmon	Urbana, Iowa	15 H.P.
Martin Jensen	Iola, R. No. 3, Wis.	15 H.P.

STAR ENGINES

Holle Bros.	Kulman, Ind.	12 H.P.
C. F. Waterman	R. & W. (Doubt)	12 H.P.
J. F. McWilliams	Chanute, Kans.	12 H.P.
Chiquette Bros.	Bay City, Wis.	30 H.P.

STEVENS ENGINES

J. C. Romick	Treer, Iowa	16 H.P.
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Agents Wanted in Unoccupied Territory.

WALVE COMPANY

we all turned in and during the next day some one had put Old Bill wise to the two Philistines in our midst, so he resolved to have a little quiet fun with them and incidentally make some for the gang, so he passed the word quietly that we were none of us to be surprised at any statement he should make but corroborate him if we were asked, and we weren't going to get through that night, so shut down about seven

o'clock and went to supper, after everybody had got into a comfortable shape, and got his pipe going, Old Bill came in and after a few desultory remarks, skillfully turned the conversation, to an imaginary big traction engine owned by Old Man Johnson (equally imaginary), but it wasn't long before the engineer and the separator man were interested, presently they both began to ask questions. Old Bill smiled and guessed they

hadn't heard about this big engine. No, they confessed they had not. Well the old man began to describe her, he claimed he couldn't remember her exact dimensions, but could give a description sufficiently accurate, to form some idea of her size. Well to begin with, this old man Johnson had some quarrel with the steamboat owners out here on the Lake, so he had this big traction engine built to compete with them

freighting and the first time he filled the boiler, (he got the water out of the lake) he lowered the level of the lake so far down that it left the steamboats high and dry; why she was so big that when they dumped the fire Saturday nights, smoke would still be coming out of the stack Sunday morning; in going a mile she only made five exhausts, had to stop for water every two miles, and it

(Continued on page 54)

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 Gasoline Traction.

THAT gasoline traction engines are bound to come into general use is as plain as the fact that the self binder is used today wherever grain is grown. So many reasons are offered in support of this contention that many manufacturers of steam engines not only consider this a foregone conclusion but are preparing to meet this contingency by arranging to build gasoline traction engines for farm work. This is not because of a desire to be forever changing, for this is the last thing a manufacturer cares to do.

Steam traction engines have reached a very high state of perfection and but little can be added to make them more useful. But fuel is becoming scarcer and more expensive every year, and it requires good fuel to generate steam for the monster engines now required to do the heavy work of the farm traction engine, especially during the cold weather. Water is an object to the user of the modern steam engine on the western plains where the heaviest kind of work is required of these engines, and it often has to be hauled miles during dry weather.

One advantage which the builders of the combustion engine claim over that of steam is less weight for a given horse power. This point may or may not be well taken, but it is the specter that stalks abroad in the land, especially among operators of threshing machinery where the motive power of traction engines is most required. The user of a traction engine has a hard road to travel at best. He knows that lurking along the way are death traps in the shape of dangerous bridges over which he must pass and which in many cases causes death and injury. The number killed and injured by reason of imperfect bridges every year is so great that anything that offers relief, or which promises to do so, is eagerly

sought after by the operatives of traction engines.

Only those who have fired a traction engine in the winter know anything about what it means to raise steam and hold it at a point where the engine will develop its rated power. Hours of hard and constant firing are necessary to get a sufficient head of steam to begin work. The

claims and the only successful reply he receives is that "it's unreliable and a costly experiment." But now this argument has been upset by the very men who build steam engines. These gentlemen, most of whom had experimented in gasoline engines years ago and cast them aside as failures, have since become owners and operators of automobiles

a skip or a miss, of that delicate construction which of necessity the automobile engine must be, has taught the world a lesson, and no one has watched its progress with more interest than the builders of steam engines, most of whom have learned this lesson from personal experience. This great educational factor, the automobile, despised by some, abused

by many, and over which all mankind has become intensely interested, has been the silent teacher of the steam engine builder and he has heeded or will very soon heed the lesson.

To the steam engine the world owes, in a large measure, its present prosperity, and from the days of Robert Fulton down to the present it has performed its Herculean tasks with a great degree of efficiency. Those

who have studied its construction and whose cunning brains have brought forth the perfect steam engine, have run well and the world owes them a deep debt of gratitude.

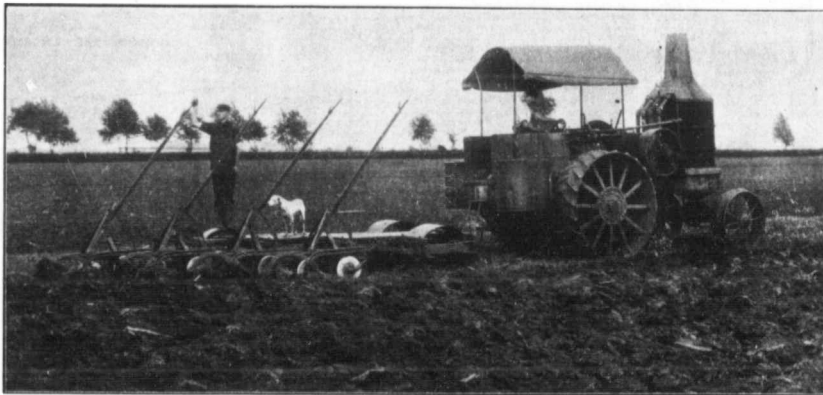
There will always be a demand for steam traction engines but the fact remains true, that with the improved gasoline traction engine now being built and those which will yet be built, and with the discovery of oil all over the world in abundant quantities, for fuel, and its successful use as fuel, together with the use of denatured alcohol, it would be shortsightedness on the part of anyone to deny that very speedily the gasoline engine will supplant the steam engine to a great extent.

An Answer to S.E.A. In Our Last Issue.

Canadian Thresherman & Farmer,
Winnipeg.

Gentlemen:—

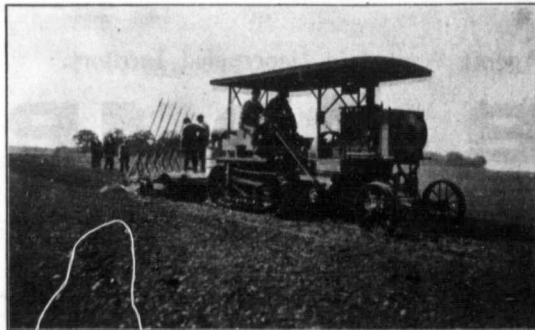
In reply to your recent request for our experiences with a gasoline engine, also to your request in your December issue for our opinion which outfit for one of your readers to buy. We will give you a full detail of what we



The Rumely "Oil Pull" Tractor pulling an eight bottom fourteen inch John Deere Engine Gang.

gasoline engine salesman, knowing these facts, whispers them into the ears of the prospective buyer and for further argument demonstrates his ability to make a "dead engine" begin work instantly by applying the ignition and turning on the gasoline. He

in which they have made journeys of from five hundred to five thousand miles without more than minor mishaps, and most of these were from causes other than defective engines. They have gone over the smooth boulevards of the cities and over the rocky and



The Holt Caterpillar Gas Tractor Doing a Plowing Stunt.

goes further and demonstrates the great saving of time and energy by simply turning off the flow when through, and his engine becomes as dead as a door nail." He challenges his brother competitor with the steam engine to meet him with any argument to offset

mountainous regions of the country, many times at a speed equaling that of the ordinary passenger train, and these gentlemen have learned a lesson therefrom.

The gasoline engine of from four to six cylinders, speeding along for hours at a time without

Trophies of a Season



International gasoline tractors scored unparalleled successes during the past season.

At the Farm Motor Contest held at Winnipeg, Manitoba, International tractors won four prizes and carried off the Sweepstakes Gold Medal for the best all 'round farm tractor.

At the Farm Motor Contest held at Brandon, Manitoba, the International tractor won three medals.

At the Plowing Contest held at Aurora, Illinois, the International tractor won the loving cup.

At the traction plowing contest held at Amiens, France, the International tractor won the first prize against all comers—the crowning success of a victorious season.

This competition of Amiens was open to all comers and all nations. The conditions under which the tractors competed were unusually severe—the tractor was required to work two consecutive days without stopping a single instant. The International tractor performed this task to the entire satisfaction of the Special Committee appointed by the Automobile Club of France and was awarded the cash premium of 2000 francs in addition to a diploma of honor and two gold medals.

In all of these contests, regular stock engines were used—they were not built especially for these competitions.

The thresherman who uses the International tractor is in a position to claim for his tractor the distinction that its utility has been demonstrated in actual field tests in three countries on two separate continents.

An International tractor is admirably adapted for operating a threshing machine—no water, coal or wood to haul—requires practically no attention except to start and stop, keep the fuel tank filled, and oil occasionally.

If you are interested in traction engines or threshing machines see the local International dealer or write the International Harvester Company of America at nearest branch house.

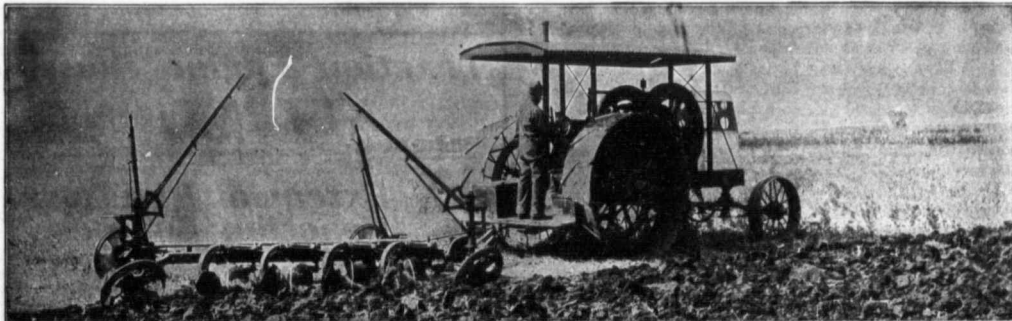
CANADIAN BRANCHES: Brandon, Calgary, Edmonton, Hamilton, London, Ottawa, Regina, Saskatoon, St. John, Winnipeg, Yorkton.

INTERNATIONAL HARVESTER COMPANY OF AMERICA

(INCORPORATED)

HOME OFFICE,

CHICAGO U. S. A.



did with a Flour City Gasoline Tractor, 30 horse power.

We are owners of some 2000 acres which we started to farm in 1907 with horses, which we found a sure, but slow way of farming on a large scale. So last year we decided to look into motive power. We gave both steam and gasoline a careful study, also went and saw both powers at work, and after careful consideration, we decided for gasoline by a large majority.

We got our outfit rather late, last of September, owing to the shortage of engines. The expert stayed two days with us, and we started on our new road alone. We have a Red River Special Separator, 28-42. First week we threshed with five teams and separator man, 5,800 bushels of wheat, 978 bushels of oats and 176 bushels of barley, average for gasoline the six days was 19½ gallons at 24½c. per gallon, 2 gallons of cylinder oil, \$2.00 and 2½ gallons of lubricating oil, \$1.00.

The last day we ran the engine on 3 cylinders, as I was short of spark plugs. There was one occasion when plenty of power came in handy. That is one thing, Mr. S. E. A. don't be afraid to buy a little extra power even though it costs a little more. You will surely see the time when you will need it, and with the reserved power you won't have to drop any plows or take off any trains from your separator, as in case of accident or small breakage.

We had no experience either with steam or gasoline, and at times we had our troubles, which is a little hard for an inexperienced man to find. But after a few ups and downs you soon learn. In fact it is twice as easy as I thought it would be, as I expected trouble when I bought it, and our greatest surprise was the amount of gasoline it consumed, which is the main thing about a gasoline outfit. I have started my engine in the morning, and have only gone to it at times, balance of the time was spike pitching.

When it came to plowing, that was when I made them all look up. Some of my neighbors in fact about all quit plowing, as it was too dry. But I had no trouble in plowing 5 and 6 inches deep with eight plows, and I made 14 rounds on a field about 1½ miles long. I have a John Deere 8 furrow plow and she is a daisy. No choking up, and cleans through all kinds of soil. In 3 days we plowed 54 acres.

The outfit travels faster than horses, as we tried this, and don't take half the space to turn in as I expected. Don't have to stop for sloughs; just go right through. Had no trouble in cold weather, only on starting up as the machine was a little stiff and hard to crank up.

The Flour City has all the up to date machinery. At any time after it has run a few minutes, and then you shut down to repair something, just press the button and you are off. The 7 ft. drivers are certainly a great thing. The workmanship all through is fine, and if any party should ask me what outfit to buy, I certainly would say, "Go and see the Flour City work before you buy." In fact, I would be glad to have anyone give us a call when we are at work, and they can see for themselves, which I would advise Mr. S. E. A. to do: I think as far as improvement goes, the gasoline engine will be improved on, such as little conveniences for years to come. But I do think it is on a good solid foundation now, and it would be safe to buy any time. Old farmers in this district are giving the gasoline power the best of it, who a year ago, you could get nothing from regarding gasoline; it was all steam. This is a long letter for what little is in it. But next time I write regarding gasoline engines, I will save time to you and myself and I'll just send a picture and then you can see what it can do.

Yours truly
Bennison Bros.
Silver Moon Ranch,
Manor, Sask.

A Good Experience.

I have broken somewhat over 400 acres with a gas traction engine during the past summer and we also threshed during the last fall for 38 days. My engine is a 33 h.p. Hart-Parr Gasoline Traction and it has given me excellent service. I was not compelled to lay up for three days during the entire 38 on account of the engine and I often took 30 h. p. out of it.

It takes about 4 gallons coal oil per hour under full load and for this we pay 20c. per gallon, which makes the cost of fuel 80c. per hour. I figure that it takes a little more gasoline, but I cannot tell exactly how much because I never use a great deal of it on account of the high price we have to pay for it here. Besides, on a heavy load I like coal oil much better. It seems to make a harder explosion and therefore gives the engine more power. On a light load, however, it will run smoother and quieter on gasoline.

There is one thing about a gasoline traction engine, in order to keep it running well, and that is to keep every part of it tight, see that all bearings are adjusted so that there is no play anywhere, as there is more strain on nearly every part of a gasoline engine than there is on a steam engine. It is, therefore, necessary to see that your engine is timed right for if the explosion takes place



THE FLOUR CITY TRACTOR

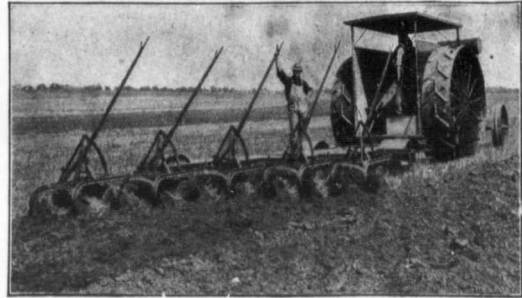
Twice winner of the Gold Medal at the Winnipeg Contests in 1908 and 1909

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



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KINNARD-HAINES CO. 828 44th AVENUE N. MINNEAPOLIS, MINN.

Ontario Wind Engine and Pump Co. Ltd.

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GILSON

"GOES LIKE SIXTY"

GASOLINE ENGINES

LOW PRICES

COMPACT AND SIMPLE

WATER COOLED Frost Proof



AIR COOLED OR WATER COOLED ALL SIZES STATIONARY AND PORTABLE Write for Catalogues and Prices

GILSON MFG. CO.

516 PARK STREET GUELPH, ONTARIO

Traction Engine Plowmen ATTENTION!

Do you plow with an engine? Were you ever stuck in a mudhole or soft ground? If so we have an

Extension Rim for Traction Engines

that will never see you stuck.

It will take you through soft ground, mudholes and bogs. It is the long looked for remedy for spring plowing. It will save you hundreds of dollars a year because you will never have any aggravating delays through getting bogged.

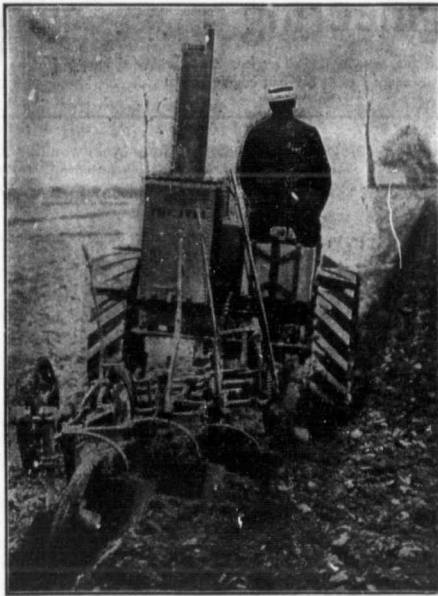
The Rims are attachable to the drive wheels of any engine, are not cumbersome, are moderate in cost, easily attached and will positively do the work.

For further particulars apply to

SCHEIL EXTENSION RIM COMPANY

Watch for Feb. Issue Can. Threshingman and Farmer

Langenburg, Sask., Canada



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 3200 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.

JAMES STUART ELECTRIC CO. LIMITED
 322 Smith Street Dept. T. Winnipeg, Canada

too early or too late it makes a great difference as to the amount of power which you can get out of the machine. I always had my engine set about 40° off centre on gasoline and about 43° on coal oil. The coal oil however, differs with different lots. On some I had to time my engine a little early and on some I had to time it a little late, but this can be easily determined by just holding the fingers on the timers. If it then pulls its load without a hard metallic sound, it is all right to set it earlier. If not, time according to directions.

All parts that belong to the governor and the batteries must be kept clean and well looked after every day because if they are oily and dirty the spark will be made weak and you will have less power than in a bad running engine.

My experience during the 76 days that I ran my engine this past summer is that if one keeps the engine clean and all bolts tight and have it perfectly timed it will give very little trouble. I had some little trouble when I first started. I used coal oil when I was going to turn on the water, but I soon learned in doing this that the engine commenced to pound. I found, however, that by turning on the water slowly and if it still pounded I held one knife edge hooked up so as to hear which cylinder was pounding; but

towards the last I could tell with the knife edge down and if one cylinder pounded and I could not deaden it by turning on more water, I changed the governor so as to make the other cylinder take more load.

I have heard some gas engine owners complain about it being hard to start their engine when it was cold and frosty, but this can be overcome by taking the spark plugs out and cleaning them well, putting a little gasoline on them and setting fire to it. This will warm them up and give a better spark. When starting in cold weather, give the cylinders a little gasoline.

Hoping that this experience will be a benefit to someone, I am,

Yours truly

Bernhard Swanson,

Royholm P. O. Sask, Canada:

Noted Man Enters Agricultural Field.

Mr. George L. Cook, who has superintended the building of more gas engines than any other man, formerly General Superintendent of the Fairbanks-Morse Company, at Beloit, Wisconsin, later of the International Harvester Company, as General Manager of the Gas Engine plant at Milwaukee, from which plant there is today turned out, approximately, 30,000 gas engines every

year, and who has had full charge of and just recently completed such an efficient manufacturing organization in the E. M. F. plant at Detroit, Michigan, that an automobile can be turned out every five minutes, has now entered the employ of the M. Rumely Company, at LaPorte, Indiana, as Works Manager.

Mr. Cook intends, immediately to move his family to LaPorte and take up a permanent residence in that city and confine his efforts wholly to the interest of the M. Rumely Company.

The Gasoline Engine in Cold Weather.

GEORGE CORMACK.

During the winter months especially in the cold climates, there is probably no more frequent complaint, among the many hurled at the gasoline engine builder, than: "The engine is awful hard to start on cold mornings." Many cases come up where he has cranked the engine for ten, fifteen or even twenty minutes, before he got the first explosion. We all know that cranking an engine for even a few minutes is no joke, especially so when the lubricating oil has congealed with the cold and the engine turns hard. It is one of the most exasperating and temper trying ex-

periences that assail the gasoline engine operator. It is like the long, sharp thorns which Mark Twain tells of meeting in his travels through the Holy Land. In his inimitable way he tells how when the ordinary unregenerate mortal ran up against one of these thorns the mind could only find relief in profanity. So it is with most of us when we get up against a vigorous, prolonged spell of engine cranking. This strenuous cranking of the gasoline engine, even in the coldest weather, can, however, be very easily avoided, if the reasons for the hard starting of the engine in such weather are thoroughly understood, and the proper course pursued to overcome the unfavorable conditions.

Cold weather affects the gasoline engine in several different ways, preventing it from starting as easily as in more temperate weather. In the first place, there is not enough heat in the atmosphere to vaporize the gasoline. Secondly, the cold affects the dry cells in the battery, reducing the rate of discharge or the amperage, and lastly, the cold freezes the lubricating oil in the cylinder and bearings, making the engine hard to crank.

I do not know any method whereby these conditions can be overcome, and the engine started as quickly as in warm weather, but I can tell how the engine can be

Continued on page 50

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 III.

The Meaning of Cycle in a Gas Engine

In the practical operation of a gas engine there are several stages, each characterized by a particular event. The cylinder is charged by an outstroke of the piston, creating a vacuum behind it

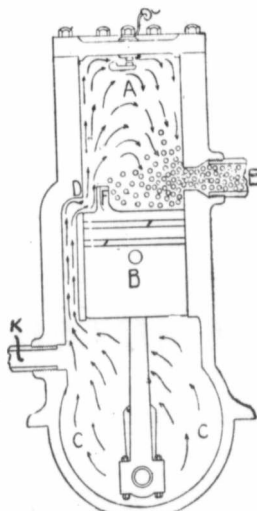


FIGURE I
Theoretical Condition of Gas, 2 Cycle.

and drawing in a mixture of air and gasoline gas formed in the carburettor or mixer. The charge is then compressed by the return stroke of the piston which act secures complete carburization of the contained air, and reduces the mixture to the proper condition, to be kindled by the igniting spark or other source of firing. This causes it to explode or to expand suddenly and with great effect and drive the piston outward again. The fourth stroke which is the one immediately following the explosion is known as the exhaust stroke, from the fact that the piston moving back again in the cylinder, expels the products of combustion through the exhaust valve. This process completed, the parts are in position for a repetition of the process, the valves for admitting gasoline to the cylinder then being opened again.

The word cycle is somewhat of a misnomer. We speak of two cycle and four cycle engines, but if we were to be exactly correct, we should say two stroke cycle or four stroke cycle, meaning that it takes two and four strokes respectively to perform the operation of suction, compression,

working and exhaust. In other words, the two cycle engine administers an impulse to the piston at every complete revolution of the fly wheel, while on a four cycle engine the impulse is administered only once in two revolutions.

It is quite a common matter for one to mix up cycle and stroke. They do not mean the same by any means, for the word cycle means all that has to be done in the cylinder to make the engine work, viz., suction, compression, working stroke and exhaust. Where a great many get mixed up

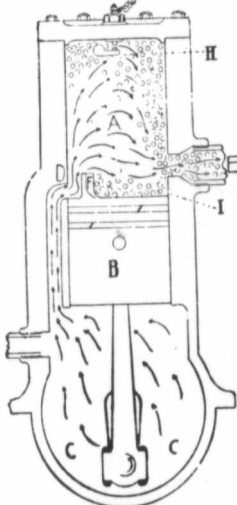


FIGURE II
Actual Condition of Gas, 2 Cycle.

is in thinking that stroke and revolution mean the same thing. Take for example, a four cycle engine and turn it over so that the piston is at the back end of the cylinder. Now turn it over so that the piston is at the front end and you will see that that is one stroke, but remember that you have only turned the crank half way around. When you turn it back to where it started from you will see that the piston has gone to the back end of the cylinder, which is another stroke. This piston has thus made two strokes, while the crank has only made one revolution.

Referring to figure (1) you will see just how the two cycle engine works. If the piston (B) were at the top of the cylinder, it would come down on the working stroke and at the same time put a light compression on the mixture in the base or crank case (C) which is made air tight. As the piston gets toward

the end of its stroke it uncovers the exhaust port (E) and the exhaust rushes out through it as the piston keeps travelling down and back again until the port is covered. In the meantime, after the exhaust port is opened the piston uncovers the inlet port (D) and the charge which was under compression in the base rushes in and is turned towards the top of the cylinder by the deflector (F) and by this means helps to force out more of the exhaust. The piston travels by closing ports, draws into the base a fresh mixture through the pipe (K) to which is attached the mixer or carburettor, having a check valve so as to hold the charge in the base. The piston on the rest of the way up compresses the charge in the cylinder and when near the top ignites it and starts down on the working stroke again.

You may ask the question, why are not two cycle engines in more general use? The one answer to this seems to be that they are not as economical in the use of fuel

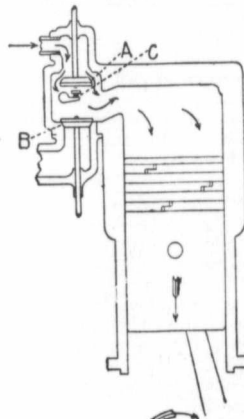


FIGURE III
Suction Stroke 4 Cycle.

as the four cycle type. This may be explained somewhat as follows. By referring to figure (1) you will see that the arrows stand for the new charge and the circles for the exhaust, and you will also see just how nicely the new charge is pushing out the exhaust. If it worked out in just this way the two cycle engine would be just the thing, but it does not. What really happens is like figure 2; and you can see how things get mixed up, some of the new charge going out with the exhaust and some of it mixing with what is left. So it does not make a good burning mixture and uses more gasoline to do the same amount of work

than a four cycle would. Figure 1 is what it shows out to on the drawing and figure 2 is how it acts when at work.

A prominent gas engine authority remarks, "The two cycle engine at best is the next thing to an impossibility." By this statement he means that the act of admitting inflammable fuel into the mixture already flaming with gas, without igniting it, involves something closely approaching a contradiction in physical conditions. Were it not for the fact that the burning gases actually exhaust faster than the new mixture is admitted under impulse to their inherent expansion, ignition of the new charge would seem to be nearly inevitable. By deflecting the incoming mixture to the rear end of the cylinder, it follows the rapidly expanding exhaust coming into contact with it only when the expansion has so far reduced the temperature that the danger of pre-ignition is averted. It may be readily seen, however, that the danger of such interference or at best of a contamination of a new charge to a point rendering it unignitable, must result if the speed be increased beyond a certain moderate rate.

Despite statements to the contrary, there have been a number of two cycle gas engines placed upon the market that have met with a fair degree of success and the time may not be far distant

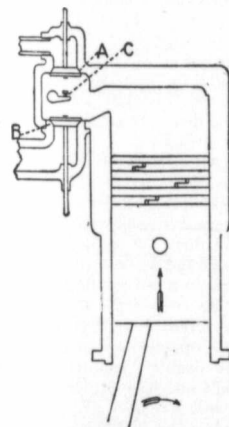


FIGURE IV
Compression Stroke 4 Cycle.

when the gas engine designer will perfect something that will work.

The four cylinder engine works as follows: The piston travels down on the suction stroke through the inlet valve (A) in figure 3. When the piston reaches the lower end of its stroke

the valve (A) closes and the piston on the return stroke (figure 4) compresses the mixture in the cylinder and when near the top ignition takes place at (C). The piston now travels down on the working stroke (figure 5) and when approaching the lower end the exhaust valve (B) is opened. The exhaust valve is held open during the entire up-stroke (figure 6,) and the piston pushes the exhaust all out; or to be exact, not quite all for the clearance space at the top has always some gases left in, but you can see that it clears the exhaust far better than the two cycle does.

OIL Pull

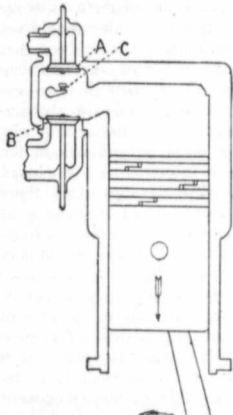


FIGURE V Working Stroke 4 Cycle.

It may be explained more fully in another way. The four strokes two outward and two inward, constitute what is known as the cycle and as we have said before there is thus only one power impulse for every two revolutions of the fly wheel. This power stroke also continues while the crank is travelling through half a revolution or through an arc of 180°. It is also evident that the cam for operating the valve system of the cylinder revolves once for every two revolutions of the crank shaft with which it is geared. Thus is secured the opening of the charging or inlet valve and of the scavenging or exhaust at precisely the proper points in the cycle.

The operation of a four cycle engine may be understood more fully by figures 3, 4, 5 and 6. Supposing we have a four cylinder motor, the cranks of whose four pistons are so fixed that counting from figure 3 to figure 6 we have cylinders representing the four operations of the cycle; that is to say the suction or supply stroke, figure 3, the compression stroke, figure 4, the explosion or working stroke figure 5, the exhaust figure 6.

In such an engine the crank is turned by a steady impulse, since a new explosion would occur in each 90 degrees of rotation. At the aspirating or supply stroke, the outward movement of the piston, by creating a partial

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vacuum, causes the feed valves to open under atmospheric pressure, thus indicating that the pressure within is lower than that of the atmosphere without. At explosion the volume and temperature are raised, and at the end of the exhaust stroke the burned gases are expelled. The supply stroke being completed, and the feed valves closed by force of a spring, there is no considerable increase in volume and pressure due to contact with the hot cylinder walls, nor yet from the residuum of products in the clearance, although, owing to the tension of the valve spring, the pressure of the contained gases is below one atmosphere. The rise in pressure during the supply stroke is from a negative point to generally about 13.50 pounds to the square inch. So soon, however, as the compression stroke begins, the indicator tracing shows a steady rise to 65 or 70 pounds to the square inch, at the completion of the stroke, according to the compression ratio, as will be presently explained.

At the end of the compression stroke the gas mixture in cylinder has attained its greatest density, also its greatest pressure and temperature previous to combustion.

It is then ready for firing, which is generally accomplished very shortly before the piston begins the second out-stroke, the explosion serving to bring the gas to the maximum point for volume, pressure and temperature alike. In fact, the effect, as shown by thermometer and indicator tests,

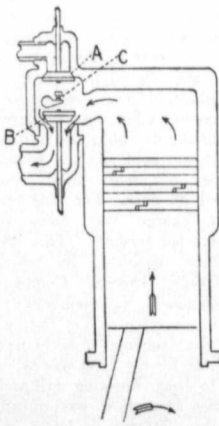


FIG. 6. Exhaust Stroke 4 Cycle.

is that the temperature in a gas-engine cylinder rises during this

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stroke from between 500 to 700 degrees, absolute, as noted when the engine is running at good speed, to between 1,500 and 2,000 degrees, on the average, and the pressure from an indicated 65 or 70 pounds to 200 or 230 pounds per square inch. The fall in both particulars is equally rapid during the succeeding in-stroke, when the burnt gases, under impulse from the piston, are expelled through the open valves.

Regarding the time of firing practice differs considerably. Generally, as stated above, it is slightly before the beginning of

(Continued on page 34)



Handling The Farmers' Grain Crop

By E. HUGHES



Wheat for the millions engages a very large proportion of the population of the three western provinces. From the breaking of the prairie till the bread is on the table of the consumer every movement and process has more or less interest to the man who tills the soil. Nearest to the tiller is the man who gives him the money reward of his labor. If this reward is disappointing, it is natural that the tiller should scrutinize the proceedings of and demand explanation from the buyer.

The average grain dealer has always been ready with excuses which, for a time at least, have silenced if they have not satisfied the man who thought too large a toll was taken from him.

A grain exchange is simply a market localized and as such, is a benefit, an actual necessity to commerce in cereals or any other commodity. In this market all grain dealers congregated naturally and from it came prices of grain which ruled those paid at elevators throughout the country. When the latter were unsatisfactory, agitators could not find terms too strong to denounce the Grain Exchange, which was supposed to be a place where schemes for the robbing of the farmer were incubated. The courts were appealed to and such a dust kicked up that few people knew any more about the question than they did before.

Now the members controlling the grain exchange were engaged in two separate occupations. First those who purchased the grain outright, manufactured it into flour, or exported beyond Fort William or Port Arthur. Second those who received grain shipments for sale on commission and put up each consignment in the Grain Exchange market to receive the best bid to be had. The first, for convenience, may be called the elevator interests, for they nearly all owned elevators and all belonged to the Grain Dealers' Grain Co., the second may be called the commission men.

A great deal of confusion of ideas has originated through ignorance of the above distinction. To have the Grain Exchange blamed for the misdeeds of one section only, has been of immense advantage to that section. The same section being in the majority in the exchange, compelled that body as a whole, to bear the odium which should only attach to themselves. The elevator interests combined to have one price paid at each station by all their

buyers and, as a commission man was not allowed to share his commission with a local buyer, or engage such a buyer at less than a substantial salary, the price on the street was at the discretion of the elevator interests. Of what they did to the farmer the story is too stale to repeat here. It was a good large plum to have the say as to what each wagon load was to cost. Had it not been for the loading platform, and the commission man on the Grain Exchange, there would have been cut each week by the elevator interests a large and luscious melon instead.

In the court trials the Grain Grower's Company took foremost part in an attack on the grain exchange and the rank and file of the farmers did then and do still continue to blame the Grain Exchange for a condition for which it is not responsible and over which it has no control.

The commission man's business was done after this fashion. He first bought a seat in the Grain Exchange and furnished a bond for honest dealing with his consignors before he might solicit business. A farmer shipped a car of wheat to Fort William or Port Arthur and gave instructions on the shipping bill, that a certain commission man was to handle his wheat. The shipping bill was mailed to this commission man who would send to the farmer at once about half of the value of the wheat. He then procured a sample and a report of the government inspector or as the car passed Winnipeg. On the car's arrival at the Lake port it was weighed and a warehouse receipt for the quantity of grain with record of the freight and charges was sent to the commission man. When instructed to sell he went to the open exchange and offered the wheat to the highest bidder. When sold an account sales was rendered showing the day hour and minute that it was sold and to whom. Balance of sale price was remitted at once. For this service a charge was made of one cent per bushel. This was the very business in which the Grain Growers' Company was engaged, as members of the Exchange too. Yet they allowed the Exchange to be blamed for all the ills the farm was called upon to bear, knowing full well that the accusation was unjust.

On the platform, by letter and through flamboyant advertisements, the farmers were admonished by the Grain Growers' Company to consign their wheat to

"their own company" which was no more the "own company" of the non-shareholders than the C. P.R. is. Posing as the only friend of the farmer, a commission firm not able or willing to do any more for the farmer than any other commission firm, stood by while their competitors were discredited in the minds of the whole country.

In business circles it would be considered reprehensible, on the part of a commission man, to use wheat consigned to him for speculation, or to attempt to manipulate the market with it. It has been asserted that the Grain Growers' Company has done this. It might be claimed that it is done with the interests of the consignors in view. Granted that it is does the ordinary farmer understand that this is being done? Is the Grain Growers' Company strong enough, wise enough to manipulate the market successfully when the strongest and shrewdest men in the world have come to grief in the same game?

An overwhelming majority of the people in this western country is with the farmer in this grain controversy and they will stand for pretty nearly anything that may serve his interest but they have seen many "farmers' friends," well intentioned and otherwise, get the farmers into endless trouble. Unwise entanglements at the present juncture may antagonize valuable influences that might be enlisted in the farmers' problems for all time.

The leaders in the Grain Growers' Association are the managers of the Grain Co. In the former capacity they aspire to be

legislators and general business regulators. They are amateurs all through. As we have no professionals in this country devoted to the last two occupations there is no objection to the personnel up to date; but for the future we must shortly look for action in which the interests of the whole community are inseparably involved.

It is also the concern of every citizen that the farmer should not involve himself in a business that is in the hands of any but competent and experienced men—experts in fact. It is also the concern of good citizens that the parties assuming to work in the farmers' interests be above-board in all their dealings—that there should be no concealment or want of candor. Run upon other lines, suspicion will be aroused in any association, whether for the farmers to say or any body of men or women. That the extent of concern is appreciated by citizens generally is open to doubt. It is policy for the newspapers to report proceedings, make comment and butter and sugar everything that has to do with the farmer.

The Grain Growers' Convention has broken all records in attendance, in interest displayed and in business done. That they are a power in the land is beyond question and this is right. The pursuit of agriculture represents the most capital, the greatest source of wealth and the largest population devoted to any walk in life. That it has received such scant recognition in past years is the result of many causes, some of which it will be well to mention only, but others at the



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present time demand wide and exhaustive discussion.

The isolated life and difficulties of communication prevented or impeded concerted action tending towards any assemblage of individuals. All other interests were more favorably situated in this regard. Education, as commonly understood, ignored in theory and discredited in practice everything connected with the life work of the large majority of the population. Little wonder that the town which offered occupations less arduous and more remunerative drew to itself the more active and adventurous.

Influences tending to modification of such handicaps have been working for years, one of the most potent being the larger remuneration for the labor on the farm.

The political machine disregarded the farmer except as an election approached, for the rural district was divided on political lines and every man was labeled. Exceptional cases were the result of personal quarrels or of the glad hand and oily tongue of the candidate. It was easier to jolly a woe.

Many have been the organizations devised to better the lot of the farmer and many, many more have masqueraded for his dollars and his dimes.

When an united front was presented and the voting power behind it menaced the sitting members with political annihilation history presents no case where capitulation of the law-maker has not taken place. Internal quarrels, personal jealousies unbusiness-like methods or the recklessness of charlatanism in loud-mouthed leaders have all served as rocks on which farmers' organizations have split. Hopeful signs of ultimate success are to be observed in the facts, that each new venture starts better, lasts longer and accomplishes more than its predecessor, and some have come to stay with yearly fresh evidences of their usefulness.

By their actions in the grain business the Grain Growers' Company have thrown down the gauntlet to the elevator interests—by want of candor, they have antagonized the commission men who might have been their friends and now they not only want the local government to establish internal elevators but a pledge is to be enacted from every candidate that he will insist on an act to provide government internal elevators. The government is to meet them half way and is disposed, we all believe, to do anything in reason to make farmers satisfied that what is coming to

them for their grain they shall have,

Now we have seen that the Grain Growers' Co. would like to manipulate the wheat market with consignors' wheat. With the much more efficient power of stores in internal elevators the temptation will be greater. Are the same men to manipulate wheat corners and are the elevator interests past masters where the others are novices, not going to play music it will take nimble feet to dance to? Surely these are questions that must engage the attention of the whole population of this province, and surely the other provinces to the west, now contemplating following Manitoba's lead, are so placed, that they cannot ignore the gravity of acts that are more likely to be followed by something similar in their own legislatures.

In effect, this taking a candidate by the throat and making one single promise the price of his election is worse than bribing a legislator after he is in the house.

Another phase of the question is this. Granted that our Grain Growers' Company can hold up the wheat to where they wish to put it, how will it affect those other western citizens who, not only do not share in the high price, but who are on the other side and have to pay the piper.

It is a much hackneyed phrase, that "legislation for a class will not stand the test of time." The desire is to pass acts that would be in the interest of the wheat grower but against those of all other citizens, not only in Manitoba but the whole Dominion.

Far be it from the intent of this article in any way to obstruct or oppose a system of government elevators if due deliberation is given to a scheme well thought out by experts in all the branches of the undertaking. The prospect of government operation of utilities should be no nightmare to anyone who has faith in the honesty of purpose of the Canadian citizen. That politicians have worked out many inventions is immaterial. If the country is possessed of ordinary human intelligence and common honesty, the more burdens and responsibilities laid on a government the more it is necessary for its own life to discharge the duties the electorate leaves to its care. Should it not be seized of the new responsibilities, new duties involved, there is more incentive to assiduous study on the part of the public, to find out the cause of shortcomings and to punish delinquents than if governmental duties are more restricted to administrative routine and the departmental foggy dozes in a fortress of red tape.

The adage that "any country is governed as well as it deserves" is worthy of the study of Canadians of all classes. Governments left to themselves and politicians recruited from second rate ability or "axe to grind" material is the result of the proper leaders being engrossed in personal in contradistinction from public affairs. The professional politician and the grafter are weeds in an untilled field. Though they exhaust the soil more than succulent root or nutritious cereal, the seed is useless, the leaf, root and stalk crowd out the yielding herbage and their vicinage swells to heaven.

It is a cheering sign of the times that one, and that the chief interest in our community is aroused, if not to seek unselfishly the public weal, at least to force on the country's notice and demand government action in behalf of its class.

At the present writing the government and the Grain Growers' Association are conferring. It is not unworthy of notice that the Premier may be classed as an expert in the grain business, having been engaged in it for many years. His political astuteness is unquestioned so it may be stated, without raising the quills of political opponents, that the personnel of the tribunal is fairly equipped to work out a practical solution of a large question.

The Saskatchewan Government is not inferiorly equipped. The minister of agriculture having few peers in Canada on the questions involved.

The partisan "yap" in both provinces is limited to the cry "the government is scared of the farmers" or "the question will be shelved for another year." If there is nothing worse than that to say all parties are to be congratulated. The opposition was ready to taunt whichever way the government acted. Quiet and temporary peace will reign if action is taken but the country can worry through a whole year of careful working out a complete problem involving powerful conflicting interests.

The subject will be debated in the house and the Grain Growers will have to talk as they never talked before. Their clientele will expect them to demand everything in sight and will be impatient of any pause made or modification interjected by the government or anybody else. A little patience must be exercised in regard to pace made and the immediate results. Spectators interested and disinterested, must expect fireworks and buncombe from both sides; for each is playing to a gallery of gods whose conception of a good play is inseparable from spilled gore.

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Forage And Root Crops At Brandon Experimental Farm.



The unusually warm weather experienced during July and August was particularly favorable to the corn, and a splendid crop resulted. Corn cannot yet be regarded as one of the staple forage crops of Manitoba, but demonstrations of its value in different parts of the province every year are making it increasingly popular. It is a plant that luxuriates in warmth and sunlight during the growing season as it is a southern plant. The cool nights that mean so much for our cereal crops are not what the corn most requires, but the extreme heat during the day counteracts this. In the higher altitudes of Western Canada, corn will probably not be so popular for a great many years as in the more favored plains at the lower levels. Here there is no reason why it should not be grown more extensively, as it will yield a heavy crop of excellent fodder.

A mistake frequently made by new growers is to grow late varieties instead of the smaller early maturing kinds. The varieties that produce an abundant grain crop in Illinois or Southern Minnesota are not as suitable for growing here for fodder as those that reach maturity in North Dakota. Such varieties as North Western Dent, Golden Dent, Triumph, and Mercer, seldom grow more than nine feet high in this climate, but if sown in good time,—May 20th-24th—will be well cobbled by the first of September, and give a good yield of excellent feed.

All the corn grown this year, about 14 acres, was after a cereal crop, the land being well manured the previous fall. In future, part of our acreage will follow a clover sod plowed in the fall after being manured. Manure applied before the corn not only benefits the corn crop but the cereal crops which follow. The growth during July and August was all that could be desired, but a slight frost on August 29th put a damper on further growth and it had to be cut for silo. About twenty different varieties were grown this year on small plots, some of which yielded nearly 18 tons per acre, but the smaller kinds mentioned above produced only about 10 tons per acre. The main crop was North Western Dent, and it was not only well cobbled, but the grain was nearly mature when it was cut. The silage that was produced is of as fine quality as one could wish to find anywhere.

ROOTS.

The root crop was seriously affected by the dry, hot weather so that the yields were little more than half of what they have been in more favorable years. As

has almost invariably been the case, the earliest sown roots gave the best yields. The sowing is done on the flat as there is too great a tendency for drills to dry out before the plants are well rooted. Frequent cultivation with roots, as with corn, is essential to satisfactory results. Mangels, turnips, carrots, and sugar beets, all produced a fair crop of roots of medium size; the turnips and carrots suffered most from the dry weather as their growth is made later in the season.

CLOVERS AND GRASSES.

Most of the grasses and clovers gave a satisfactory crop, but in some cases the aftermath was very short owing to the lack of rain. Plots of one fifth acre in area serve as the basis of yield with most of the varieties reported on, and some of them are not grown in larger acreage. Two cuttings were made of all the alfalfas and mixtures containing alfalfa. The following table gives the total yield of cured hay per acre and the year of sowing.

Variety.	Sown.	Total yield per acre.
	Tons.	Libs.
Grimm's Alfalfa	1908	4.525
Alfalfa (Indian Head seed)	1907	4.100
Turkestan Alfalfa	1908	3.1800
Alfalfa and Western Rye Grass	1908	3.1400
Alfalfa	1907	3.1050
Alfalfa and Timothy	1908	3.1000
Common Red and Western Rye Grass	1907	2.575
Alsike & Timothy	1907	1.725
Red Clover and Timothy	1907	1.1000
Western Rye Grass	1907	1.575
Timothy	1907	.1870
Alsike	1907	.1825
Common Red Clover	1907	.1725
Orchard Grass	1907	.850

None of the alfalfas are much thinner than when they were sown although some of them have now come through two winters. There would appear therefore not to be much difference in hardiness, but since alfalfa is a crop that is intended to be cropped at least four or five years, it is scarcely fair to base conclusions on two years' results. Grimm's Alfalfa is a strain that has been grown in Minnesota for upwards of fifty years, and it is supposed to be much harder than the ordinary strain. Turkestan Alfalfa is usually considered somewhat hardier. The mixtures of alfalfa with the grasses gives a first cutting consisting of a considerable proportion of grass, but the second cutting is almost wholly alfalfa. It is not generally considered safe to take a third cutting of alfalfa

in this climate as the roots are then left with little protection for the winter, but if the season were such as to promote a late growth, the third cutting might be taken without much risk. In addition to the plots of alfalfa, we had this year about six acres that yielded about three tons of hay per acre.

A mixture that seems to possess unusual merit is Western Rye Grass and Common Red Clover, sown in the proportion of 8 pounds of Rye Grass and 6 pounds of Red Clover per acre. Rye Grass is one of our surest croppers and it seldom fails to make a good start, but it produces a hay that is rather stiff, wiry, and difficult to handle. The clover not only corrects these faults, but also improves the feeding value of the hay, and stimulates a stronger growth in the rye grass. In 1908 the yields from the Rye Grass and Rye Grass and Clover plots were respectively,—2 tons 1050 lbs., and 2 tons 875 lbs. In the second year's growth there was a very marked difference in favor of the mixture,—one ton per acre. The aftermath was also much better where the clover was present.

The yield of hay from the Orchard Grass (Cocksfoot) was very low, but it gave an abundant aftermath and it may prove valuable as an addition to pasture mixtures. It has generally been considered rather tender but it withstood last winter without loss. A plot of Perennial Rye Grass sown in the spring of 1906 was a good catch but was completely killed out during the winter. The low yield of Red Clover in the table is due to its being the second year it was cropped, and the crop was much thinner than a year ago when the yield was 3 tons 800 lbs. per acre. A considerable proportion of the hay crop this year was a mixture of Clover and Timothy seeded a year ago with oats.

Test All Seeds—Important.

No one can, by merely looking at them, positively tell whether any particular lots of field, garden, or flower seeds have or have not sufficient vitality of germ to start into vigorous growth. Yet it is a severe loss, often a disastrous one, to go through with all the labor and expense of pre-

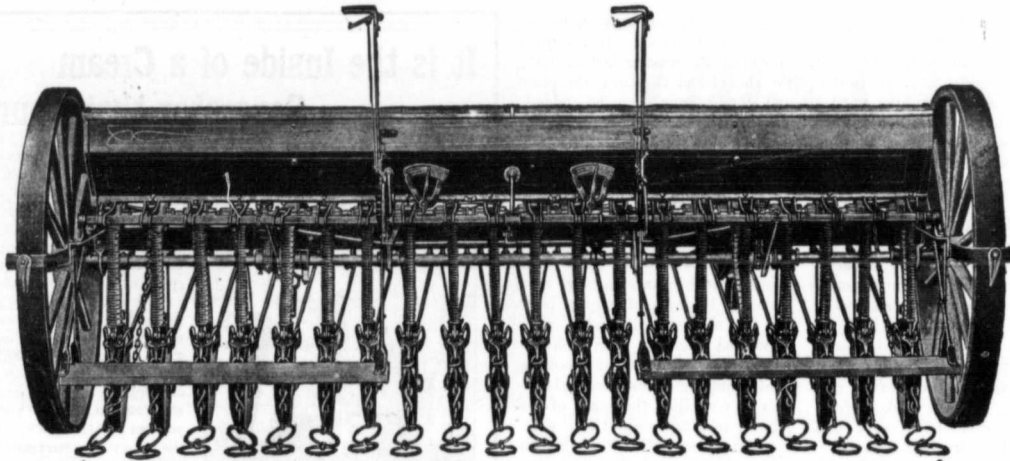
paration and planting or sowing, and find too late that the crop is lost because the seeds are defective. All this risk can be saved by a few minutes' time all told, in making a preliminary test, and it should be done before the seed is wanted, and in time to get other seed if necessary. Seeds may not have matured the germ; it may have been destroyed by heat or moisture; minute insects may have, unobserved, punctured or eaten out the vital part of a considerable percentage.

Select from the whole mass of the seed, one hundred, or fifty, or even ten seeds, that will be a fair sample of all. For larger seeds as wheat, oats, peas, etc., take a thin, tough sod, and scatter the counted seeds upon the earth side. Put upon the seeds another similar sod, earth side down. Set this double sod by the warm side of the house or other building, or of a tight fence, moistening it occasionally as needed. If very cold, cover, or remove to the kitchen or cellar at night. The upper sod can be lifted for observation when desirable. The swelling and starting of the seeds will in a few days according to the kind, tell what percentage of them will grow—a box of earth will answer instead of sods, both for large and small seeds. Small seeds of vegetables or flowers, or even larger ones may be put into moist cotton, to be kept slightly moist and placed in the sun or in a light warm room. For small quantities of valuable flower seeds and the like, half a dozen will suffice for a trial test. With any seed, or field or garden, however good, it is always very desirable and useful to know exactly how many or few are defective, and thus be able to decide how much seed to use on an acre, or other plot.

Will you Feed Hay or Wood?

A great deal has been said and written about the proper time of cutting hay. The best time, all things considered, is to cut the grass just after it has come into full bloom though many think the preferable time is just when it is coming into full blossom. As it is impossible to always mow every field just at the right moment, the general safe rule is, we think, to be all ready to begin at full bloom, and finish before it is entirely past.

There is this important fact to be kept in mind, viz., that as soon as grass of any kind has attained its growth, and is full of juices, it begins to change more and more into woody fibre, and that when fully ripe a large part of the stems or stalks differ very little in composition from dry wood. And everyone knows that dry wood is neither easily digested nor nutritious. It stands to reason

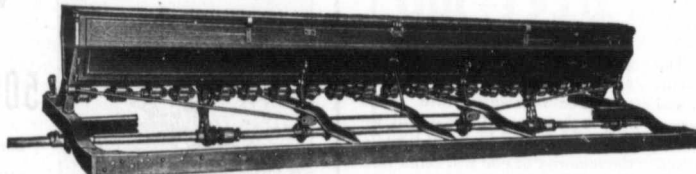


When You Buy a Drill

Will you buy a sagging grain box drill when you can get a drill that will not sag? Isn't it reasonable that the drill to use is the non-sagging kind — a *Deering* or *McCormick*?

Will you buy a stub axle drill knowing that it will not deposit the seed uniformly in making sharp turns when you can get a drill with a continuous axle which will deposit the seed just as uniformly in making short turns as it does when moving straight down the field? *Deering* and *McCormick* drills distribute the seed evenly under all conditions.

Will you buy three drills — a single disk, double disk and shoe drill — when you can buy a *Deering* or *McCormick* drill, which can be equipped with a single disk, double disk or shoe furrow openers, thus giving you three drills in one to suit your requirements.



Note that the truss brace prevents the box and frame from sagging.

You know good drill construction. Examine a *Deering* or *McCormick* and you will see that it is built right. *Deering* and *McCormick* drills have interchangeable furrow openers, continuous axles, truss rods to prevent the seed box and frame from sagging and the axle bearings are self aligning to prevent binding and wear on the axle.

DEERING and McCORMICK SPRING IMPLEMENT LINES

Before long you will want other tillage implements. The *Deering* and *McCormick* lines include—in addition to drills—disk harrows, smoothing harrows, and cultivators for summer fallowing purposes. These implements are made with just as much care and are just as efficient in service as the drills.

Decide right now to use either *Deering* or *McCormick* spring implements. They are durable and convenient, and you will have the satisfaction of knowing that you are using the best.

Ask your nearest local dealer for a copy of the 1910 *Deering* or *McCormick* Spring Implement Catalogue. Ask him to explain the various features of the machines you desire. He will be glad to demonstrate. If more convenient, write direct to the International Harvester Company of America, at nearest branch house and your wants will be supplied.

WESTERN CANADIAN BRANCH HOUSES:

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INTERNATIONAL HARVESTER COMPANY OF AMERICA

(INCORPORATED)

CHICAGO, U.S.A.



that a stalk of grass cut when it is full of juice containing sugar, gum and protein compounds, and cured thus, must be more nutritious than if left standing until a part of these constituents have changed into woody fibre. Feeding hay not cut until it is thoroughly ripe, is giving the animals that which is in part only so much wood. The practical lesson is, make a good ready well in advance, now, and have the barns, mows, stacking arrangements, mowers, scythes, horse and other rakes, forks, wagon racks, in short, all things in perfect order—and the work planned, so as not to let any hayfield get into the fully ripe condition. Head work beforehand will save hard work and worry, and secure better hay.

Abuse of Barn Cellars.

A great change has come over the farm during the last thirty years, in all our thrifty farming districts, in the general use of barn cellars. Formerly such an arrangement of the barn was a novelty, and farmers have slowly learned its great advantages—the greater comfort of cattle, the cheaper cleaning of stables, the more convenient watering of stock, the larger use of peat, muck and headlands in the compost heap, and the greater value of the manure made under cover. Now the cry is raised of damage to fodder and stock from the barn cellar. Almost any good thing can be perverted and become a nuisance, and it were strange if men who do not read much and think less, could not abuse the barn cellar, which is the stomach of the farm. The same kind of men not infrequently abuse their own stomachs, and suffer grievously in consequence. "If you make your barn cellar tight, carbonic acid gas and ammonia are thrown off and injure the quality of hay stored in the rooms above, and the health of the cattle in the stables. If you turn your pigs into the cellar to make compost, and keep them from the air and the light, they become diseased, and you put bad meat into your barrel to breed disease in your family." These are not uncommon complaints, circulating in our agricultural journals. Well, suppose we admit these things to be true, what of it? Is there any necessity for having a barn cellar without ventilation? If you leave one end open towards the south, you certainly have ventilation enough—and the gases that are evolved from fermenting manure are not going through two-inch stable plank and the tight siding of the barn when they have the wind to carry them off. If a barn cellar is properly managed, and seasonably furnished with absorbents, the ammonia will be absorbed as fast as it is formed. There will

be no odor of ammonia that the nostrils can detect. If the pigs do not do the mixing fast enough, the shovel and the fork, the plow and the harrow can be added. The making of compost under the barn is nice work for rainy days in winter, and is more likely to pay than any work exposed to the storm. The keeping of pigs under the barn is a question of two sides, and however we may decide it, barn cellars will stand upon their own merits. Any farmer who makes a business of raising pork for the market will find a well-appointed pig-sty, with conveniences for storing and cooking food, a paying investment. If he sees fit to utilize the labor of his pigs by making compost in a well-ventilated barn cellar, their health is not likely to suffer from the wholesome exercise, or that of his family from the use of the flesh. Swine, furnished with a dry sleeping-apartment and plenty of litter for a bed, will keep comfortably clean, and not suffer from overwork in the compost heap. If anything is settled in the experience of the last thirty years, it is the economy of the barn cellar. Our most intelligent farmers, who can command the capital, invest in them. A nice appendage to them is a watering trough fed by a spring or a large cistern in the embankment, to catch all the water, and bring it out by a faucet upon the stable floor above. This works admirably.

Crows and Scarecrows.

Probably there is no point upon which a gathering of half a dozen farmers will have more positive opinions than as to the relations of the crow to agriculture. It is likely that five of these will regard the bird as totally bad, while the minority of one will claim that he is all good. As usual, the truth lies between the extremes. There is no doubt that the crow loves corn, and knows that at the base of the tender shoot there is a soft, sweet kernel. But the black-bird is not altogether a vegetarian. The days in which he can pull young corn are few, but the larger part of the year he is really the friend of the farmer. One of the worst insects pests with which the farmer, fruit-grower, or other cultivator has to contend is the "White Crab," the larva of the "May Beetle," "June Bug," or "Dor Bug." It is as well established as any fact can be, that the crow is able to detect this grub while it is at its work upon the roots of grass in meadows and lawns, and will find and grub it out. For this service alone the crow should be everywhere not only spared, but encouraged. We are apt to judge by appearances; when a crow is seen busy in a field, it is assumed that it is doing mischief, and by a constant war-

It is the Inside of a Cream Separator that Counts.

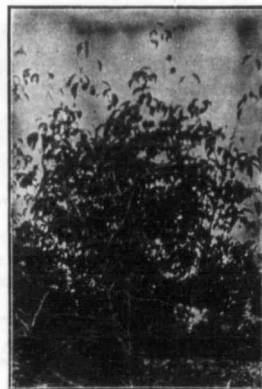


The poor Cream Separator with its slim stand nicely painted is able to stand up because screwed down to the floor, "but the worm gearing," well, ask an honest mechanic, he'll tell you it may skim all right for a time, but sooner or later it is bound to give trouble, and that trouble comes on your busiest days when you can least afford to have a break-down and right here is where the value of the strong, square gear MAGNET works come in. It is made right and can be depended upon at all times. You never lose time, temper or profit when you own a MAGNET. Why? Because the Magnet has square gears, cut from solid blanks, a skimmer in one piece, easy to clean, a large bowl supported at both ends (Magnet patent). So easy to turn, children operate it. A perfect brake, stops in eight seconds preventing wear. Look at the MAGNET stand, so strong and rigid, it holds the parts so firmly that it will skim perfectly sitting on the ground or any floor; compare it with the flimsy stand and gearing in others. A blind man may be fooled by talk, but surely anyone who can see and compare the construction would not fail to buy a MAGNET. It is a real Cream Separator built to last for fifty years. It will cost one cent to examine the MAGNET in your dairy.

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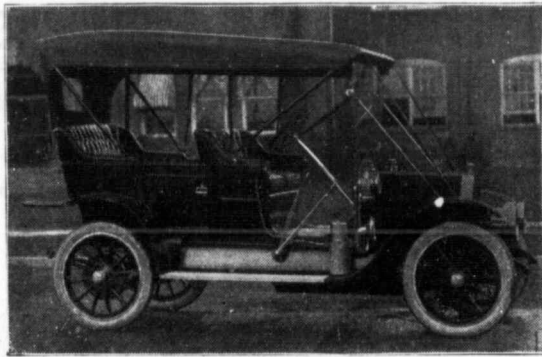
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The McLaughlin-Buick is strikingly different to most cars inasmuch as it possesses that rare ability to give satisfactory service on the city pavement, country road or on the farm

The expense of up-keep with a McLaughlin-Buick has been so reduced that to-day a man can operate a car for less than the cost of feeding a horse.

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MODEL "8"

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fare against, not only crows, but skunks, owls, and others that are hastily assumed to be wholly bad, the injurious insects, mice, etc., that do the farmer the real harm have greatly increased. Shortly after corn is planted, the crows appear, and are destructive to young corn. Some assert that the crow pulls up the corn plant merely to get at the grub which would destroy it if the bird did not. How true this may be we do not know, but as the corn is destroyed in either case, it may be as well to let it go without help from the crow. The first impulse of the farmer, when he finds his corn pulled up, is to shoot the crow. This we protest against. Even admitting that the crow does mischief for a short time, it is too useful for the rest of the year to be thus cut down in active life. Let him live for the good he has done and may do. It is vastly better to keep the crows from pulling the young corn, for two or three weeks and allow them all the rest of the year to destroy bugs and beetles in astonishing numbers. The corn may be protected by means of "scare crows," of which there are several very effective kinds. Crows are very keen, and are not easily fooled; they quickly understand the ordinary "dummy," or straw man, which soon fails to be of service in the corn-field. It has

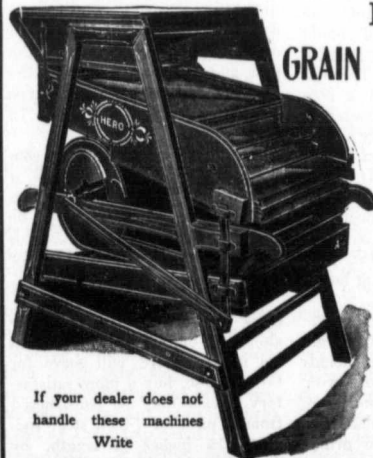
no life, no motion, and makes no noise, and the crow soon learns this and comes and sits upon its outstretched arm, or pulls the corn vigorously at its feet. A dead crow, hung by a swinging cord to a long slender pole, is recommended as far better than a straw man, as it, in its apparent struggles to get away, appeals impressively to the living crow's sense of caution. But the crow may not be at hand to be thus employed, and if it were, the farmer cannot afford to kill it. Better than a dead crow is a glass bottle with the bottom knocked out, which may be done with an iron rod. The bottle is suspended to an elastic pole by a cord tied around its neck; the end of the cord should extend downward into the bottle, and have a nail fastened within the bottle, to serve as a clapper. If a piece of bright tin be attached to the cord extending below the bottomless end of the bottle, all the better. A slight breeze will cause the tin to whirl, and, in motion, cast bright reflections in all directions, while the nail keeps up a rattling against the inside of the bottle. An artificial "bird," to be hung in the same manner, may be made from a piece of cork—one used in a pickle jar—into which a number of large goose or chicken feathers are fastened so as to roughly imitate a dilapidated bird.

Our 1910 Seed Catalog

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Every machine is built of the best materials procurable.

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No other Separator can compare with the "Hero" for reliability and efficiency.

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Mention "Canadian Threshman and Farmer."

REPAIR OF FARM EQUIPMENT

By E. F. W.

(Continued from last month)

DIVIDERS.—The little implement known as dividers, or compasses, is desirable for drawing circles or segments of circles in the making of special parts of machinery from wood. The cost of a pair of dividers with a segment and set screw for setting to any angle should not be more than 60 cents.

PLIERS.—Some form of pliers for working wire is essential. Besides their use for handling wire a good pair of pliers are desirable for a great many lines of repair work. There are a number of styles of pliers on the market, but one of the simpler types (fig. 18) will give the greatest amount of service. As a rule a very serviceable pair of pliers can be secured for about 60 cents.



FIG. 17.—PLIERS.

CUTTING NIPPERS.—A pair of heavy cutting nippers with circular jaws is useful for many purposes, especially for removing a shoe from the foot of a horse or for trimming the edge of a broken hoof. Where a horseshoeing outfit is maintained, the cutting nippers will be included.

CROWBAR OR PINCH BAR.—A crowbar or pinch bar will be found useful on the farm for prying or moving heavy objects. Where stones are to be removed from the soil a bar of this character is almost indispensable. A bar for general purposes weighing about 20 pounds will cost from \$1 to \$1.50.

MAUL, OR BEETLE.—A maul, or beetle, can be hewn from a gnarly piece of hickory or gum. The head portion of the maul should be about 9 inches in length and 6 or 7 inches in diameter. Through the middle of this block a hole about 1½ inches in diameter is bored and a shaved hickory handle inserted, forming a mallet weighing 16 to 25 pounds. If extra-heavy work is to be done, the head can be reinforced by means of iron rings, which are put on while hot and shrunken into place. This tool is desirable for driving heavy stakes and similar work.

GRINDSTONE.—The farm repair outfit will not be complete unless some form of grindstone is included. The old type of stone with its wooden shaft, crank, and bearings has largely been replaced by the light-running treadle grindstones. No part of the repair work is so important as the keeping of tools in good order, and proper facilities for sharpening are essential. A good stone,

mounted ready for use, will cost about \$3.50.

OILSTONE.—The oilstone is a necessary adjunct to the grindstone, its use being to put a smooth edge on the tools after grinding. Chisels, the bits of planes, and similar tools require grinding only occasionally, but may be sharpened quite frequently on the oilstone, and a fine cutting edge maintained. Instead of water, use kerosene or any light oil on the oilstone and wipe off clean when through sharpening. Oilstones can be bought at prices from 60 cents to \$1.

OILER, OR SQUIRT CAN.—This device is a convenience about the shop, for both oiling machinery and keeping tools in order. A small oiler is desirable for use in connection with the oilstone. A can of this character will cost from 10 to 40 cents according to quality. In purchasing an oiler care should be taken to secure one having a folded seam where the bottom is joined to the main portion, as a soldered seam is liable to give out in a short while. It is also essential that the bottom should have plenty of "spring" to force the oil from the sprout.

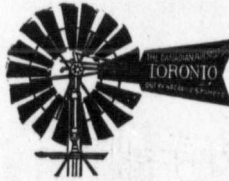
WIRE STRETCHER.—On farms where wire fencing is employed it will be necessary to provide an appliance for stretching lines of wire. For light work, where short runs of single wire are to be handled, one of the hand-lever stretchers will be found most satisfactory. This tool consists of a wood lever about three feet in length, about one-third the distance from one end of which is attached a pair of grips or pliers to hold the wire. The wire is gripped in the holder, the short end of the lever passed around the post, and the power applied to the handle. A stretcher of this type can be purchased for about 75 cents.

Another form of stretcher consists of a wire grip to which is attached a ring through which an ordinary crowbar may be passed to serve as a lever. This type of grip is obtainable for about 50 cents.

STAPLE PULLER.—A staple puller is essential to the repair or alteration of wire fencing. An old mower guard will serve for this purpose, but a more satisfactory device may be constructed from a piece of ¾-inch steel rod, about 15 inches in length, by drawing one end to a point, then turning about 1½ inches of this point at a right angle to the main portion. In using this tool the point is driven behind the staple

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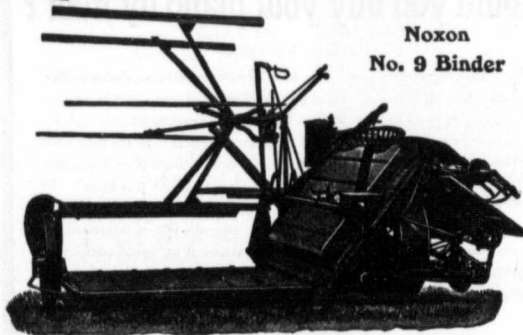
Are you the man that is looking for a better Rubber Threshing belt? Glance up in the left upper corner and you get the hunch—"LION"—that's it—insist on this brand and stick to it.

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by means of a hammer, then by a prying movement the staple is easily drawn. The handle end of the clawbar (fig. 4) may be shaped for use in drawing staples.

HARNES-REPAIR OUTFIT.

The tools and facilities required for keeping harness in repair are comparatively simple and inexpensive. Many of the parts of harness, together with convenient supplies with which to make repairs, are now offered at reasonable prices by dealers everywhere. A considerable portion of the repair work on harness can be performed by the aid of tools required for other purposes, but there are a few special devices that are desirable.

LEATHER PUNCH.—A good leather punch is one of the most desirable implements both for repair work and for making alterations in harness to fit animals of different sizes. A leather punch made somewhat on the order of a pair of pliers and having four or more punching tubes of various sizes is most desirable. It can be secured for about 40 cents.

RIVET SET.—A rivet set is especially desirable for use in connection with solid copper or coppered steel rivets. This (fig. 19) is made of a small piece of tool steel and is provided with a small hole for driving down the washer on the rivet, also a countersink for expanding the end of the rivet.

RIVETING MACHINES.—There are upon the market several kinds of lever devices for use in

the insertion of hollow or tubular rivets in leather. These riveting machines are comparatively cheap, but as a rule the hollow rivets do not hold so well as the solid rivets.

AWLS.—For the repair of driving harness there should be kept on hand one or two awls to be used in making the holes for sewing with a waxed thread. Awls of this character can be purchased for about 10 cents each, including handle.

HARNES CLAMP.—A clamp of some character is desirable for holding parts of harness while repairs are being made upon them. For this purpose a small table vise may be employed or a regular steel or wooden clamp may be purchased. A very serviceable homemade clamp may be constructed from two pieces of wood shaped somewhat like the staves of a barrel; at one end these pieces are dressed off so that they will fit together like the jaws of a vise, and the opposite ends may be hinged together or they may be fastened firmly to the sides of a base block. A short distance from the clamping end a screw, a bolt, a leather strap, or some other simple device may be used to draw the jaws tightly together.

SPECIAL CONVENIENCES.

In addition to the outfit of tools obtainable from a hardware dealer, there are a number of special devices that may be made on the farm and which will prove of great assistance in general repair work. Among the more important are the following:

WORKBENCH.—A workbench of some kind will probably be the first essential. A good type of workbench is shown in the foreground of figure 21; also in cross section in figure 20. For the construction of this bench there will

be required four boards seven-eighths inch thick, 12 to 14 inches wide, and about 12 feet in length. The length of the bench, however, will depend upon the size of

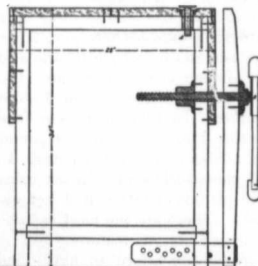


FIG. 20.—Cross section of workbench: A, planing stop; B, bench screw.

the shop or other space that may be available for use as a workroom. Two pieces of 2 by 4 inch scantling, each 16 feet long, will be sufficient to construct the framework of the bench. All lumber entering into the construction of the workbench should be thoroughly seasoned and dressed to uniform width and thickness.

A clamp for holding materials should be constructed from a piece of hard wood and attached by the aid of a carpenter's bench screw, as shown in cross section in figure 20. This clamp should be provided with notches or pin holes at the lower end, so that it can be set to hold materials of any thickness. Along the front of the bench, two or three holes should be provided, into which pins may be set for supporting boards or other materials that are too long to be held rigid by the clamp alone.

A "stop" for holding materials that are to be planed can be inserted in the top of the bench, near the left-hand end, as shown in figure 20. If a regular stop is not employed, its place may be

taken by a small piece of notched board nailed on top of the bench.

SAWHORSES.—A pair of trestles, or sawhorses, each consisting of a piece of 2 by 4 inch or 2 by 6 inch timber, about 4 feet in length, supported upon four legs, as illustrated in the foreground of figure 21, are very convenient for working upon while marking, sawing, boring, or chiseling. The sawhorses are an accessory to the workbench and should be constructed at the same time. The cost of materials with which to construct both the workbench and sawhorses should not exceed \$5.

MITER BOX.—Among the accessories to the workbench there is perhaps no device that will give greater satisfaction than a good miter box to be used for sawing small wood materials either square or at an angle. For the construction of a miter box, three pieces of board 1 inch thick, 6 inches wide, and 3 feet in length should be selected and nailed together in the form of a square trough, taking care that the nails are driven well out toward the edge of the boards. Vertical cuts are sawed down through the sides to the bottom board to guide the saw when the box is in use. Near one end a cut is made at right angles with the length of the box to be used in making square cuts. For making bevel cuts for a right-angled miter joint, the sides of the box should be sawed down on oblique lines running at an angle of 45 degrees with the length of the box. Two such cuts should be made and should cross each other at the middle of the box, forming a letter X. In marking the box to make these cuts, the square should be laid flat on top of the box so that its corner is

(Continued next month)



FIG. 19. Rivet Set.

kinds of lever devices for use in



I

The old practice of summer-fallowing, or working the soil for one year without a crop, for the purpose of gaining a double crop the second season, is now, very properly, obsolete. While some may question the propriety of this opinion, there can be no doubt as to the value of fall fallowing. The constant turning and working of the ground during the fall months costs nothing but time and labor, at a season when these cannot be otherwise employed, and so, in reality, cost nothing. Especially is this the case with heavy clay soils, and less, in a descending ratio, through the gradations from heavy clay down to light loams—at least it is so considered by many; and it is reasonable to suppose that if the atmospheric effects upon the particles of a clay soil serve to some extent to dissolve the mineral particles, they may easily do the same service for a sandy soil, and help to set loose some of the potash contained in the granitic or feldspathic particles of such a soil. The mechanical effects of the fall working are certainly more useful upon clay than a light loam; but there are other purposes to serve than merely to disintegrate the soil, and mellow and loosen it. There are weeds to destroy, and the forwarding of the spring work by the preparation of the ground for early sowing. These services are as useful for a light soil as a heavy one, and as it is reasonable to look for some advantage from the working in the way of gain in fertility on light as well as heavy soils, it is advisable that owners of either kind should avail themselves of whatever benefits the practice affords. Fall fallowing consists in plowing and working the soil with the cultivator or the harrow. This may be done at such intervals as may be convenient, or which will help to start some weeds into growth, when these may be destroyed by the harrow or cultivator. Heavy soils should be left in rough ridges at the last plowing, with as deep furrows between them as possible, in order to expose the largest surface to the effects of the frost and thaw. Light soils may be left in a less rough condition, but the last plowing should be so done as to throw the furrows on edge, and not flat, leaving the field somewhat ridged. A very little work in the spring will put the ground into excellent order for the early crops, and for

spring wheat, especially, this better condition of the soil will be of the greatest benefit. When thus treated in the fall, the soil is remarkably mellow, and is dry enough to work earlier than the compact stubble land which remains as it was left after the harvest. As to the time for doing this work, the sooner it is begun, and the oftener it is repeated, the better. It is not too late to finish when the ground is frozen or there is an inch of snow on the ground.

II

In ordinary farm practice by far the larger part of the liquid manure of the stock kept is lost. No effort is made to save it. There is no barn cellar, no gutter behind the stabled animals, no absorbents. Analysis shows that the liquid manure is quite as valuable as the solid, or even more so. In 1,000 pounds of fresh horse dung there are 4.4 pounds of nitrogen, 3.5 of potash, and 3.5 of phosphoric acid. In horse urine there are 15.5 pounds of nitrogen, and 15.0 of potash. In 1,000 pounds of fresh cattle dung there are 2.9 pounds of nitrogen, and 1.0 of potash, 1.7 of phosphoric acid. In the urine, 5.8 pounds of nitrogen, 2.9 of potash. These are the most valuable constituents of manure, and no farmer can afford to have them so generally run to waste. There is very little loss where there is a gutter well supplied with absorbents, and a barn cellar well coated with dried peat, muck or headlands, to absorb the liquids as fast as they can fall. But barn cellars are still in minority. Mr. Mechi had a very expensive apparatus for distributing the liquid manure over his farm, by means of tanks and pipes, and thought it paid, but failed to convince his contemporaries of the fact. However, that may be, it is out of the question to apply liquid manure in this manner, economically, upon the average farm. It takes too much capital and requires too much labor. By the use of absorbents, it can be done economically on a small or large scale, with very little waste. Some use a water tight box, made of thick plank, covering the floor of the stall. This is a very sure way to save everything, and the only objection to it is the expense of the box, and the increased labor of keeping the stall clean. We used for several years dried salt-marsh sod, cut in blocks eight or ten inches square, taken from the

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. 1½ 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.

DON'T FORGET THE ADDRESS

Lindsay's
284 PORTAGE AVE WINNIPEG

surface of the marsh in ditching. This had an enormous capacity for absorbing liquids, and a layer of these sods would keep a horse or cow comfortably dry for a fortnight. Refuse hay or straw was used on top for the purpose of cleanliness. The saturated sod was thrown into the compost heap with other manure, where it made an excellent fertilizer. Later we used sawdust, purchased for the purpose at two cents a bushel, as bedding for a cow kept upon a cemented floor. A bed a foot thick would last nearly a month, when it was thrown out into the compost heap. The sawdust requires a longer time for decomposition, but saves the liquid manure. Our present experiment, covering several months, is with forest leaves, principally hickory, maple, white ash, and elm. A bushel of dried leaves, kept under a shed for the purpose, is added to the bedding of each animal, and the saturated leaves are removed with the solid manure as fast as they accumulate. The leaves become very fine by the constant treading of the animals, and by the heat of their bodies, and the manure pile grows rapidly. It is but a little additional labor to the ordinary task of keeping animals clean in their stalls, to use some good absorbent, and enough of it, to save all the liquid manure. What the absorbent shall be is a question of minor importance. Convenience will generally determine this matter. No labor upon the farm pays better than to save the urine of all farm stock by means of absorbents. These are in great variety, and in some form, are within the reach of every man that keeps cattle or runs a farm. Stop this leak, and lift your mortgage.

The American Society of Agricultural Engineers

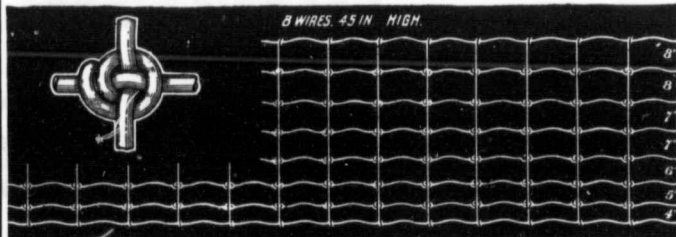
(Continued from page 18)

ing a business session was held at which the following officers were elected for the ensuing year:

President—Prof. P. S. Rose, Editor of the Gas Review, Madison, Wis; 1st Vice-President—Prof. M. L. King, Experimentalist, Ames, Iowa; 2nd Vice-President—J. B. Bartholomew, President, The Avery Co., Peoria, Ill; Secretary—E. W. Hamilton, Ames, Iowa; Treasurer—E. W. Hamilton—Editor The Canadian Thresherman and Farmer, Winnipeg, Canada.

The manufacturer of to-day is anxious that the farmer who uses his goods should know just as much about them as possible. The day is past when any manufacturer has anything to hide. He realizes that he must put the very best material and workmanship in-

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AND
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IS ALSO ATTRACTING WIDESPREAD ATTENTION.



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"DOMINION SPECIAL" FIELD FENCE is STRICTLY A CANADIAN PRODUCT, fully guaranteed of first class quality.

"DOMINION SPECIAL" FIELD FENCE was erected along the Right-of-way of the Largest Railway in Western Canada last year.

ALWAYS ORDER "DOMINION SPECIAL" FIELD FENCE "The Landmark of the Future."

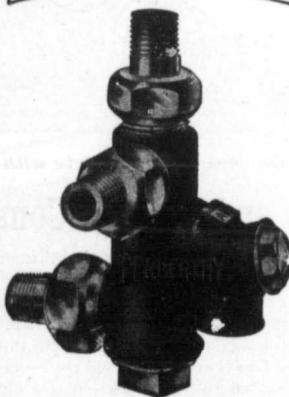
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DOMINION WIRE MANUFACTURING CO., LTD., MONTREAL

WISHING ALL A PROSPEROUS NEW YEAR.



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BE BEATEN**



If you are in doubt put one into service for one season against the just-as-good kind.

Thousands of Engineers all over the country will tell you that the "Genuine Penberthy" makes good where others have failed.

We want every Thresherman to have our Catalogue. It's Free for the asking.

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SPECIAL OFFER.—Every engineer sending his name and address to us and enclosing 15c, to cover cost of packing and postage will receive by return mail a handsome Penberthy Watch Fob. You will be pleased with it. Do it now.

Address

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Dept. A, WINDSOR, ONT.



to every machine that he builds consistent with the price charged and he wants the farmer to know it. He furthermore realizes that an intelligent use of these machines which have been sold creates a far bigger market for the machines which he has to sell than a half hearted and unintelligent use of the same machines, and to this end the manufacturer sees in the American Society of Agricultural Engineers an organization that

will aid him in putting his various implements before the farmers of the United States and Canada in such a way that they will buy them with a definite end in view and will use them in the best possible manner to serve that end. Every farmer has a vital interest in this organization. Very few as yet have heard of it but young as it is it promises wonders viewed from the standpoint of practical results.

Uncle Reuben—"What a dude Jake is since he came back from school!"

Uncle Joshua—"Dude! Should say he was. Don't it make you tired, though, to hear him say 'inveigle' when he means 'hornswoggle'."

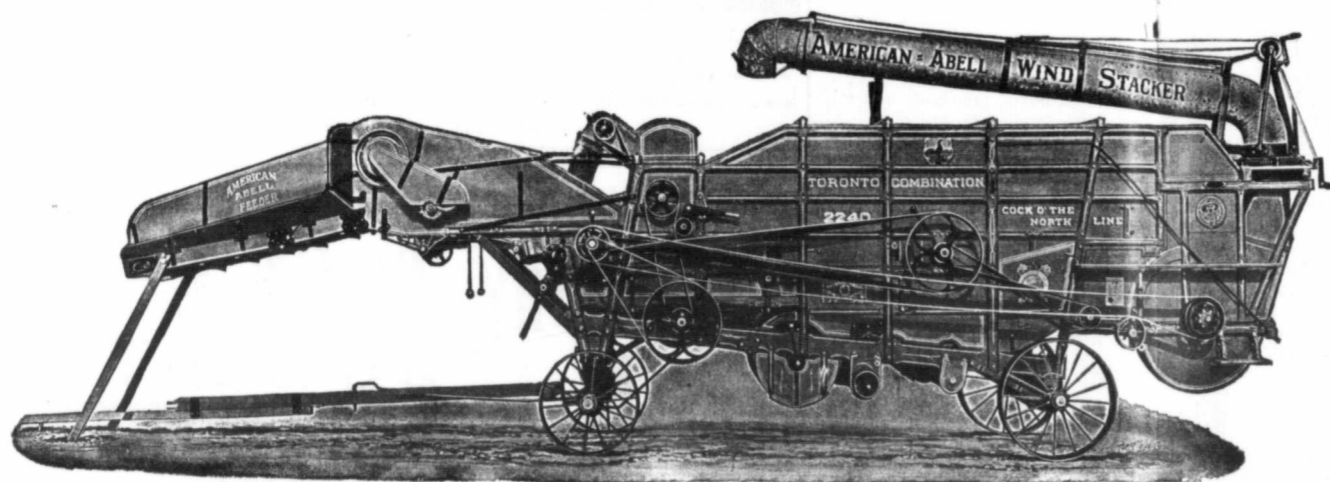
Two Irishmen, bent on robbery, held up a passing Scotchman. After a long, fierce fight, in which the Scotchman almost had the better of it, they succeeded in conquering him. A thorough search of his clothes disclosed one lone five-cent piece.

"Troth, Pat," said Mike disgustedly, "if he'd had tin cents instead of a nickel he'd have murdered the two of us!"

1910 IS YOURS FOR PROFIT

PROVIDED YOU HAVE

AMERICAN-ABELL THRESHING MACHINERY



Toronto Combination Separator, complete with American-Abell Self Feeder and Wind Stacker.

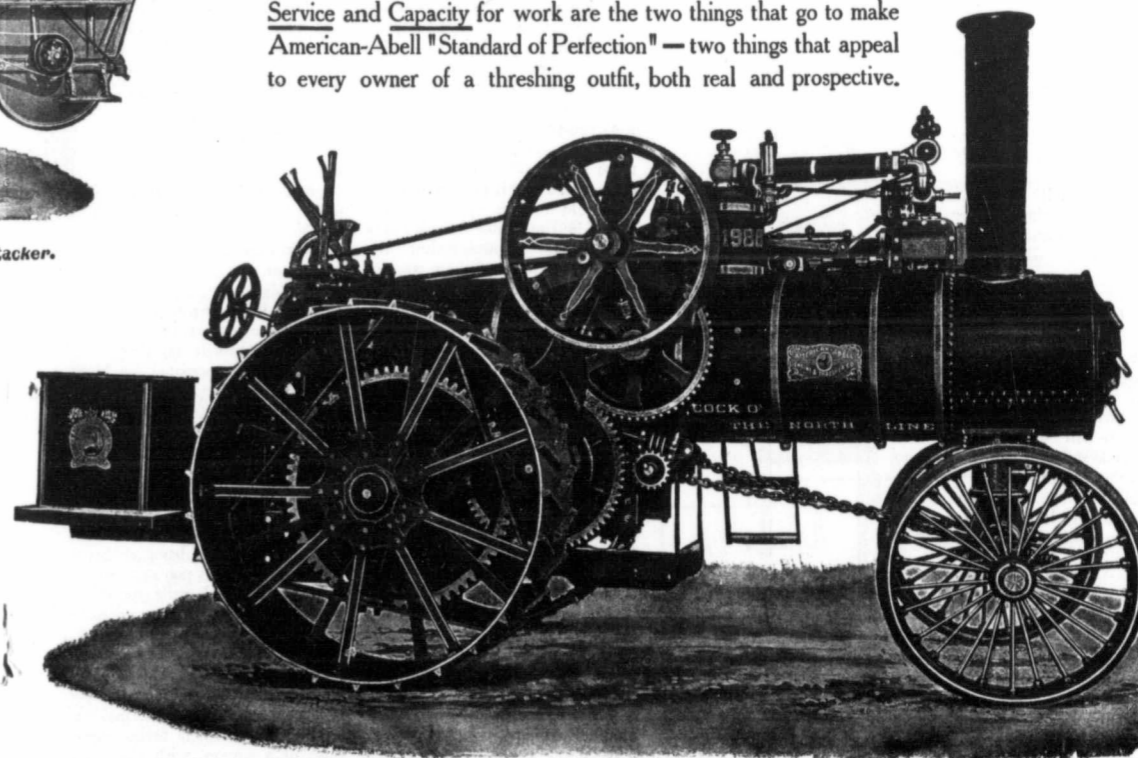
Our Toronto Advance and Toronto Combination Separators

Have held and still continue to hold an enviable place in the favor of practical threshermen. Year by year they have their distinctive features, and we are always adding minor improvements to facilitate the handling or to meet new conditions. Our machines have stood the test of time and hard usage and have come off the victors in every case. We are not surprised at this, for our separators are constructed upon principles that make for fast work and clean separation. As the prime object of a separator is a thorough separation of the grain from the straw, nothing is gained by increasing the amount of straw put through the machine unless the separation keeps pace with it. Until both objects are obtained, the machine is extravagant and the amount of grain wasted. These two things have gone hand in hand in the construction of American-Abell Separators with the result that it puts all the straw into the straw stack and all the grain into the bin and this in the shortest possible time. It is furthermore durable, every attention being paid to its construction. The man who buys an American-Abell Separator is sure of having a friend that will stand by him for a long time to come. Our catalogue tells you all about it. It's yours for the asking.

American-Abell Traction Engines

Are the result of years of experience in traction engine building. Their design and construction is such that there is always a minimum of fuel consumption in proportion to the power developed and that power is always given in abundance. They are strong and durable with no working parts other than what is absolutely necessary to perform the functions of a traction engine. They are easy steamers and most excellent pullers, both in the belt and on the road. They are made in a wide range of sizes to suit every need of the Western farmer and Thresherman. Our catalogue tells you all about them and we would ask that you send us a postal for a copy.

We are living in an age of Progress and everything and everybody that wins must be progressive. That is why American-Abell machinery has won its way into the hearts of the Threshermen and Farmers of the West. That is why the demand for our machinery has steadily increased. It is Progressive and always Up-to-Date. The man who buys is always assured of getting the best. Our line of Engines and Threshers for 1910 is complete in every detail from the foot board of the engine to the wind stacker spout, at the same time containing many new and valuable features. Long Service and Capacity for work are the two things that go to make American-Abell "Standard of Perfection" — two things that appeal to every owner of a threshing outfit, both real and prospective.



26 H.P. American-Abell Traction Engine

American-Abell Engine and Thresher Company, Limited

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We also represent The Advance Thresher Co., Battle Creek, Mich., and The Minneapolis Threshing Machine Co., Hopkins, Minn.

THE fusible plug or soft plug is another important safety device that all or nearly all traction engine boilers are equipped with. It consists of a brass plug having an opening in the middle filled with tin. Figure 69 shows two styles in which these plugs are made. In the one marked A, the hole in the plug is made tapering



FIG. 69.

so that when steam pressure acts on the tin filling it can not possibly be forced out by the pressure alone since the pressure acts on the large end of the tin plug. In B there is an enlargement in the middle that serves the same purpose.

In fire box boilers the plug is screwed into the highest point of the fire box and in return flue boilers it is located in the front end, in the smoke box, just above the main flue. The tin that it is filled with melts at a temperature of about 440° Fah., and if the water in the boiler gets so low as to leave the top of the plug bare the tin melts and water and steam blow out. If this happens in a fire box boiler the fire will be put out. Many return flue boilers do not have a fusible plug, but all fire box boilers do, and they are needed.

In case a plug melts out anyone can fill it by melting a little tin in a suitable dish and pouring the hole in the plug full. If the plug is stood up on an iron plate it will prevent the tin from running through. After the plug is filled the tin should be tamped in with a hammer and punch. In filling be sure there is no moisture in the plug. If there is, the hot metal will turn it quickly into steam and there will be a little explosion and some one is apt to get burned with the hot tin. The plug should be filled at the beginning of every season. If left too long it becomes crystallized and does not melt readily. It is a good plan to take the plug out every time the boiler is cleaned and see that the top is not covered with scale. A little scale on the top can easily prevent the steam from blowing out even if the tin has melted. It is also a good plan to coat the threads of the plug with graphite so that it will unscrew easily next time. Oil put on the threads will burn, forming a deposit of carbon that will make it stick and consequently oil should not be used. In concluding this bit of advice in regard to fusible plugs it may be well to add that an iron plug such as a spike is a very poor substitute for tin and is not to be recommended although some fellows who claim to be engineers use it occasionally. Babbitt is not good either although it is better than the spike.

Practical Talks to Threshermen

Conducted by PROFESSOR P. S. ROSE

TALK No. XVIII.



The reason babbitt is not very good is that it has a rather uncertain melting point, depending upon its composition, and may be too high. Pure tin is by all odds the best and every engine should be provided with a bar to be kept in the tool box for emergency.

The next safety device we will consider is the safety valve or spring pop valve, a sectional cut of one type of which appears in Figure 70. It is made of brass throughout except the springs and the handle. The lower end G screws into the steam space in the boiler and admits steam to the lower side of the main valve A. A rod B rests on the top of this valve and is held down by means

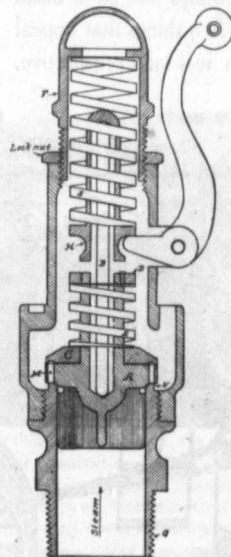


FIG. 70

of the cap H and main spring S. In order for valve A to rise it must compress the spring S. A lock nut holds the top of this spring in place and if it is screwed down it puts more load on the spring and of course more load on the top of the main valve. A full turn of this lock nut by the way, is equivalent to the adding about thirty pounds pressure on the top of the valve. It doesn't pay, therefore, to use a monkey wrench very freely on this lock nut unless you want to carry a tremendous pressure on the boiler. On the top of the valve A there is another valve C called an auxiliary valve. This valve is held to its seat by an auxiliary spring E. It will be noticed that

this valve and spring are attached firmly to the stem of the main valve and must move with it. The purpose of this auxiliary valve will presently be described.

All pop valves are provided with what is called a pop chamber, into which the steam first expands after it passes the main valve. This is shown at M in the figure. When the pressure in the boiler is less than the compressive force on spring S the main valve remains seated, but when it rises to a point just a trifle above the load on the spring, the valve rises and steam flows out around the valve seat V and up into the pop chamber M underneath the valve C. In expanding, the steam acquires considerable velocity, which is changed to pressure when stopped by the valve C. The force that now opens the main valve is the steam pressure acting on the lower side of A plus the pressure on C in the pop chamber. This total pressure is more than sufficient to open the main valve and it pops wide open. It would remain open until the steam in the boiler had fallen a considerable amount below the popping off point if there was not some provision made to relieve the pressure in the pop chamber. This is accomplished in this machine by making the compressive force on spring E much less than on spring S. This allows the valve C to lift and let the steam escape from the pop chamber. The load on spring E can be regulated by means of the nut D. If this is made heavy the pressure in the boiler will fall a considerable amount before the main valve returns to its seat. If made light, on the other hand, there will be only a slight fall in pressure. It is set correctly when it leaves the factory and needs no further attention unless the pressure at which the main valve works is changed a great deal. In that case it may be necessary to make some adjustment.

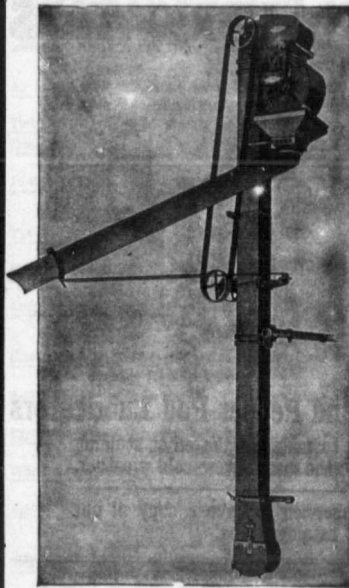
In other types of pop valves there are different methods used to accomplish the same object that the auxiliary valve does in the pop valve above described. These devices are known as regulators and provide means for relieving the pressure in the pop chamber at varying rates. In almost all pop valves except the one described this regulator must be adjusted whenever the load on the main valve is changed very much, otherwise, the pressure in the boiler

or will be either reduced by too small an amount, or else too much pressure will be lost every time the pop valve acts. In general, the regulator should be set to reduce the pressure in the boiler about three pounds.

The pressure at which the pop valve is set on a new engine is what the manufacturer considers the safe working pressure for his boiler. While the boiler will undoubtedly be safe with somewhat higher pressure when new it is not good sense to screw down the pop and increase the pressure. As the boiler grows older it is not able to stand such high pressures as when new and the "pop" should be set lower. It may be set down as a general rule, though not applicable in every case, that the engineer who has a hankering to screw down the pop valve is a fellow who needs pretty close watching. It might be safer to let him haul water.

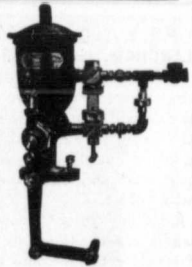
How To Get Rid Of Straw.

Many farmers in "the West", and some in what we call "the East" are troubled as to what they shall do with the piles of straw which lie about their fields. Upon the same farms with these nearly useless straw piles, many head of stock are kept, and many more might be kept, which could be made useful in reducing the straw to a condition in which it would serve as manure. If the already urgent necessity for manure upon the western and southern fields were realized, there would be little hesitation in taking measures to remove the difficulty. The chief obstacle is, that these involve either personal or hired labor; the first is objectionable to many, and the second cannot be had for want of the money necessary to pay for it. The least laborious method of using this straw and making it serve the double purpose of a shelter for stock and a fertilizer for the field upon which it has been grown is as follows: Some poles are set in the ground, and rails or other poles are laid upon them so as to form a sloping roof. This is made near or around the place chosen for threshing the grain. The straw from the threshing machine is heaped upon the rails, making a long stack, which forms three sides of a square, with the open side towards the south, and leaving a space between it in which cattle may be sheltered from storms. In this enclosure some rough troughs or racks may be placed, from which to feed corn. Here the cattle will feed and lie, or will lie at nights under shelter, while feeding during the day upon corn in the field. As the straw that is given them becomes trampled and mixed with the droppings, a further supply is thrown down



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 or 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. Its 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."

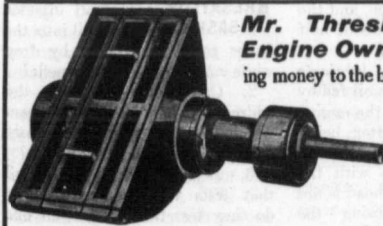
WRITE US. We have a GOOD THING and LIKE TO TALK ABOUT IT. AGENTS WANTED IN EVERY TOWN. ADDRESS:

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from the stack. The accumulation may be removed and spread upon the field to be plowed in when it is so required, and the stakes pulled up and carried to another place, where they may be needed for the same purpose. Such a shelter as this would be very serviceable for the purpose of making manure, even when straw is scarce, as in parts of the Southern States. There pine boughs may be made to serve as a covering, and leaves, pine straw, dry pond muck, swamp muck, "trash" from cotton fields, corn stalks, or pea vines, and any other such materials may be gathered from time to time beneath the cattle. Cotton-seed meal, straw, and coarse hay would keep stock in excellent order, and although there may be little snow or ice during the winter months in those States, yet the animals will be very much better for even this rude but comfortable shelter. In many other places such a temporary arrangement will be found useful in saving the hauling of straw, stalks, or hay from distant fields, and the carting of manure back again to them. It will be found vastly easier to keep a few young cattle in such a field, and go thither daily to attend to them during the winter when work is not pressing, than to haul many loads of hay or straw to the barn at harvest time, or many loads of manure in the busy weeks of spring.

Cold Weather Shelter for Stock Profitable.

Not one farmer in a hundred understands the importance of shelter for stock. This has much to do with success or failure of tens of thousands of farmers. Animals fairly sheltered consume from ten to forty per cent. less food, increase more in weight, come out in spring far healthier; and working and milk-producing animals are much better able to render effective service. The loss of one or more working horses or oxen, or of cows, or other farm stock, is often a staggering blow to those scarcely able to make the ends of the year meet, and the large majority of such losses of animals are traceable to diseases due, directly or indirectly, to improper protection in autumn, winter, or spring. Of the food eaten, all the animals use up a large percentage in producing the natural heat of the body at all seasons, and heat enough to keep up ninety-eight degrees all through the body is absolutely essential. Only what food remains after this heat is provided in the system can go to increase growth and strength and to the manufacture of milk in cows and of eggs in fowls. When heat escapes rapidly from the surface, as in cold weather, more heat must be produced within, and more food consumed. In



Mr. Thresherman and Engine Owner! You are throwing money to the birds every day you run your Slide Valve. Let us stop the leak for you and make your engine run better than when new. Write for Catalog telling "How we do it."

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nature this is guarded against by thicker hair or fur in winter.

Any thinking man will see that an animal either requires less feed, or has more left for other uses, if it is protected artificially against winds that carry off heat rapidly, and against storms that promote the loss of heat by evaporation of moisture from the surface of the

body. A dozen cows for example, will consume from two to six tons more of hay if left exposed from October to April, than if warmly sheltered, and in the latter case, they will be in much better health and vigor, and give much more milk. Other cattle, horses, sheep and swine will be equally benefited by careful protection.

The Thresherman's Question Drawer

Answers to Correspondents

P. A. Y. Q. About how **LANGHAM**, much lead must a **SASK.** valve have?

2. Which is the more economical and will give better results, a valve set with an equal lead and an equal cut-off or with an unequal lead and an equal cut-off, and why?

A. One-thirty-second of an inch is usually the right amount of lead for the average size traction engine.

2 There will be very little difference in the economy of either way, but the equal cut-off will give better results, and will give a uniform sound to the exhaust, which is desirable.

P. R. Q. My engine **SHELLBROOK**, makes a squeaking noise; it is

either in the cylinder or in the guides. I can't tell which. The front of the upper guide is a little rough. The engine has been run two seasons. The man in charge of it the first season said the sight lubricator wouldn't work. There was plenty of oil went through the cylinder, but depended on the oilers on the steam chest. He would fill it and in about fifteen minutes it would be gone, and the engine would then run about half an hour without oil.

A. The best way to lubricate a cylinder, is to have the oil fed by drops continuously. If the engine continues to squeak after being oiled, this would indicate that the cylinder is out of line with the guides or that the crosshead is not properly adjusted, causing the piston rod to be forced out of center. Sometimes a squeak comes from the valve or valverod.

F. P., Q. How do you **CARDSTON**, figure the horsepower of a cylinder

ALTA. I don't mean with the indicator but just knowing the dimensions, boiler pressure and piston speed.

2. How do you figure the safe working pressure on the walls of the fire box?

3. Is not an 11x11 cylinder stronger than a 10x12 under the same conditions?

4. Do both cylinders on the Reeves cross compound give the same power on the crank shaft? If not, what is the difference?

A. There is no exact way, You can make an estimate that is close enough for comparative results, but that is all. For non-condensing engines it is customary to take half the gauge pressure as the average working pressure for the whole stroke. This multiplied

by the area of the piston and the number of feet it travels in a minute will give you the number of foot pounds of work done. If this product be divided by 33,000 the quotient will be the horsepower.

2. The rule says: multiply the square of the thickness of the plate, express in sixteenths of an inch, by 112, and divide this result by the area supported by one stay bolt. The result will be the safe working pressure for plates up to 7-16 an inch in thickness. For plates thicker than this divide by 120 instead of 112. To illustrate: If the plate is 5-16 of an inch thick multiply 5x5x112 and divide by the area supported by the bolt. If the bolts are spaced 4x5 inches from center to center the area supported is 20 square inches, and this should be used as the divisor.

3. Under full steam pressure there is very little difference. At low steam pressure and a very early cut-off there may be considerable difference. A complete answer to your question would cover several pages.

A. R., Q. Do you think **BRESAYLOR**, a coal oil injector **SASK.** putting oil into the boiler at all times drop by drop while running is of any benefit?

2. Can you give me the address of any company from which I can get spring lock washers up to one inch or 1 1/4 inches?

3. Is there any cylinder oil that tests 725 fire test? How do they test it and how can one tell a good oil?

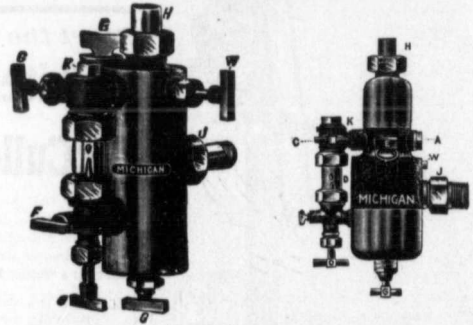
A. An injector such as you describe is sometimes used to keep scale from forming in the boiler. The action of the kerosene is to prevent the scale from sticking together and forming a hard crust. It has some objectionable features and is not generally recommended by engineers of good standing.

2. We do not recall the name of any company that manufactures washers of this kind, but your local hardware dealer can easily get what you want.

3. We have no records of tests that have gone as high as this, but we hardly think there are any steam cylinder oils made with such a high burning test, although it is possible that there may be some gas engine oils. Some of the mobile oils on the market show tests well above 600.

The test is made by heating the oil to a temperature at which the surface will take fire when a lighted taper is applied. The

MICHIGAN LUBRICATORS



Our Hot Stuff and Pepper Pod Lubricators

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

We want Threshermen to have a copy of our catalogue free.

MICHIGAN LUBRICATOR CO.

Manufacturers, DETROIT, MICH.

OUR GOODS ARE JOBBED BY:

J. H. Ashdown Hardware Co., Winnipeg, Man.

Miller-Morse Hardware Co., Winnipeg, Man.

The Canadian Fairbanks Co., Winnipeg, Man.

Handling Hot Water With Your Injector

The hot water problem is one that causes much concern with every thresherman. We have solved the difficulty in two ways.

The Chicago Automatic Injector

is especially built and constructed to operate with high temperatures of feed water together with high pressures of steam. These are special features in addition to its simple construction and ease of operation. Does not "buck" or "break" when engine is traveling over rough or bumpy roads.



The Chicago Ejector

delivers the water cooler to your engine tank than any other jet on the market. Read what users say of the Chicago Ejector:



The Ohio Injector Co., Wadsworth, Ohio.

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. HENS.

You get a Brass Strainer with the Chicago Ejector.

You Pay Extra for it When Buying Other Makes.

Ask your Dealer about it, or write us for circulars.

THE OHIO INJECTOR COMPANY

132 S. MAIN ST.

WADSWORTH, OHIO, U.S.A.

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 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.

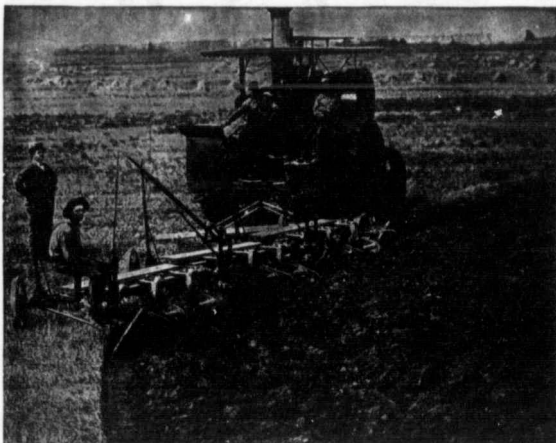
Carried on wheels equipped with oil-tight, dust-proof wheel boxes running on long distance axles reduces friction and saves expense.

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 landslide 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

heating must be done carefully in a receptacle protected from the fire by a layer of dry sand.

There is no easy way to tell a good oil from a poor one. About the only way to do is to buy from a reputable dealer and take his word for the quality of the oil. When you find a brand that is perfectly satisfactory in all ways stick to it.

C. R., Q. How should one prepare leather belts for storing away when not in use?

2. Is it good practice to put tar or valve oil on a drive belt to prevent slipping?

3. Is soap injurious to leather belts?

4. Should belts be run any tighter than really necessary to perform their work?

5. Please give a good formula to prevent scale on boiler and flues.

6. When cleaning up engine for storing through the winter, would you remove the cylinder? Should the injector and lubricator be taken off and cleaned?

7. Please explain how to line up the main shaft on a traction engine so that both pillow block boxes can be rebabbitted.

8. What is angularity of the main rod? As it is spoken of in locomotive practice.

9. I have taken notice of several traction engines, and when

the friction is in, ready to transmit power to the drive wheels, the reverse lever is always at the front end of quadrant when the engine is moving ahead and at the rear end when the engine is backing up. But the other day I saw a Port Huron 14 h.p. simple engine running a saw mill. The flywheel was running under the same as it should when going forward on the road, but the reverse lever was at the rear end of quadrant or back motion. Are all Port Huron engines made to run that way?

Will some of our readers please answer these questions.—EDITOR.

Y. A. V., Q. I have noticed at times the oil in a lubricator will turn brown when going up through the sight feed glass, which gives trouble, fogging the glass.

A. It may be your oil is not of a good quality. It often happens, when the sight glass is not full of water, that the oil adheres to the glass. This can be blown out without taking the oil out of the lubricator. The glass should have time to fill up full of water before the feed is started.

L. B., Q. Will you please tell me if a traction engine crown sheet is nine inches from top to crown sheet, or not so deep? Does the depth of a crown sheet make any

difference in the pressure on a boiler? I should think a crown would be greater on an eleven inch than on a nine inch space between the top and the crown sheet.

A. Usually the distance from the top of crown sheet to the top of the boiler is greater than nine inches, the depth varying for different sizes of boilers. The distance between these two sheets can make no difference either in the pressure on the boiler or the strength of the boiler.

I. Y., Q. I have a cone screen in my stack and when I use it,

it retards the draught so that the boiler steams very hard. Can there be anything done to help the steaming quality of the boiler when using the screen?

A. The draught can be increased by reducing the exhaust nozzle. Another way to help the draught while using the screen is to invert it. Instead of having it to extend downward in the stack, turn it upward. Thus the smoke will have an easier outlet and you will find the draught much stronger, and good results may be had in this way without reducing the exhaust nozzle.

If the frame on which the screen is fastened will not permit of being reversed, the screen can be taken off and fastened on the top side of frame.

The Manitoba Windmill and Pump Company Enlarging Their Plant.

There is no better evidence of prosperity, industry and thrift in Western Canada than the fact that a manufacturing concern sees it necessary to enlarge its plant, in order to take care of its increase in business.

Some few years ago the Manitoba Windmill and Pump Company was a comparatively small concern. Their motto was, however, Reliable Goods, and they soon won the confidence of the farmer to such an extent that it became necessary for them to enlarge their quarters. They purchased the plant of the old Brandon Binder Twine Company, thinking that this would be ample for their requirements for several years to come, but their business has increased at such a rapid pace that they have again found it necessary to enlarge their plant. They now have in the course of construction a brick foundry, 110 x 60, equipped with travelling crane and all modern foundry appliances. The estimated cost of this new building will be \$10,000, and will be equipped with over \$5,000 worth of new machinery. The old foundry will be used as an addition to the machine shop.



The Buck Fever Immune

BY L. A. B.

"D'you see how steady I can hold this gun?" remarked Bill, as his eye gleamed over the barrel of a 38-55 Winchester. "I'll just bet you at the top round of anything you want, that I won't get it, and to show you that I can shoot, too, I'll just pick you out that white rock on yonder bank of the railroad tracks and make it smoke."

A steady aim, a sharp report, and a puff of dust from the indicated rock told the story of Bill's marksmanship.

"Well done!" and "Good" came from several of the bystanders.

"But that don't prove that you can't get the fever, or be able to control yourself when it comes on," said one "Here comes your partner, who has killed a few and seen more. We'll see what he says."

As I came up, Bill's theory of buck fever was explained, and as to passing an opinion, I could only inform them that I had had it more than once and knew of older hands who have been bothered with it. As to Bill, a tenderfoot, hunting deer without an attack of the shakers, it would be one chance out of more than I can tell. Bill and I had planned a deer hunt as soon as the season opened, and of course polished up a little before hand, so as not to go into the woods and be grinned at by the Jacks on the first morning after our arrival. We fared pretty well at practice, and on the following morning we landed with an inward feeling of satisfaction as to our ability. A drive of about twenty miles into the woods landed us at Camp Sunrise, at the head of French Lake, where live Barney and Mrs. Pripps and their boy Raymond. A cheerful greeting, a stretching of our lame limbs and backs, a little grumbling of the inner man, and we were seated around a well-spread table, loaded with all that we needed, I say needed, but could you have seen Bill knock in on that dinner you might have thought we needed more. Barney looked alarmed, and his face showed great doubt as to whether she would take Bill's 310 pounds to board or not, but he quieted her fear a little when he arose from his chair and left a crust of bread on the plate for the cat. I'd think it well for Mrs. Barney to adjust her rates according to a man's capacity.

Bill bunked in early and dreamed of the morrow, but not the rest of us; for of all the buzzes, scrapes, scratches, squeaks or groans Bill's snoring beats everything. I almost believe one could run a 25-light dynamo with just the sound of it; anyway, it kept me awake all night, and Bill never missed a note, either up or down. We rose at five o'clock and prepared for a stand somewhere near the camp for Bill's first, real hunt for the buck that couldn't give him the fever.

I took him to a place where the signs of deer were thick and fresh. Bill's eyes dilated, goose-flesh covered his face that one could have scratched matches on, and once or twice I noticed him tug at his cap as if the calm, frosty, morning air had intentions of blowing it off. Bill sized up the tracks as if he wanted to gather 'em in a basket to take home. He was all absorbed, but on being told to stay there and keep a sharp look out for the buck, he came to and meant business. We waited and watched till our teeth began to chatter, which is a sign to go home, so we did. The next morning proved to be Bill's eventful day. History should not omit it. Bill took his stand as the morning before and had not long to wait when a fine spike-horn made his appearance. With a steady aim, a sharp report, a crashing of brush and a dull thud, Bill had him down.

Well, to leave space for something better I'll simply say that you couldn't reach Bill with a ten-foot pole that day; his cap was two sizes too small for his head and his feet covered enough ground to raise a peck of beans on.

"What'd I tell you about getting the fever?" he said. "You fellows don't want to get excited, that's all." And much more of the same sort.

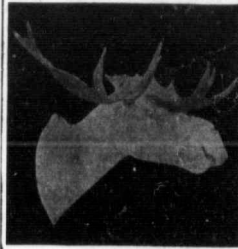
The next day was my chance, and I succeeded in killing a nice fawn. Two days later came Bill's downfall, and, oh! how he fell! I'll tell you how it was. I wouldn't, but Bill nettled me about some politics once, so here's where I'll even matters up a little:

Bill, this morning, took his stand as usual, but having gotten tired of standing he took with him an old cracker box to sit on, and by so doing and leaning his back up against a tree, enjoyed comfort. How it ever happened Bill don't know. Anyway, he said that all of a sudden he saw a

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THE ONLY TAXIDERMIST MAKING SCIENTIFIC MODELLED MANNIKINS



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

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Ordinary Mounting showing Paper Nose Form

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173 Fort Street, - Winnipeg

great, big buck stand a few rods away from him, sizing him up with a pair of eyes as big as billiard balls. Bill looked at the buck and the buck looked at Bill. Finally it dawned upon Bill that he had his rifle with him and might shoot the monster.

"Such a pair of antlers," thought Bill. "What a fine show they'll make in the office." Bang! "He's there yet." Bang! Bang! Bang! Bang! Click? "What? Empty!"

Well, you may imagine that Bill did some tall fumbling around in his pockets for the wanted goods, the buck in the meantime running a semi-circle around him. Concealing himself behind a thicket, the buck started to give Bill that well-known snort, which Bill says he repeated nine times, and at which Bill shot at two of them. I don't know if Bill's gun was sighted right that day or not, but I know that when a fellow shoots at the snort of a buck there is something wrong. How that beast ever walked so close to Bill before he spied him I don't know. It must have been the fault of his cap, which had shifted too far over his eyes.

Bill and I enjoyed a pleasant vacation and returned home with the limit.

"There! You have a black eye, and your nose is bruised, and your coat is torn to bits," said Mamma, as her youngest appeared at the door. "How many times have I told you not to play with that bad Jenkins boy?"

"Now, look here, Mother," said Bobby,

"do I look as if we'd been playing?"

A party of young men were camping, and to avert annoying questions they made it a rule that the one who asked a question that he could not answer himself had to do the cooking.

One evening, while sitting around the fire, one of the boys asked: "Why is it that a ground-squirrel never leaves any dirt at the mouth of its burrow?"

They all guessed and missed. So he was asked to answer it himself.

"Why," he said, "because it always begins to dig at the other end of the hole."

Marlin



12 Gauge Repeating Shotgun

The 12 gauge Marlin repeater is a gun of perfect proportions, and has one-third less parts than any other repeater. It handles quickly, works smoothly and shoots close and hard.

The Marlin solid top prevents powder and gases blowing back; the side ejection of shells allows instant repeat shots; the closed-in breechbolt keeps out all rain, snow and sleet, and the dirt, leaves, twigs and sand that clog up other repeaters.

All 12-gauge Marlin repeaters have double extractors that pull any shell, and the automatic recoil hanger safety lock makes them the safest breech-loading guns built.



The Marlin 12 gauge repeaters in three distinct models, many grades and styles, fully described in our 136-page catalog. Free for 3 stamps post.

The Marlin Firearms Co.,
105 Willow Street, NEW HAVEN, CONN.

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WRITE FOR CIRCULAR
TRAPPERS GIVE FREE TO THOSE WHO
SHIP TO US.

FOR SALE—25 Horse Power Plow Engine, excellent condition, only used portion of one season, bargain for cash; inquire of IRA JONES, New Dayton, Alberta.

"But," one asked, "how does it get to the other end of the hole?"
"Well," was the reply, "that's your question."

JUST CHAFF

Dolls are made for girls to play with, not for men to marry.

A bird on a bonnet is worth five on a plate.

Marriage is like a beleaguered fortress; those who are without want to get in, and those who are in want to get out.

If on my theme I rightly think,
There are five reasons why men drink—
Good wine, a friend, because I'm dry,
Or else I may be by and by,
Or any other reason why.

The law has no penalty for stealing a heart because the punishment of having it left on your hands is enough.

'Tis an excellent world that we live in,
To lend, or to spend, or to give in;
But to borrow, or beg, or to get one's own,
'Tis the very worst world that ever was known.

Drink nothing without seeing it, sign nothing without reading it.

Those who apply themselves too much to little things, commonly become incapable of great ones.

Two ears and but a single tongue
By nature's laws to man belong.
The lesson she would teach is clear,
Repeat but half of what you hear.

Matches may be made in Heaven, but they are sold on earth.

If the claims of a law case attractively draw,
And your case no one can make much of it,
You should never forget that an action-at-law
Is not worth while if there isn't a profit.

What a foolish man does in the end a wise man does in the beginning.

When our vices leave us, we flatter ourselves that we have left them.

Let every man sweep the snow from before his own door, and not busy himself about the frost upon his neighbour's tiles.

Buy what you dinna want, and you will sell what you canna spare.

Inquire about your neighbour before you build, and your companion before you travel.

Living friendly, feeling friendly,
Acting fairly to all men;
Seeking to do that to others
They shall do to me again;
Hating no man, scorning no man,
Wronging none by word or deed,
But forbearing, soothing, serving,
Thus I live and this my creed.

Here's to the maiden of bashful fifteen;
Here's to the widow of fifty;
Here's to the flaunting extravagant queen,
And here's to the housewife that's thrifty!
Let the toast pass;
Drink to the lass;
I'll warrant she'll prove an excuse for the glass.

A good horse, a warm house, a snug estate, and a pretty wife, to everyone that deserves them.

Here's to the bachelor, so lonely and gay,
For it's not his fault he was born that way.
And here's to the spinster so lonely and good,
For it's not her fault—she hath done what she could.

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RAW E. T. CARTER & CO.
73 Front St. East, TORONTO, ONT.
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HIGHEST PRICES PAID for all kind of RAW FURS.
SHIP US NOW.
We Pay Express Prompt Returns
Write for Latest Price List

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.

WE TAN ALL KINDS OF HIDES & FURS FOR RUGS, ROBES OR COATS

THE BRANDON TANNERY CARRUTHERS & CO.
CUSTOM TANNERS
Manufacturers of Galloway and Sheep Lined Coats, Robes and Gauntlets.
Buyers of Hides and Sheepskins.
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TORONTO, ONT.

THE FUNNY WORLD

The matter on this page lays no claim whatever to originality. The one idea is to amuse, to provoke a smile. If it fulfills this mission we shall feel amply repaid for the time and labor expended in its preparation. Have you read or heard something that has made you laugh? Has it chased dull care away for a time? Then pass it along for publication in our Funny World. Such contributions will be greatly appreciated.

Father Vaughan, the London priest who has achieved notoriety, is said to have, in addition to his more deliberate rhetoric, the art of putting wisdom into a pointed phrase, which is the definition of the brightest wit. Often his irony is very quick and flashing. Once when he was being shown a portrait of Henry VIII by Holbein at Trinity College, someone asked him what he would do if King Henry stepped down from his frame.

"I should ask the ladies to leave the room," was his instant reply.

Mother: "Willie, come right down with your airship, and get ready for school."

Son: "Won't."

Mother: "I'm ashamed to have the women of the town catching such a report over their wireless circuits. You come down now."

Son: "Won't."

Mother: "Then I will signal that flying policeman to bring you down."

Son: "I'm coming down."

"For two years after I was married I was ashamed to meet the preacher who united my wife and me in the holy bonds. You see, in my excited condition I made a blunder and gave him a five dollar bill instead of \$20, which I intended to hand him. I suppose he thought I was a cheap skate, but I couldn't very well explain it without making myself ridiculous or causing him to suspect that I was lying about it."

"You say you felt that way for two years?"

"Yes. After that I began to be sorry I had given him anything!"

The country parson was condoling with the bereft widow.

"Alas," he continued earnestly, "I cannot tell you how pained I was to learn that your husband had gone to heaven. We were bosom friends for years, but we shall never meet again."

"Why is Maude so angry with the photographer?"

"She found a label on the back of her picture saying, 'the original of this photograph is carefully preserved.'"

"Mother, Henry writes that he has ter have money right away fer to git an autmobile."

"Land Sakes! What does he mean by sech extravagance?"

"Extravagance! Looks ter me like it's the fust time he ever had enny idee 'bout economy. He says he lives so fer from the college he wants ter save car-fare."

Mother—"There were two apples in the cupboard, Tommy, and now there is only one, how's that?"

Tommy (who sees no way of escape) —"Well, ma, it was so dark in there that I didn't see the other!"

A witness in a railroad case at Fort Worth, asked to tell in his own way how the accident happened, said:

"Well, Ole and I was walking down the track, and I heard a whistle, and I got off the track, and the train went by, and I got back on the track, and I didn't see Ole; but I walked along,

and pretty soon I seen Ole's hat, and I walked on, and seen one of Ole's legs, and then I seen one of Ole's arms, and then another leg, and then over one side Ole's head, and I says, 'My God! Something muster happen to Ole!'"

Mother:—"Alice, it is bedtime. All the little chickens have gone to bed."

Alice:—"Yes, mamma, and so has the hen."

"I'll pass the butter," said he, while trying to pass the browsing goat.

"I'll butt the passer," said the goat, as he helped him over the fence.

"I want to get this cheque cashed," said the fair young matron, appearing at the window of the paying teller.

"Yes, madam. You must endorse it, though," explained the teller.

"Why, my husband sent it to me. He is away on business," she said.

"Yes, madam. Just endorse it—sign it on the back so we will know and your husband will know we paid it to you."

She went to the desk against the wall and in a few moments presented the cheque triumphantly, having written on its back:

"Your loving wife, Edith."

An old couple, who had passed their lives in the quiet of a Derbyshire village, resolved to make a journey to London. The resolution was communicated to their neighbors, who gave them long instructions as to the best methods of taking care of themselves and avoiding city sharpers.

The villagers gathered at the station to see the departure, and all went well until the train rached Bedford. There the old man, in an evil moment, allowed himself to leave the compartment, with the result that the train went off without him.

Fortunately an express was due in a few minutes, and the station-master, taking pity on the old countryman's distress, permitted him to board it, so that he was enabled to reach London fully twenty minutes before the arrival of his wife.

He was waiting eagerly at the station when the train came in, and seeing his wife, he rushed joyously up, crying out:

"Hi, Betty, I'm glad to see you again! I thought we wor parted forever!"

The old woman looked at him, suspiciously, and remembering all the advice that had been showered upon her, said indignantly:

"Away w' ye, man! Don't be comin' yer Lunnon tricks w' me. I left my own man at t' other station. Be off at once, or I'll call a bobby and hae yer locked up!"

Despite all warnings, a patient who suffered from overeating was obliged to call upon the doctor every few weeks for remedies. But when several months passed without a summons the doctor wondered, and, meeting his patient on the street, he asked:

"How is it I haven't heard from you in so long? Are you taking my advice or my prescriptions, or have you joined the ranks of the food-faddists?"

"I have done none of these things," responded the former dyspeptic, "and I believe I am done with doctors forever. I

have found a perfect rule. When I sit down at the table I am careful to see that I measure just six inches from the table. Then I eat and eat and when I hit—I quit."

Pat Dooley went round to the cabin of Mike Doolan to pass the time of day to him; but Mike was out. Mrs. Mike was in, boiling the praties and trying to nurse the child at the same time. Pat being a polite boy, offered to dandle the baby while Mrs. Mike stirred the pot.

In came Mike. "Good morning to you, Pat."

"The top of the morning to you, Mike, and how's yourself?"

"It's gay and grand I am, and how are you, Pat?"

"Just holding my own," says Pat, tossing the child.

And when Pat woke up he found that he had been in the hospital for a week.

Two ladies, who had known each other in years gone by, met on the street. Both of them were married to musicians. The one, a bride of a year, was pushing a baby-carriage in which were three fine babies—triplets, all girls. The other lady had been in the bonds of matrimony a couple of weeks.

"What beautiful children!" exclaimed the newly-married one with interest.

"Yes," replied the proud mother, "let me tell you the funniest coincidence. At our wedding supper the boys who played with my husband in the orchestra serenaded him and they played 'Three Little Maids,' from 'The Mikado.' Isn't that queer?"

At this the newly-married one turned pale.

"Mercy" she gasped. "At our wedding supper Tom's friends serenaded him, also, and they rendered 'The Sextette' from 'Lucia.'"

Toward the close of a recent lawsuit in Massachusetts, the wife of an eminent Harvard professor arose and with a flaming face timidly addressed the court.

"Your Honor," said she, "if I told you I had made an error in my testimony, would it vitiate all I have said?"

Instantly the lawyers for each side stirred themselves in excitement, while His Honor gravely regarded her.

"Well, madam," said the Court, after a pause, "that depends entirely on the nature of your error. What was it, please?"

"Why, you see," answered the lady, more and more red and embarrassed, "I told the clerk I was thirty-eight. I was so flustered, you know, that when he asked my age I inadvertently gave him my bust measurement."

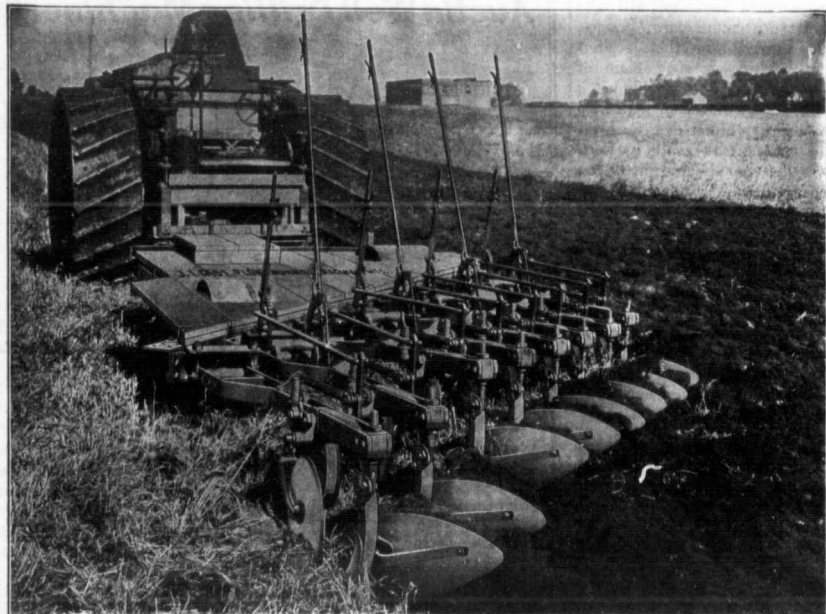
Patrick arrived much the worse for wear. One eye was closed, his nose was broken, and his face looked as though it had been stung by bees.

"Glory be!" exclaimed his wife.

"That McGillicuddy—'twas him," exclaimed Patrick.

"Shame on ye!" exploded his wife, without sympathy. "A big spalpeen the loikes of you to get bate up by a little omadhaun of a McGillicuddy the size of him! Why—"

"Whist, Nora," said Patrick, "don't spake disrespectfully of the dead!"



The plows are attached to the frame by screw bolts, affording a very fine adjustment for setting the plows in the line of draft.

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One lever lifts two plows so that the entire battery of plows may be lifted or lowered quickly at the ends of the field, and the ends left square. However each plow can be lifted or lowered separately when desired.

A Desirable Milking Shed

We recently observed a peculiarly constructed building used as a milking shed during the warmer portions of the year. It is a common frame structure, thirty-five feet in length and eighteen feet wide, with posts eight feet high. The sides and ends are boarded up and down with eight-inch stuff, leaving a space three inches wide between the boards for ventilation, light, etc. A row of common stanchions are placed along each side. A door is made at one end, through which the cows enter. If grain is fed, it is placed in position before the cows are admitted. A small quantity of salt is kept on the floor, immediately in front of the stanchions, thus allowing the cows to obtain a supply twice each day. This manner of salting is an inducement for the cows to enter the building and take their accustomed places; it also tends to keep them quiet while milking. This arrangement, for cleanliness, ventilation, etc., is far superior to the common basement stables, and is a great improvement over the usual plan of milking in the open yard, where broken stools, spilled milk, and irritable tempers are the rule rather than the exception. No matter how stormy it may be without, this shed always secures a dry place, with comparative quiet. A greater supply of milk is obtained with such a shed.

The floor of the stable portion may be of earth, covered with coarse gravel.

The Wood-Lot in Winter.

A few acres in trees is one of the most valuable of a farmer's possessions; yet no part of the farm is so mistreated, if not utterly neglected. Aside from the fuel the wood-lot affords, it is both a great saving and a great convenience to have a stick of ash, oak, or hickory on hand, to repair a break-down, or to build some kind of rack or other appliance. As a general thing, such timber as one needs is cut off, without any reference to what is left. By a proper selection in cutting and the encouragement of the young growth, the wood-lot will not only continue to give a supply indefinitely, but even increase in value. A beginning, and often a whole, of the improvement of the wood-lot, is usually to send a man or two to "brush it," or clean away the underbrush. This is a great mistake. The average laborer will cut down anything; fine young trees, five or six years old, go into the heap with young poplars and the soft underbrush. The first point in the management of the wood-lot is, to provide for its continuance, and generally there are young trees in abundance, ready to grow on as soon as given a chance. In the bracing winter

mornings one can find no more genial and profitable exercise than in the wood-lot. Hard-wooded and useful young trees should not have to struggle with a mass of useless brush, and a judicious clearing up may well be the first step. In timber, we need a clean, straight, gradually tapering and thoroughly sound trunk. In the dense forest, nature provides this. The tree are so crowded that they grow only at the upper branches. The lower branches, while young, are starved out and soon perish, the wounds soon healing over are out of sight. In our open wood-lots, the trees have often large heads, and the growth that should be forming the trunk is scattered over a great number of useless branches. Only general rules can be given in pruning neglected timber trees; the naked trunk, according to age, should be from one-third to one-half the whole weight of the tree; hence some of the lower branches may need to be cut away. All the branches are to be so shortened in or cut back as to give the head an oval or egg-shaped outline. This may sometimes remove half of the head, but its good effects will be seen in a few years. In removing branches, leave no projecting stub on the timber, and cover all large wounds with coal-tar. Whosoever works in this manner thoughtfully cannot go far astray.

Summer Fallow.

Gentlemen:—

Will write you a few lines in regard to summer fallow here in Manitoba. Many ways are tried, but the most satisfactory method is to plow the land in the fall as soon as possible, about 2½ inches deep, then harrowed and packed with a pulverizer. If it is done in this way some warm days will cause the wild oats and other weeds to germinate, and the frost will destroy them afterwards. This method saves lots of work in the spring when so many other things are to be done. I have a Massey-Harris cultivator, and as soon as the weeds are all well up in the spring begin cultivating the land, leaving it to dry, one day and then harrowing and cultivating again as soon as the weeds appear. I continue this till the later part of June and then I plow again 5 inches deep, harrow, and pulverize and it is ready for the cultivator, to be cultivated as soon as any weeds appear. If land were to be treated in this way I am sure there would be no more Canada Thistles, Sow Thistles nor Wild oats or Mustard, Mr. Farmer. Try the above method and you will be delighted with the results.

Your truly
 Peter C Rempel,
 Winkler, Man.

Some Good Advice.

I have been on the farm all my life and the best way I have found to farm is to start as soon as a person can get on the land and sow as early as you can. I have found it is not profitable to sow wheat any later than the first of May and oats not later than May 20th. I found oats will pay as well as wheat if they get the same show, but as a rule every farmer sows wheat as long as he can and then puts his oats in any old time. To do this and expect a crop is folly. To sow barley later than May 30th is also wrong. I find that the Blue Stem wheat gives the best satisfaction with me in this locality, although I have grown Red Fife with some success. I have found, however, the Blue Stem gives a much better yield. Last year I sowed an acre of Blue Stem and an acre of Red Fife side by side on the same day and the same amount to the acre. The Blue Stem yielded me 29 bus. to the acre and the Red Fife 12 bus. to the acre. Both were sown on old land that had previously yielded three crops of wheat.

The Blue Stem grows much longer in the straw and much bigger in the head, but it is bad to shell if you do not cut it slightly on the green side. Unless you watch it carefully it is liable to fool you as it looks green when it should be cut. It will stand to be cut much greener than the Red Fife.

After May 30th I find it best to stop seeding and start summer fallowing. This summer fallowing I do rather light so as to starve the weeds and wild oats. I find that summer fallowing too deep is not good policy as I like to keep the wild oats growing as this is the only way to kill them. If you plow too deep you will get them down in the ground so far that they won't grow till they are turned up again and he who says that wild oats will rot is mistaken.

As regards my machinery. I find that it pays by all means to keep it in a shed. It will last much longer and will give you much better service when you use it. In the spring it is a very good policy to go over all the farm machinery thoroughly before the work begins and put it in good repair. By doing so you will avoid a great deal of trouble when you start working in the fields. Watch the machinery carefully when you are working with it and see that no bolts or nuts are loose or that none of the bolts are lost. By keeping the machinery in good shape it will work much nicer and will be much easier on the horses.

I find that it pays to keep nothing but good horses. Three horses that are thin and worn out are no better than two that are

in good shape, but they will eat just as much feed and will take a great deal more care; besides, what farmer is there that does not enjoy working a good team of horses and that does not find it a task to work with a poor team? Do not feed too much dry feed. I find I get the best results by feeding some oat sheaves with the oats, regulating the amount according to the work that is being done.

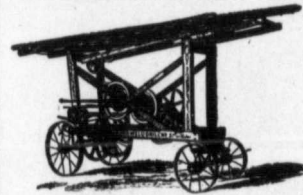
Another mistake that farmers make is working their teams slowly on the farm and then when they get them on the road drive them to death. Such a thing is out of reason. Let them take a little longer in going to town and keep your horses somewhere near the farm gait on the road.

Yours truly
J. R. C.,
Two Creeks, Man.

Digging Muck and Peat.

A dry fall often furnishes the best time in the whole circle of the year for procuring the needed supply of muck or peat for absorbents in the sty and stable. The use of this article is on the increase among the farmers who have faithfully tried it, and are seeking to make the most of home resources of fertilizers. Some who have used muck only in the raw state have probably abandoned it, but this does not impeach its value. All that is claimed for it has been proved substantially correct, by the practice of thousands of our most intelligent cultivators, in all parts of the land. There is considerable difference in its value, depending somewhat upon the vegetable growth of which it is mainly composed, but almost any of it, if exposed to the atmosphere a year before use, will pay abundantly for digging. This dried article, kept under cover, should be constantly in the stables, in the sties and sinks, and in the compost heap. So long as there is the smell of ammonia from the stable or manure heap, you need more of this absorbent. Hundreds of dollars are wasted on many a farm, every year, for want of some absorbent to catch this volatile and most valuable constituent of manure. In some sections it is abundant within a short distance of the barn. The most difficult part of supplying this absorbent is the digging. In a dry fall the water has evaporated from the swamps, so that the peat bed can be excavated to a depth of four or five feet at a single digging. Oftentimes ditching, for the sake of surface draining will give the needed supply of absorbents. It will prove a safe investment to hire extra labor for the enlargement of the muck bank. It helps right where our farming is the weakest—in the manufacture of fertilizers.

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Preventable Losses on the Farm

It is a "penny wise and pound foolish" system, to breed from scrub stock. There is not a farmer in this region who has not access to a pedigreed Shorthorn bull, by a payment of a small fee of two to five dollars, and yet we find only one animal in ten with Shorthorn blood. It is a common practice to breed to a yearling, and as he is almost sure to become breechy, to sell him for what he will bring the second summer. Many farmers neglect castrating their calves until they are a year old. We think ten per cent. are thus permanently injured, must be classed as stags, and sold at a reduced price. Fully half the calves so stunted never recover.

With many, the starving process continues through the entire year. They are first fed an insufficient quantity of skim milk; then in July and August, just at the season when flies are at their worst, and pastures driest, they are weaned, and turned out to shift for themselves and left on the pastures until the snow falls, long after the fields yield them a good support. They are wintered without grain, spring finds them poor and hide bound, and the best grazing season is over before they are fairly thrifty.

The keeping of old cows long past their prime is another thing which largely reduces the profits of the farmer. We have found quite a large per cent. of cows, whose wrinkled horns and generally run-down condition show that they have long since passed the point of profit. A few years ago, these cows would have sold at full prices for beef, now they will sell only for Bologna at two cents per pound. Thus cows have, in a majority of cases, been kept, not because they are favorites or even because they are profitable, but from sheer carelessness and want of forethought. Another fruitful cause of loss to the farmer is attempting to winter more stock than he has feed for. Instead of estimating his resources in the fall, and knowing that he has enough feed even for a hard winter, he gives the matter no thought, and March finds him with the choice of two evils, either to sell stock, or buy feed. If he chooses the former, he will often sell for much less than the animals would have brought four months earlier, and if the latter, will usually pay a much higher price for feed than if it had been bought in autumn. Too often he scrimps the feed, hoping for an early spring, and so soon as he can see the grass showing a shade of green around the fence rows, or in some sheltered ravine, turns his stock out to make their own living. This brings one of the most potent causes of unprofitable

cattle raising; namely, short pastures. The farmer who is overstocked in winter, is almost sure to turn his cattle on his pastures too early in the spring, and this generally results in short pasture all summer, and consequently the stock do not thrive as they ought, and in addition, the land which should be greatly benefited and enriched, is injured, for the development of the roots in the soil must correspond to that of the tops, and if the latter are constantly cropped short, the roots must be small. The benefit of shade is lost, and the land is trampled by the cattle in their wanderings to fill themselves, so that it is in a worse condition than if a crop of grain had been grown on it. From all these causes combined, there is a large aggregate of loss, and it is the exception to find a farm on which one or more of them does not exist, and yet without exception they may be classed as "preventable," if thought and practical common sense are brought to bear in the management.

Putting Away Tools.

The wearing out of farm implements is, as a rule, due more to neglect than to use. If tools can be well taken care of, it will pay to buy those made of the best steel, and finished in the best manner; but in common hands, and with common care, such are of little advantage. Iron and steel parts should be cleaned with dry sand and a cob, or scraped with a piece of soft iron, washed and oiled if necessary, and in a day or two cleaned off with corncob and dry sand. Finally, paint any iron part with rosin and beeswax, in the proportion of four of rosin to one of wax, melted together and applied hot. This is good for the iron or steel parts of every sort of tool.

Wood-work should be painted with good, boiled linseed oil, white lead and turpentine, colored any desired tint; red is probably the best color. Keep the cattle away until the paint is dry and hard, or they will lick, with death as the result. If it is not desired to use paint on hand tools, the boiled oil with turpentine and "liquid drier," does just as well. Many prefer to saturate the wood-work of farm implements with crude petroleum. This cannot be used with color, but is applied by itself so long as any is absorbed by the pores of the wood.

To Prevent the Baling of Horses.

When the snow upon the roads is cohesive and packs firmly, it collects upon the feet of horses,

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of Pamphlet C. 43, issued by The Great-West Life Assurance Company. It describes a Life Insurance Policy that will undoubtedly interest you—the Automatic Endowment Policy. In a sentence—the Policy gives protection at the lowest cost available, yet provides for the later years of the Policy-holder himself. No provision can entirely take the place of Life Insurance. It is the one investment that reaches its highest value at the time of greatest need.

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forming a hard, projecting mass, in a manner known as "balling" This often occurs to such an extent as to impede the motion of the horse, while it causes the animal great discomfort, and is sometimes dangerous to the rider or driver. The trouble may be prevented very easily by the use of guttapercha. For this purpose the guttapercha should be crude, i. e., not mixed with anything or manufactured in any manner, but just imported. Its application depends upon the property which the gum has of softening, and becoming plastic by heat, and hardening again when cold. To apply it, place the gutta-percha in hot water until it becomes soft, and having well cleansed the foot, removing what has accumulated between the shoe and hoof, and having well cleansed the foot, removing what has accumulated between the shoe and hoof, and taking care to force it into the crack between the two. Thus filling the crevices, and the space next the shoe, where the snow most firmly adheres, the ball of snow has nothing to hold it and it either does not form, or drops out as soon as it is gathered. When the guttapercha is applied and well smoothed off with wet fingers, it may be hardened at once, to prevent the horse from getting it out of place by stamping, by the application of snow or ice, or more slowly by a wet sponge or cloth. When it is desired to remove the gum, the application of hot water by means of a sponge or cloth will so soften it that it may be taken off.

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The Gasoline Engine in Cold Weather.
Continued from Page 29.

started as easily as in warm weather by the expenditure of a few minutes time and by the expenditure of only a fraction of the energy necessary in cranking the engine until it starts.

In the first place we must understand that gasoline inside the engine cylinder in any other form than that of gas is practically useless; the gasoline must be vaporized. Vaporization of any substance requires heat, and the amount of heat depends on the degree of volatility of the substance. Gasoline is fortunately a very volatile substance and does not require very much heat to vaporize it. If a saucer filled with gasoline is placed in a moderately warm room it quickly evaporates, but if placed out doors when the temperature is below freezing it will require a long time to evaporate, the length of time being proportionate to the temperature; in fact, if the temperature is below zero it will require hours to evaporate a saucerful of gasoline.

No doubt most gasoline engine operators have observed that even in warm weather the mixer of their engine is always icy cold when the engine is running, even if the mixer is in proximity to a warm part of the engine, and in certain conditions and temperatures of the atmosphere it becomes covered with white frost. The explanation of this rather curious phenomenon is simple; a very simple experiment will explain it. If a little gasoline is poured on the skin of the human body it quickly evaporates, and the place where it was applied feels chilly for a few moments. This chilly feeling is more pronounced if pure alcohol, a more volatile substance, is used in place of gasoline. What causes this chilly feeling? The gasoline or alcohol can be at a temperature which precludes the idea that the cold is inherent in the liquid, and still the same feeling will be experienced. The reason is that the evaporation of the gasoline or alcohol absorbs heat from the skin faster than the blood can supply it, thus reducing the temperature at the point of application. For the same reason the rapid evaporation of the gasoline in the mixer absorbs all the heat within its reach, thus drawing all the available heat it can from the metal of the mixer. This principle of absorbing heat by the evaporation of volatile substances, is the fundamental principle in the manufacture of artificial ice. By the evaporation of ammonia, under certain conditions, the temperature of surrounding substances can be reduced many degrees below the freezing point of water.

The reason why an engine will start up on a cold morning after

prolonged cranking is explainable from the fact that a small part of the energy expended in cranking the engine is converted into heat inside the cylinder, gradually warming it up to a point where it contains heat enough to vaporize the gasoline which is carried in with the air in the form of a fine spray. When air or any other gas is compressed adiabatically during the process of cranking, it becomes heated a certain definite amount for each pound of increase in pressure. The work done on the gas by compressing it is thus turned into heat. Even if the cylinder relief cock is left open, there will yet be enough compression of the gas to affect the temperature of the cylinder quite materially.

It can easily be seen that cranking the engine is a slow method of warming up an engine cylinder, especially so if the engine is of any size and turned comparatively slow. Small engines which can be cranked quickly with the relief cock closed, will start up quicker in cold weather than the larger ones, due to the fact that, as the full compression is obtained in the cylinder, far more heat is evolved than is the case when a large percentage of the compression is allowed to escape through the relief cock. From the foregoing discussion it is readily apparent that the principal thing lacking, and whose absence is mainly responsible for the trouble experienced in starting gasoline engines in cold weather, is heat.

What is the use trying to supply this heat by the laborious and painful process of cranking the engine, when it can be supplied with hardly any physical exertion. If the mixer and intake pipe are supplied with heat from some external source the same end will be attained, the gasoline will be vaporized before entering the cylinder of the engine, and the engine will start readily. Many people, however, object to the application of heat to those parts, owing to the supposed danger from the gasoline in the tank and piping catching fire. If proper precautions are used there is no danger whatever. Be sure that all the openings in the gasoline tank, if it is close to or is a part of the engine, are closed, or what is just as good, protected by screens in the openings; flame will not pass through even a coarse screen. Neither will a flame pass through a pipe filled with gasoline, but it will pass through a pipe filled with gasoline vapor if there is no screen in the pipe. If you are assured of these things the mixer and air pipes can be readily warmed by many methods which will suggest themselves to the ingenious operator. Gasoline can be poured over the mixer and intake pipe in small quantities and lighted up. A piece of rag or

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waste tied on an iron bar soaked in gasoline or kerosene and lighted can also be used. Probably the best method is a plumber's blow torch. Such a torch can be bought at from two to four dollars, and is one of the handiest appliances that the out-door gasoline engine operator can have in cold weather. With it, frozen pipes can be thawed out in a few minutes, and any part of the engine can be readily warmed up. Some of the newer engines for outdoor use are being equipped with a small shallow cup under the mixer valve, where a small quantity of gasoline can be ignited, and the mixer and piping warmed up, precisely in the same manner as a gasoline stove is started up. Such devices are usually so connected that the gasoline can run into the cup by opening a small pet cock in the gasoline feed pipe, thus dispensing with the necessity of carrying gasoline in a separate can. As I have already said, the only caution necessary in using any of these devices in the preliminary warming of the engine, is to be absolutely sure that there are no openings into the gasoline tank, which are open and unprotected by a screen, or which are not reduced to a series of small holes of less than one-eighth inch in diameter. Flame will not enter a tank containing gasoline or gasoline vapor through a hole of less than one-eighth inch in diameter, and you cannot drive the flame from a blow torch through a wire screen of one thirty-second inch mesh. The danger of fire from gasoline in the gasoline engine is mainly from leaks in the tank or the connections, just as in the deadly gasoline stove. Use judgement and common sense in handling gasoline and there is little danger. A lighted cigar will not ignite gasoline, a fact which can be easily proven by immersing the lighted end of a cigar in a small cup of gasoline, when, contrary to the popular belief, the cigar will be immediately extinguished, just

as if you had dipped it in water. An iron bar heated to a dark red heat can be cooled in a pailful of gasoline with perfect safety.

Very cold weather, as already stated, affects the dry cells of the battery. Some battery manufacturers claim that their batteries can be packed in ice and still maintain their amperage, but my own experience has been that cold weather has a tendency to reduce the amperage of nearly all makes of dry cell batteries. The reason for this is not far to seek. In all dry cells a certain amount of liquid is used in their construction, and this liquid freezes or congeals to a certain extent in very cold weather, preventing the free action in the cell and thus reducing the amperage or volume of the current. In cold weather, due to the adverse conditions in vaporizing the gasoline, and to the fact that the gasoline in the first charges is only partially vaporized, as large a spark as can be obtained is a great advantage in starting the engine; but we can readily see that the same causes prevent the battery from giving a good spark, thus making the starting of a gasoline engine on a cold morning doubly hard. Some engine operators of my acquaintance who run these engines outdoors all winter long in all kinds of weather, have adopted the method of taking the battery cells into the house and placing them close to the stove all night. By this method the cells are in excellent shape in the morning, and in the best condition to deliver a strong spark when it is most needed.

As it is somewhat of a nuisance to disconnect the wires every night and connect them again in the morning, I have supplied some of my friends with a special battery box for outdoor use in the winter time. This consists of a box within a box, the cells being contained in the inner box which slips easily into the outer box. The wires to the engine and magnets are connected to connections

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In this climate there is nothing better than Oats in some form for breakfast, and the form in which they are most easily digested is as Rolled Oats, but they must be properly milled in order that the consumer get best results. Our Mills are noted for their fine products, and we know you will find

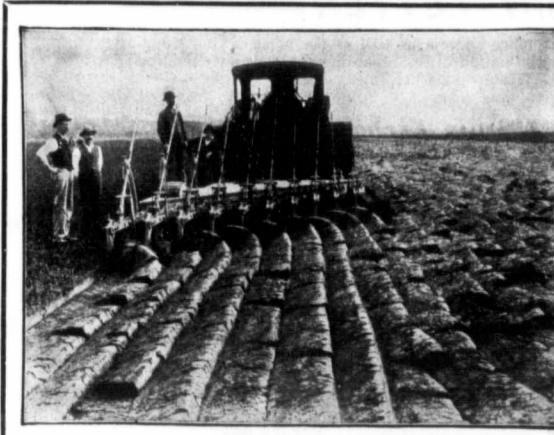
OGILVIE OATS
always give satisfaction

attached to the outer box. The battery and spark coil wires are attached to flat brass springs on the outside of the inner box and as the inner box is slipped into the outer one, these brass springs come in contact with the inside ends of the wire connections on the outer box. All the operator

has to do is to slip the inside box out at night and take it along with him, bring it back in the morning and slip it back into its place, no wires to connect or disconnect; the slipping in of the inner box carrying the cells automatically makes all the connections.

Continued on page 54

INVESTIGATE THE AVERY FOR



Rear View of an Avery Plowing Outfit consisting of an Avery 22 H.P. Double Undermounted Engine and 10-Gang Plow Attachment.
(Owned by L. F. Shaw, Jonesboro, Ark.—See Letter Below.)

AVERY COMPANY,
ST. LOUIS, MO.

WALDENBERG, ARK., NOV. 9, 1900.

GENTLEMEN:

We have been running the steam plow outfit I bought of you some time ago, plowing Virgin Prairie Land for rice. On this land there is a great deal of brush and large grubs and roots. We have no trouble in turning under the brush and cutting the grubs and roots, some of which are six inches through. As you know my outfit consists of Avery 22 Horse Locomotive Type Engine and Ten Gang Plow, and without question it is the best and most complete engine and steam plow on the market to-day. My 22 horse engine would easily pull 15 plows in the prairie sod I am plowing. Several other parties have tried steam plowing in this country with top mounted Bracket Type, both single and double, but none of them can in no way compare with my Avery locomotive. The plow is far superior to anything that has ever been seen in this country. It does the work in a first class manner, and has the strength so it will plow anything anywhere, as I am now plowing in land that no other plow could handle on account of the brush and roots. Every one that has seen my outfit says it is perfect, and to say I am pleased is putting it mild.

With best wishes for your success, I remain

Yours very truly,

F. L. SHAW.



Silver Medal won by Tractor at Winnipeg

Gold Medal won by Tractor at Brandon

Gold Medal won by 20 h.p. Undermounted Engine at Brandon

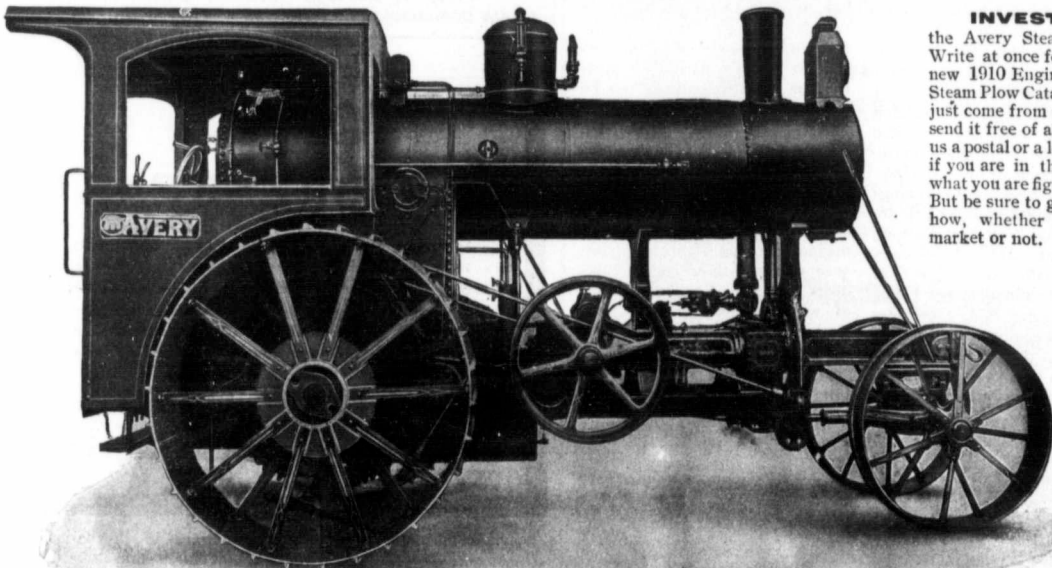
Sweepstakes Medal won by 20 h.p. Undermounted Engine at Brandon

Silver Medal won by 20 h.p. Undermounted Engine at Brandon

Bronze Medal won by 20 h.p. Undermounted Engine at Winnipeg

Another Proof of the Superiority of Avery Machinery

Medals won by Avery Machinery at the 1909 Brandon and Winnipeg, Canada, Agricultural Motor Contests.



INVESTIGATE

the Avery Steam Plow Outfit. Write at once for a copy of our new 1910 Engine, Thresher and Steam Plow Catalogue, which has just come from the printer. We send it free of all charges. Write us a postal or a letter at once, and if you are in the market tell us what you are figuring on buying. But be sure to get a catalog anyhow, whether you are in the market or not.

AVERY COMPANY, 657 Iowa Street, Peoria, Ill., U.S.A.

HAUG BROS. & NELLERMÖE COMPANY, LIMITED

CANADIAN JOBBERS, WINNIPEG, CANADA

RY UNDERMOUNTED ENGINE

PLOWING

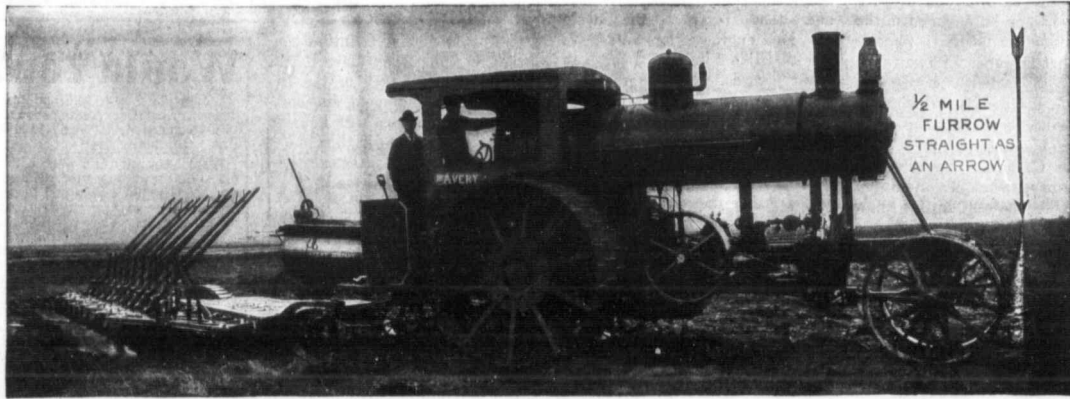
These are SOME of the IMPROVED FEATURES you get when you buy an AVERY DOUBLE UNDERMOUNTED TRACTION ENGINE.

An engine with a boiler that has no pulling strains on it. Every experienced traction engine operator knows about the serious difficulties which often arise because of loose brackets, leaky cap screws, and a strained boiler shell caused by the heavy strains of plowing and other heavy traction work. Owners of Avery Undermounted Engines never have these troubles because all the working parts are mounted on a steel framework and are entirely independent of the boiler.

A more powerful engine—because of the straight line pull from the cylinders, through the gearing, and back to the load, instead of the pull at an angle down from the top of the boiler as with top-mounted engines.

An engine that is much easier to handle. Has a Screw Shaft Guide. Look at the straight line furrow in the illustration below. All working parts can also be reached by operator while standing on the ground, without having to climb around over a hot boiler.

Steam plowing has been fully demonstrated to be the most practical and the cheapest method of plowing. No prospective buyer needs to have any question about this fact, as it has been thoroughly proven in hundreds of cases. There are, however, very important differences between the different makes of steam plow outfits and we are in a position to show you that the Avery Undermounted Plowing Outfit will do your work better and cheaper than any other make of outfit built.



The Outfit that Won the Only Perfect Plowing Score at the 1909 Winnipeg, Canada, Agricultural Motor Contest. A 30 H.P. Avery Double Undermounted Engine and 10-Gang Cockshutt Plow Attachment.



Front View of an Avery Steam Plowing Outfit, Owned by Mr. Chas. H. Butler, New York City, N.Y.

The illustration above shows an Avery Undermounted Engine and Plow at work on the Hemstead Plains, Long Island, New York. You can see from the illustration about the kind of plowing this outfit was doing. It is needless to say that the owner of this outfit is more than pleased with his purchase,

At the same time this outfit was sold, another owner of a neighboring farm purchased a different make of plow outfit and has experienced very serious difficulties with both the engine and plow. He has stated to us that he regrets very much that he did not know sooner in regard to the Avery Outfit.

All we ask you to do is to investigate the Avery Undermounted Engine and compare their construction in detail with the construction of other outfits. A full investigation on your part may save you very serious regrets and a heavy expense which might have been avoided.

Fill Out the Blanks Below with the Names of Five Threshermen, then Enclose a Dime or 10c. in Stamps and



GET AN AVERY UNDERMOUNTED ENGINE WATCH FOB

It's a Fine Souvenir and Badge. Patterned very closely after a side view of the full-sized engine.

Can be worn as a Fob or Charm. We will mail this Fob to any one sending us the names of five bona fide threshermen and a DIME or Ten Cents in Stamps.

Fill in names plainly. Sign your own name plainly. We will mail promptly upon receipt of order.



The subject of the above illustration, Mr. J. T. Atkinson, is at present the new general agent for the J. I. Case Threshing Machine Co. at Calgary

Mr. Atkinson is an old timer in Western Canada, although comparatively a young man. In 1882 he started on a farm at Glenboro, Man., which he followed up to 9 years ago when he engaged in the local implement business, remaining in that business for two years. In 1903 he started as a salesman for the J. I. Case Co., which position he has held until his promotion to his berth.

The Canadian Thresherman and Farmer wishes Mr. Atkinson all possible success in his new field.



The above represents Mr. E. H. Christenson, who for the past three or four years has been connected with Reeves and Co. as salesman. Mr. Christenson has now joined the staff of the M. Rumely Company at Edmonton, and from now on will discuss the

set more than 15 or 20 degrees ahead.

Some engines are now being made, known as the six stroke cycle. In other words, the piston makes six strokes, three inward and three outward for every impulse. The object of this is primarily to scavenge the cylinder completely of all the burned gases from the previous explosion. In engines of this type it is necessary to have extremely large fly wheels in order to store up sufficient potential energy to carry the engine at a uniform rate of speed between the explosions. The real practicability of this engine has not yet been demonstrated, but the future may prove it to be an admirable form of gas engine design.

There is one little point that may help the reader in fixing this relation between stroke and cycle and that is that the cycle of an engine must always be divisible by two, or, in other words, there are two strokes or some multiple of two strokes every cycle; cycle meaning in every case suction, compression, the working stroke, and the exhaust, and stroke meaning in every case the number of times that the piston travels through the cylinder either backward or forward, while these operations are being performed.

The Gasoline Engine in Cold Weather.
Continued from page 50

Every gas engine operator ought to buy a pocket ammeter and test his cells. By this means he can readily tell the weak cells and pick them out, and by a little experiment he can find out for himself the effect of heat and cold on the battery. Care must be exercised in the use of the ammeter—not to hold it on the cells any longer than necessary to take the reading, as it is a direct short circuit and will run a cell down very fast.

I have mentioned that the cold also affects the oil in the cylinder, making the engine hard to crank. The easiest way to help out in this respect is to pour a painful of hot water into the water jacket

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No. 4 Planet Jr Combined Seeder and Wheel-Hoe
saves time, labor, seed and money. Almost all useful garden implements in one. Adjustable in a minute to sow all garden seeds, hoe, cultivate, weed, or plow. Pays for itself quickly, even in small gardens.

No. 8 Planet Jr Horse Hoe and Cultivator
will do more things in more ways than any other horse-hoe made. Flows to or from the row. A splendid furrower, coverer, hiller, and horse hoe; and unequalled as a cultivator.

The 1910 Planet Jr catalogue is free.
It illustrates and describes 55 different implements for the farm and garden. Write for it today.

S L Allen & Co
Box 1106E Philadelphia Pa

Full and complete stock of Planet Jr. tools carried by Steele-Briggs Seed Co., Winnipeg, Canada.

attention to getting it into a condition in which they know it will start at the first turn of the fly-wheels. Use judgment and common sense and you will be able to start your engine in the coldest weather with very little exertion.

The Biggest Engine.

Continued from page 25

took two 40 horse power tractions to tank for her and they made alternate trips; she made so much smoke that the chickens all went to roost and the crops wouldn't ripen; it took ten barrels of oil to black her stack, used a fire engine to put it on with; she had an independent pump, worked by steam to pump in the cylinder oil; her cab had five stories in it, the top flat was the chief engineer's office, and had a hydraulic elevator up in it. She just covered about ten acres of ground to stand on. Why, think of a crosshead weighing five tons; used hard oil in all her bearings, and big screw jacks to force it down into the bearings; three men did nothing else but go around with pinch bars working these jacks, and one day the Boss fireman noticed the steam clinker bar wasn't working her full stroke, so he telephoned up to the chief engineer's office for him to come down, so he

ne down in the elevator to see at was wrong with her, and the t thing he did was to open the de window and look in the ash a and what do you think they v all tangled up in the rigging at dumped the grates? Why, a plete 20 horse outfit separator, d all that had strayed too near d been sucked bodily into the 1 pan by the draught she made. this point the engineer butted and said he had seen a great ht, and would make it cigars the bunch as soon as they got where they could get 'em, and separator man said he would ke it something wet at the ne time and place.

E. C. Centric.

Would You?

Would you buy 40 to 60 milk pails just because someone with pails to sell said you needed that many to milk a cow? Certainly not!

Would you buy or bother with an old style cream separator, with 40 to 60 disks in the bowl, just because

someone with that kind of machine to sell said you needed disks? We think not!



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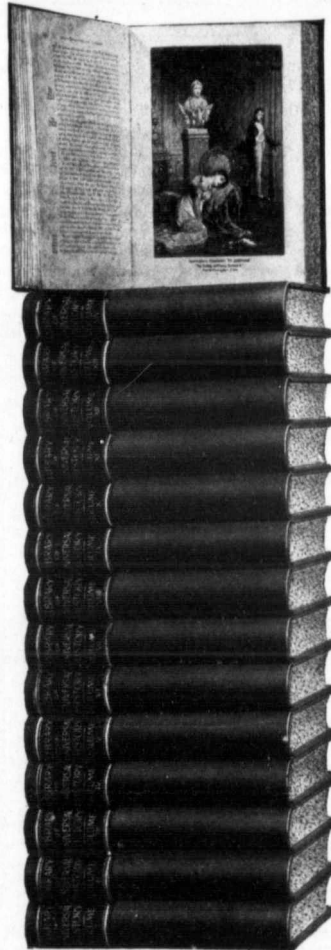
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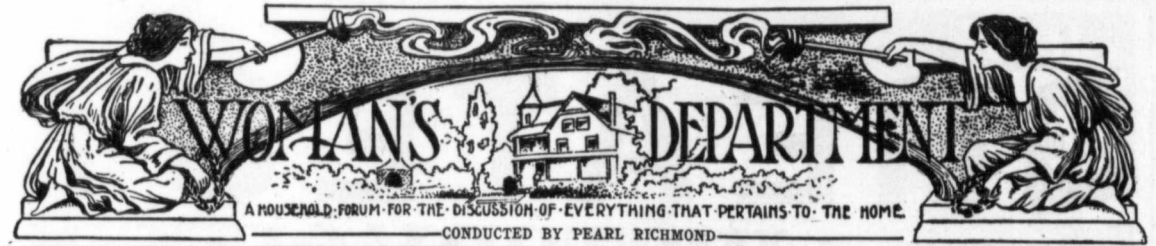
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Woman's Rights.

A right to tread so softly
Beside the couch of pain,
To smooth with gentle fingers
The tangled locks again;
To watch beside the dying
In wee small hours of night,
And breath a consecrating prayer
When the spirit takes its flight.

A right to cheer the weary
On the battlefields of life;
To give the word of sympathy
Amid the toil and strife;
To lift the burden gently
From sore and tired hearts,
And never weary of the task
Till gloomy care departs.

A right to be a woman
In truest woman's work;
If life should be a hard one,
No duties ever shirk;
A right to show to others
How strong a woman grows,
When skies are dark and lowering
And life bears not a rose.

A right to love one truly,
And be loved back again;
A right to share his fortunes
Through sunshine and through rain.
A right to be protected
From life's most cruel blights,
By manly love and courage—
Surely these are woman's rights.
—Sadie Gilliam Baird.

The Grind of Gain.

BY PEARL RICHMOND HAMILTON.

AS the six o'clock whistles pierced the frosty air with their hoarse shrieks, the tables and desks after a hasty attempt of being tidied up, were deserted and the crowded office changed from a day's tiresome noise of lively business activities to the usual evening silence that closes the work in the average place of a manager's headquarters.

Just one person remained—the industrious little person at a typewriter—she was pounding away the last words of a dictated letter to add to the pile that lay on the great desk near her.

At last she came to the end and after placing it with the others she buried her head in her hands and remained in this position till the manager stepped in and sat down near his desk.

Looking up he noticed her unusual manner and asked! "What's wrong, Miss Miller, are you not well?"

"Oh yes," she replied, "I'm all right, I suppose, but I'm tired, and disappointed and wretched," and the last word ended in a cry, so she again buried her face in her hands and her body shook with the sad sobbing that comes from an aching heart

The manager was touched and endeavored to soothe the troubled girl into confidence, but all in vain, because the pent up emotions of many days had found vent owing to a physical breakdown that often follows the strenuous strain of an office girl's life.

For several minutes the only sounds in the room were the audible convulsions of the little stenographer.

The manager tried in vain to speak words of comfort to her but the distressed one could not curb the outflow of tears till there seemed to be none left. Then with strangely solemn expression she lifted her swollen eyes and looked long and steadily at the typewriter in front of her.

After which she gathered courage, saying pleadingly:

"I beg your pardon, Mr. Wendling, but I just could not keep you a minute longer."

"I am sorry, very sorry that this happened here," she added, fingering her wet handkerchief nervously.

"Never mind, Miss Miller," he answered kindly, little bodies often carry big troubles, but are you not happy this season just after Christmas when the whole world is glad?"

"No, Mr. Wendling, far from it—you are very kind to me in the office—very kind, but—oh I can't tell you," and she stopped suddenly and her eyes filled again as she sat for a minute in mute misery.

"Come tell me all," he urged carelessly making a few marks on a piece of paper on the desk. "Perhaps I may be able to help you," he added wheeling his chair around till he sat directly in front of her as if to encourage her into confidence.

"Though my acquaintances know me as a reticent bachelor, full of business and not given much to society, I have some interest in humanity and a desire to help others in times of misfortune," he continued, bringing his white teeth upon the lip as if he would press the blood from under it.

Miss Miller felt that before her was a man full of the magnetism of an intense inner life, so her heart opened to him in these words:

"You may call me weak, Mr. Wendling and you may believe with many others that I am earning my living because I want to be independent. But back in the home city is a young man who is all the world to me.

He loves me and I love him and he earns enough to make us a little home together but that can never be," she stopped suddenly as if fearful of telling too much.

"I cannot understand why you cannot marry—circumstances seem favorable to me," responded Mr. Wendling wheeling the chair half way around and back again.

For a moment the little stenographer did not speak, then she began:

"A long time ago when this young man was a boy, and the other three children were smaller than he was, they lived comfortably and apparently happy. While they did not have very much they lived well.

The mother, busy with her little ones, kept the house tidy and cosy and the little house rang with childish laughter until one dark, terrible, awful day when the father suddenly left the family in cold destitution."

"No one knows the reason—no one knows his whereabouts. The mother took in washing and one little boy sold newspapers. The oldest girl worked in a store till her frail body was filled with germs of consumption and she is now home too feeble to work, so nearly all of the support of the family depends on the income of this young man. The mother and children have battled through the perishing cold of our northern winters while pangs of hunger and sickness have nearly eaten out their lives.

Under this condition, the young man feels that for years to come, he must support the family for he has recently obtained a good position. So you see Mr. Wendling why I am sad," she ended and her whole soul shone in her eyes.

The human heart is full of mystery and sacredness, and Mr. Wendling I think felt the force of this tale just told him, since the veins stood out like whiplashes on his brow and strange convulsive workings of the throat prevented him from making any remark about the strange story.

He felt that before him was a girl whose soul was as pure as sunlight and as full of great depths as the sea.

She was one of the many young women who have enough of God in them to make a man live up to the best that there is in them. Suddenly there was a knitting of the brows as if his thoughts were making hard knots in his busy brain—for indeed the brain that managed a large machine company such as he managed, was busy—too busy to listen to many stories of real life. Finally he exclaimed:

"What a pity for a young man to bear the burden of such a weight!"

To be robbed of that which is the best in life—a home with the heart of his choice!"

"Yes," the girl broke out anxiously.

"There is nothing crueler under the sun than a man leaving a wife and children in want, with the wolf of hunger gnawing at the bodies while the worm of sorrow is eating out the hearts."

Both remained silent for a while. Then Mr. Wendling straightened up, pulled down the cover of his desk, put on his coat and turning to Miss Miller and remarked:

"Your understanding is strong, your judgment clear; the happiest fate for a girl is to grow up to be a womanly woman in a house of her own."

"A home of my own with him," she repeated half conscious and it seemed as if her very life would flame out in this great desire.

She looked up at him earnestly as he reflected in this reply:

"The great troubles of youth are almost without exception molded by the little hands of love. There is nothing in human life that breathes such happiness as the consciousness of love. Remain as you are, my girl, till you marry the choice of your heart. Do not fan out the flame by trying to care for another, since the right one is in a position that must necessarily prevent your marriage.

Happiness dies hard, and the desire for happiness—never," but suddenly a terrible thought twisted his face and he left the room.

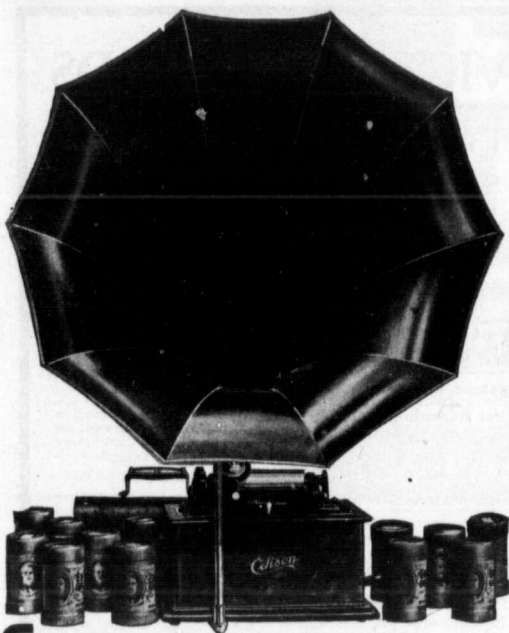
* * * * *

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 Amberol 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, 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.

MR. EDISON Says: "I Want to see a Phonograph in every Home."

The Phonograph is the result of years of experiment; it is Mr. Edison's pet and hobby. He realizes fully its value as an entertainer and educator; for the phonograph brings the pleasure of the city right to the village and the farm home. Now, the new Fireside Edison Phonograph of our outfit No. 10, 1910 Model, is the latest and greatest improved talking machine made by this great inventor. Everybody should hear it; everybody must hear it. If you have only heard other talking machines before, you cannot imagine what beautiful music you can get from the outfit No. 10. This new machine is just out and has never been heard around the country. We want to convince you; we want to prove to you that this outfit is far, far superior to anything ever heard before. Don't miss this wonderfully liberal offer.

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 photograph 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 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.



Write Today for this interesting catalog FREE



Just sign and mail the coupon at the right and get this FREE catalog. Write today

Now, remember, nobody asks for a cent of your money to see his home cheerful and his family entertained, every good father, every good husband, to write and get these free concerts for his home. Remember the loan is absolutely free from us, and we do not even charge you anything C.O.D.

Write For the FREE Edison Catalog

You can pick out just the kind of records you want for the entertainment you want on this free loan in your own home. Get this catalog at once, then you can decide whether or not you want a free loan and when you want it. You can also decide just the music you want.

Remember, I will appreciate it as a favor if you will give me the opportunity of sending you this latest style machine—the climax of Mr. Edison's skill—on this free loan offer.

I will appreciate it especially if you will send me your name and address anyway right now, so I can fully and clearly explain our methods of shipping the Edison Phonograph on a free loan offer. SIGN THE COUPON TODAY. Do it Right Now.

F. K. BARBON, Edison Phon. Distributors, Dept 5201 385 PORTAGE AVE., WINNIPEG, AMERICAN OFFICE: Edison Block Chicago, Ill.

I want every responsible household in the country, every man who wants to see his home cheerful and his family entertained, every good father, every good husband, to write and get these free concerts for his home. Remember the loan is absolutely free from us, and we do not even charge you anything C.O.D.

In this catalog you will find a complete list of music and vaudeville entertainments.



Without obligation on my part, please send me your Great Edison Catalog, and also full set of Edison Phonograph Records, on this free loan offer at the Edison Phonograph, Dept. 5201, 385 PORTAGE AVE., WINNIPEG, AMERICAN OFFICE: Edison Block, CHICAGO, ILL.

Name _____ Address _____

No letter necessary if you sign and mail this coupon right NOW. TODAY.

The next morning, Miss Miller was at her usual place pounding away at the typewriter—her face bearing traces of a sleepless night. All alone she was as it was thirty minutes before office hours so she was somewhat startled to see the door open and—the young man of her heart enter.

A mist blinded her eyes till she saw him in a dizzy distance but the warm hand clasp and the old time greeting brought her to herself. "I could not spend this Holiday season without seeing you," he exclaimed stooping over to kiss her fair brow.

"To-morrow is the New Year's first day and I wanted to be here to greet you with a Happy New Year" he added caressing her gently.

"You never loved me in so sweet a way before," she answered but it will never be a happy New Year to me, Charles, till we are in our own home, dear. The young man felt a dark cloud creep over his face at these words.

"Oh sweetheart, I feel that will never be—the children in our home have growing needs, and I must take care of them and mother."

"I am going to release you from your promise so you may be free to love another, but I did want just one happy New Year's day and I thought we might spend to-morrow in bliss before this awful separation."

A stab of pain pierced her heart.

The two remained silent for a while.

These silences are common with two hearts that commune in love. Love's sweetest language is not expressed in words.

There is nothing purer and nothing so much divine. It creates a larger, deeper, higher life.

Thus the two silent in love's sweet communion lived a bit of Paradise, till a sharp knock on the door brought them to earth again.

A messenger handed a note to Miss Miller and left just as Mr. Wendling, the manager entered.

Apparently not seeing the young man he immediately stepped up to Miss Miller's desk deeply anxious.

"What is the name of the city—your home city?"

Miss Miller answered obediently.—"And the name of the family?" he questioned further.

At this question the little stenographer hesitated but finally ticked it off on the typewriter, and handed it to the manager, and he thinking her feelings would not permit her to mention the name so dear to her heart, accepted the paper with no remark.

But as he read the name his face paled instantly and twitching muscles changed the expression to intense concern, as if he would dictate a letter but could not.

Finally he said in a broken voice, "Miss Miller, kindly take this dictation," whereupon she picked up her writing pad and—"Mrs. Byrnes," he began.

Then after a long hesitation he continued.

"Business success is a monotonous grind of gain which ends in a loathing of the thing gained. Not so, is that quest for home and happiness and love for—Home and love are very near Heaven's gates."

"When I started on my business career I did not realize the anguish that lay in the tight-rolled scroll of the future. I did not then understand the power of womanly love."

The man stopped and suppressed emotion—the reserve of a strong nature.

"I realize," he went on, "the destructive force of infidelity—infidelity, to one's family—it takes away one's soul and gives nothing in return. I am rich in dollars but poor in happiness and content. I am reaping the reward of a perverted ambition—to realize business success I sacrificed family and love."

"My success is not worth the cost. Oh, the divine power of womanly love"

"I am sending you a draft and if you and the children will forgive me and come to me you shall have the comforts of life that you have not had, but better than those, the love and attention of a husband who was a coward to leave his wife and children when they needed him most."

Sincerely,

W. L. Wendling.

The stenographer placed the sheet of paper in the typewriter and while copying the dictation, the young man—his son—came up to her desk and said in a low encouraging voice—

"Happy New Year, my dear."

What Some Men Think of Mothers.

God thought to give the sweetest thing

In His Almighty power

To earth; and deeply pondering

What it should be,—one hour

In fondest joy and love of heart

Out-weighing every other,

He moved the gates of heaven apart

And gave to earth—a mother!

G. Newell Lovejoy.

"I would desire for a friend, the son who had never resisted the tears of his mother. Permanent success and happiness do not come as a reward of ingratitude, disrespect and lack of affection for Mother. The reverse has been, is now, and always will be true."

"The same old-fashioned, sweet mother love must ever be the foundation for permanent, ideal home life. Without it the structure will fall and can never be replaced."

Samuel Francis Woolard

"When the cloud begins to pass, mother, read over your most comforting Bible verses, hum your favorite hymn, and ask the Father in Heaven for wisdom to walk softly on to victory over temptation."

"Remember that—
"One with God is always a majority."
G. E. Reilly.

"I love old mothers—mothers with white hair, And kindly eyes, and lips grown softly sweet With murmured blessings over sleeping babes. There is a something in their quiet grace That speaks the calm of Sabbath afternoons; A knowledge in their deep unfaltering eyes That far out-reaches all philosophy. Time, with caressing touch, about them weaves While all the echoes of forgotten songs Seem joined to lend a sweetness to their speech."

VICTOR RECORDS

It isn't any one thing, but ALL things combined that make VICTOR Quality.

Best Artists Caruso, Calve, Eames, Farrar, Gadski, Homer, Melba, Flancon, Schumann-Heink, Scotti, Sembrich and Tetrzini, are among the world's greatest operatic stars who make records exclusively for the Victor.

Sousa and his band, Pryor's Band, and many famous instrumental soloists make records only for the Victor.

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Best Recording Every part of every selection perfectly recorded on Victor Records. If there happens to be even the smallest flaw, the artists sing or play the selection over again until every part is absolutely perfect. The artists are just as particular as the Victor laboratory staff to have every selection perfect.

Best Materials The materials used in making Victor Records are the best that money can buy. The various ingredients form a scientific compound, particularly adapted to fine tone recording and reproduction, that was discovered only after long research and costly experiment by the Victor staff of expert chemists. Every Victor Record is carefully made by skilled workmen.

Best Reproducing The result is that every Victor Record has that unequalled, sweet, clear, true-to-life, musical tone-quality which puts Victor Records in a class by themselves far above all competition.

Every VICTOR RECORD is a work of art.

Any Berliner-Victor dealer will gladly play any Victor Records you want to hear.

Write to us today for complete catalogues of the Victor Gram-o-phone and Victor-Victrola, and of 3000 Victor Records.



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Everything in Music or Musical Instruments

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 the 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.

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

The clothes are not subject to grinding or rough usage, and are washed thoroughly clean, too, without having to resort to the Wash Board to finish them.

And to give you double assurance, the GEE WHIZZ is GUARANTEED to fulfill these claims. Insist on your merchant getting a Gee Whizz for you, and if he will not, 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.



Old mothers! as they pass with slow-timed step,
Their trembling hands cling gently to youth's strength—
Sweet mothers! as they pass, one sees again
Old garden-walks, old roses, and old loves."

Charles S. Ross.

"The mother who is true to her sweet trust,
Feels herself richer every day,
Not only as a mother—but—
Owning her babe—but in a way
Untellable to those who know it not,
And which, once known, can never be forgot!

With each caress, each care, each merry play,
Her own soul deepens for God's love;
And as the sun with fervent ray
Draws each small flower to look above,
She draws her child's soul forth to meet her own,
And learns that love, in earth and heaven, is one."

"Don't forget the mother who never forgets you."

The Little Woman.

The little woman who stays at home
I doff my hat as I pass her by;
I reverence the furrows that mark her brow
And the sparkling love-light in her eye.
The little woman who stays at home
And makes no bid for the world's applause;
Who never sighs for a chance to roam,
But toils all day in a grander cause.

The little woman who seems so weak,
Yet bears her burdens day by day;
And no one has ever heard her speak
In a bitter or loud complaining way.
She sings a snatch of a merry song,
As she toils in her home from morn to night.

Her work is hard and her hours long
But the little woman's heart is light.

A slave to love is that woman small,
And her burdens heavier yearly grow,
But somehow she seems to bear them all
As the deep'ning lines in her white cheeks show.

Her children all have a mother's care,
Her home the touch of a good wife knows;
No burden's too heavy for her to bear,
But, patiently doing her best, she goes.

The little woman, may God be kind
To her wherever she dwells today,
The little woman who seems to find
Her joy in toiling along life's way,
May God bring peace to her work-worn breast
And joy to her mother-heart at last;
May love be hers when it's time to rest
And the roughest part of the road is passed.

The little woman—how oft it seems
God chooses her for the mother's part,
And many a grown-up sits and dreams
Today of her with an aching heart,
For he knows well how she toiled for him
And he sees it now that it is too late;
And often his eyes with tears grow dim
For the little woman whose strength was great.

Edgar A. Guest.

Smiles For The Fireside.

A dancing master can sometimes boast of rings on his fingers and belles on his toes.

Before the hair dresser's—
"Is your wife a blonde or a brunette?"
"I'll let you know when she comes out."

Bachelor (who has forgotten whether the baby is a boy or girl): "Well, well,

"ELMIRA" FELT SHOES

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TRADE MARK
ON
EVERY PAIR
51

FINE
Elmira
FELT SHOES

**THE
BEST
MADE**

ASK YOUR RETAILER FOR "ELMIRAS"

but he's a fine fellow, isn't she? How old is it now? Do her teeth bother him much? She looks like you, doesn't he? Everyone says it does."

Mrs. Crawford—So his wife is extravagant in dress?
Mrs. Crabshaw—Very. Just now she's getting a coat of tan at a hundred-dollar-a-week seaside resort.

Marriage is about the only game at which both parties can get the worst of the bargain.

Not That Kind.

Aunt Emily, an old colored woman, was given two Maltese kittens, and asked the neighbors to help her name them. Uncle Eph, who lived across the street, shuffled over with a suggestion that they be named Cook and Peary. "Look a yere, Eph," replied Aunt Emily, "does you want to 'sult those animals of mine? Why, them ain't polecats."—Harvey Peake.

She had just accepted him and they were blissfully discussing the "might-have-beens."

"Darling," he inquired, in the tone of one who knows what the answer will be; "darling, why didn't you accept that little donkey of a fop?"
"Because," she answered dreamily, "I loved another."

Mrs. B. Careful: "Did you wash the fish?" Bridget: "Shure, an' what's the use of washin' anythin' what's always lived in water!"

"I understand that he is well informed?" "Yes, indeed; he has three sisters who belong to the sewing circles of different churches."

"Were you very much frightened during the battle, Pat?" Pat: "Not a bit, sir. Oi kin face most anything when Oi have me back to it."

The Mother's Corner.

Eggs are excellent food for children, especially those who are nervous. They are easily digested when lightly or under-cooked, but only one child in ten can digest the white of a hard boiled egg.

Nervous children should never be scolded unless it is absolutely necessary, and should never under any circumstances be ridiculed. Such treatment is only likely to make them more nervous, and in these days such a tendency should

Darn Stockings on Your Machine

**SINGER
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Free Lessons
AT ALL
**SINGER
STORES**



This is the latest and best DEVICE FOR HOLDING A STOCKING so that it can be darned AT ANY POINT on any sewing machine, by any one who can run a sewing machine. It is the most convenient, the most practical and the most useful device ever offered to anyone with stockings to darn and a sewing machine available.

Easier, Quicker, Stronger, Better Than Hand Darning

SEE THE DARNER DEMONSTRATED AT ALL FAIRS AND GET VALUABLE SOUVENIRS AT SINGER BOOTH

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Avoid imitations of our **CUTLERY** by Seeing that This EXACT MARK is on Each Blade.

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JAMES HUTTON & CO., MONTREAL

be specially guarded against.

One mother writes:—"I fear my milk is not agreeing with baby. She is two months old. She vomits repeatedly after nursing and has a pinched look. Please give me some of your valuable information to guide me, and greatly oblige,
N. M.

It is true that the milk of all mothers does not agree with their babies, but this is so rare that the

case should be investigated thoroughly before giving up and turning to artificial feeding. Your baby is very young, and I think it very likely that it gets too much milk at a feeding. Try giving it less. A mother who is nursing must be careful of her diet, and equally important is it that she should be careful of her mental

condition. She should avoid worry, fretfulness, fatigue, anxiety and all mental disturbance. Such affect the milk and the condition is mirrored in the child, showing itself by fretfulness, and oftener yet by indigestion. It is difficult for a young mother to avoid trying conditions; but it is essential if you would have a thriving, good-natured, happy baby. In order to determine scientifically that the milk is right it should be examined by a doctor. He can tell by use of the microscope and other means whether it is rich enough or not.

Another writes:—"My child cries a great deal nights, I walk the floor with her sometimes half the night, and the minute I put her in her cradle she is at it again. I am worn to a shadow with it. I hate to hear a child cry, it racks my nerves so, I do not want to give her medicine, but sometimes I do give her some soothing syrup. Please advise me what to do to have a good baby at night. Yours, Watchful.

You probably began in the wrong, old-fashioned way with your baby. In the first place you speak of a cradle. The cradle is an out-of-date piece of furniture which should be consigned to the attic. It is not good for a child to be rocked. From the very first a child should be left to go to sleep by itself and not carried in the arms. It becomes ac-



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THE STERLING STRAW HEATER

IT BURNS STRAW. NO FUEL BILL.



(PATENTED)

THE STERLING STRAW STOVE COMPANY

413 Somerset Block

Winnipeg, Manitoba

FUEL FAMINE NOW IMPOSSIBLE

CONSIDER THESE FACTS:

- I.—Our Sterling Heater Burns STRAW. You don't need to go ten or twenty miles for a load of wood. Your fuel is at home.
- II.—Our Sterling Heater SAVES WORK. Simply remove the detachable cylinder, fill it with straw, place it again in position and it will burn for 12 hours without attention.
- III.—Your Fuel COSTS YOU NOTHING. Straw is all you burn. Count up the saving to you: ten, twenty, thirty dollars per year.
- IV.—The Money Saved in fuel each year will buy several Sterling Heaters.
- V.—There are no Agent's Profits. We sell direct to you, thus giving you the benefit of a low price.
- VI.—If After a 30 Day Trial our Heater does not do the work we claim, return the Heater to us and we will refund your money.
- VII.—Many of our friends desire a second cylinder so that they can always have one filled and ready for use. If ordered with the stove, we supply this for \$4.00.

WHAT OTHERS SAY:

- Wolsley, Sask., Nov. 19, 1909
The Sterling Straw Stove Co., Somerset Block, Winnipeg, Man.
Gentlemen:—I purchased one of your Sterling Heaters last winter and found it would do all that is required of it. I had a good coal cook stove, but it would not heat my house. After putting in the Straw Stove I had no more trouble. I only used the coal stove for cooking and then let it go out and used the Straw Stove altogether for heating. By filling the cylinder night and morning, which took me from five to ten minutes I had a steady heat night and day at a cost of getting a load or two of straw during the winter.
Yours truly,
(Signed) GEO. C. CARRUTHERS
- Wolsley, Sask., Nov. 19, 1909
The Sterling Straw Stove Co., Somerset Block, Winnipeg, Man.
Gentlemen:—I purchased one of your Sterling Heaters last fall and found that it proved a success. Our kitchen was always cold before I got one of your heaters, especially in the morning, but after I got one of your heaters it seemed a new kitchen. My expense was nothing with it, whereas if I had burned coal in a stove all winter it would have taken three tons of coal and a cord of wood. My advice is for everybody to get a Sterling Heater for the winter months.
Yours truly,
(Signed) FEARD M. COLR
- Wolsley, Sask., Nov. 19, 1909.
The Sterling Straw Stove Co., Somerset Block, Winnipeg, Man.
Gentlemen:—I used your 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 terms are cash with the order. Send all remittances by Exp. or P.O. Money Order.

OUR PRICE TO ALL IS \$9.00 F.O.B. YOUR STATION

customed to whatever is done for it, and goes to sleep more easily and quickly if this method is adopted. If it cries it should not be taken up, for it will not be long before it will demand such an attention if it is once begun. If a child cries one should ascertain if there is a cause. A child does not cry for nothing. A pin may be sticking into it; its clothing may not be right; it may need a drink of water. It should not be forgotten that young babies, notwithstanding their liquid diet, need to have water as well, but when you have found that all is right with the child it should then be left to go to sleep, as it soon will do. A baby should not have soothing syrups, and indeed very little if any medicine. Do not get into the habit of dosing the baby. An infant often cries from hunger or colic. Be sure that the baby's nourishment is right.

I pity the child of two years whose mother gives it mince-pie, peanuts, candy, all kinds of meat, and rich foods, in fact anything it asks for it gets to eat. I have seen mothers give small children just such food and when I ventured to protest the mother would say: "She seems all right, it does not hurt her."

I answer:

"She may appear well now but in a few years you will see the

result in a weak stomach and a nervous, frail constitution. Mothers, give your children plain food.

What Stories Do You Tell Your Children.

We grown-ups must remember that the simplest facts and objects in life and nature are strange and wonderful to the child. The real world is as wonderful to the child as fairyland. Consequently, nature studies adapted to children are usually popular, whether they be plants or animals. It may seem strange but the fact remains that nothing has yet been found that just takes the place of Old Mother Goose; it seems to fill a need, and I, for my part, can see no reason why the children should not have it. Stories from mythology, fairy tales and accounts of the lives of the world's heroes have a fascination for children because of their joy in seeing man overcome natural forces. The classics bring out this feature so strongly that it seems to account for the fact that modern stories can not supplant them. The great literature of the past has made men nobler.

If you ask a child what story you shall tell him, he usually chooses one that he has heard many, many times; he does not ask for a new one. He takes the

same delight in meeting familiar characters and situations that he does in being recognized in a game of hide and seek or in seeing mother after she has been gone for a day. It is the parent who grows tired of telling or reading the same story so often. There is more danger of the child having too many books than of his having too few. Stories or history and biography can be made very interesting and are much better than tales of impossible children who do quite unreal things.

We have in books and stories our greatest instrument for teaching morals and inculcating high ideals. Children like stories with a moral, and the love of the heroic is such a fundamental part of human nature that it is a great mistake not to take advantage of it to waken in the child an admiration of the good and the beautiful. Let the child live through the history of the race in Bible stories, the stories of the early heroes, the chivalrous deeds of the knights, the more modern martyrs in the cause of freedom. Show him the wonders of nature, and you open the door for him to poetry, to art, and to the beautiful world in which he lives.

Do NOT FRIGHTEN THE CHILD.

There are some stories on the order of Jack the Giant Killer

which it were quite as well not to admit to the nursery. Unless the story is of a soothing nature it should not be related just before the child goes to bed. This is not a good time for stories, especially with sensitive children. The stories are apt to awaken the imagination and leave the brain too active, with the result that sleep is slow to come and likely to be restless and disturbed. Stories that arouse fear should be avoided. However, what will frighten one child will not so affect another. To the child who has never experienced the sensation of fear, stories very seldom awaken the emotion, but if, on the other hand the child has been frightened it is necessary to be very careful not to stimulate that emotion, for there is no other that has such a blighting effect on a child. The child who has never been taught to fear bugaboos, ghosts, hobgoblins, bears and other terrors that are permitted to disturb children's minds, will not be oversensitive about these things in stories, but if he is it is well to make him understand that such things do not happen to children now. Such fears have been known to be productive of very serious results both physically and mentally, and the child should be most carefully guarded from them.

Another point to be considered is the ending of the story. I always make the story end pleasantly. I cannot see my little girl depressed and troubled by a sad ending. Children are serious in their interest in the story. I hope the mothers of this corner do not frighten their little ones by telling them something awful will get them if they are bad. I spent many a night when a child with covers over my head to keep the big black man from finding me.

RECIPES.

The prize this month is awarded to Mrs. J. Shenleigh for the most recipes for cooking meat. In the next issue a prize of a cook book will be given for the most recipes for sauce. Send in your recipes before the 5th of January. (Editor.)

Chopped Steak

Put two pounds of lean beef through a meat-chopper; add two level teaspoonfuls of salt and a saltspoonful of pepper; mix thoroughly and form into one large steak. Broil slowly over a perfectly clear fire or in a hot pan; cook on one side, then turn and cook on the other for about ten minutes. Dish on a heated plate, and put over it a tablespoonful of butter and a tablespoonful of chopped parsley, or serve with tomato sauce.

Stuffed Breast of Mutton

Make small pockets in a breast of mutton and fill them with chopped celery; place it in a baking-pan, dust with a tablespoonful of salt and a saltspoonful of pepper. Add a cupful of water and bake in a quick oven for twenty minutes, then more slowly for one hour. Serve with brown sauce.

Creamed Chipped Beef

Chip a pound of dried beef very thin and pull it apart in small pieces. If it

is very salty soak it in boiling water for fifteen minutes. Put two table-spoonfuls of butter in a frying-pan; add the beef and stir over the fire until thoroughly heated; then sprinkle over it two rounded tablespoonfuls of flour; mix and cook. Add half a pint of stock and half a pint of milk. Stir until boiling. Add a teaspoonful of kitchen bouquet and a dash of pepper. Take from the fire and add the yoke of an egg beaten with four table-spoonfuls of cream. Heat quickly and serve in a deep dish garnished with toast.

Beef Olives

Cut a very thin slice of round of beef in strips four inches long and two inches wide. Mix half a cupful of soft breadcrumbs, a teaspoonful of salt, a tablespoonful of chopped parsley, a dash of pepper and a tablespoonful of melted butter. Put a thin layer of this over each little piece of beef; roll and tie tightly. Heat four ounces of suet in a frying-pan; dust the rolls with flour, and brown them all over in the pan; then put them in a stewing-pan; mix; add a pint of stock or water; when boiling add a tablespoonful of kitchen bouquet, a level teaspoonful of salt, and strain it over the rolls. Cover and stew gently for an hour and a half. Wash and soak in boiling water a dozen stoned olives. Cut a piece of stale bread in a four-inch cube; dip it in milk or beaten egg, and plunge it in deep, hot fat, or you may toast it in the oven. Stand this in the middle of the platter. After removing the strings heap the beef "olives" around the crouton and strain the sauce over them. Arrange the "olives" in little piles at the ends of the dish.

Mock Fillet

Remove the muscle from a good-sized flank steak and trim it in shape. Cover it with chopped parsley, then with chopped onions, and dust it lightly with pepper. Roll the steak crosswise, tie it in 3 places, giving it the shape of a fillet. Put it in a pan with a cupful of chopped celery and onion mixed, a bay leaf and half a pint of stock or water, and a teaspoonful of salt. Bake for one hour in a quick oven, basting frequently. When done dish and remove the strings. Rub together in the pan two table-spoonfuls of butter and two of flour; add half a pint of strained tomatoes and half a pint of stock, and stir constantly until smooth. Add a teaspoonful of Worcestershire sauce, half a teaspoonful of salt, and strain it over the "fillet." Serve with potato croquettes and spinach.

Baked Sweetbreads

After washing the sweetbreads and removing the "tubes" put them in boiling water; add a teaspoonful of vinegar, a teaspoon of suet, a bay leaf, a slice of onion, and cook gently for three-quarters of an hour. Drain and save the liquor for stock. When the sweetbreads are cool remove the membrane and place them in a baking pan with half a cupful of chopped celery and half a pint of the boiling stock. Bake in a very quick oven, about 400° Fahrenheit, for three-quarters of an hour, basting frequently. If you have glaze melt a little over each sweetbread and put them back in the oven for five minutes to fix the glaze. Cover the bottom of the serving-dish with a pint of nicely seasoned green peas. Dish the sweetbreads on top of the peas.

Creamed Sweetbreads

Boil the sweetbreads according to the above recipe. When cold pick them apart, rejecting the membrane. Drain, wash and chop fine a can of mushrooms and add them to the sweetbreads. Rub together two table-spoonfuls of butter and two of flour; add a pint of milk, and stir until boiling. Then add a level teaspoonful of salt, a saltspoonful of white pepper, and the sweetbreads and mushrooms. Cover and stand over hot water for twenty minutes. Serve in a border of rice.

Crown Roast

Trim the bones of a rack of mutton the same as for Frenched chops; cut through almost to the skin and fold it

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around, skin side in, making a crown of the upper part and fastening it in shape with twine and skewers. Bake in a quick oven for three-quarters of an hour, basting frequently. While it is baking, boil and mash six potatoes and heat a can of peas. When the roast is done remove the fastenings and dish it. Put the mashed potatoes in the centre, using a pastry-bag with a star tube for garnishing the top; put the peas around the outside of the dish.

Priceo

Cut one pound of the round of beef in cubes of one inch; flatten them with

a hard blow from a potato-masher. Pare and slice three good-sized potatoes and four onions. Put a layer of potatoes in the bottom of a baking-dish, then a layer of meat and onions; dust lightly with salt and pepper. Put in another layer of potatoes, meat, onion, salt and pepper. Peel and cut in halves four good-sized tomatoes, chopping the flesh fine, put over the top of the dish and add a table-spoonful of butter cut in pieces. Pour over all half a cupful of thick, sour cream. Cover, stand in a pan of boiling water and cook in a slow oven for two hours and a half.



The New Year's Sleigh

Priscilla Prudence Humility Wren,
Who lived in Eighteen Hundred and
Ten
(Just a hundred years ago to a day),
Made New Year calls in a lovely sleigh,
And the sleigh, my dear, was a lovely
swan;
But instead of water to float upon,
It glided swift over the ice and snow
Wherever Priscilla wished it to go.
Her bonnet was velvet, her tippet was
warm,
And her swan's-down muff kept her
fingers from harm,
And her toes were tucked snug as
two birds in a nest.
Now the thing that Priscilla Wren
loved to do best
Was to sit demure in her lovely sleigh
And go making calls on a New Year's
Day.
The old days are gone, but when New
Year is near,
It seems to me sometimes I see her my
dear,
This sweet little girl with her old-fash-
ioned ways
Making calls as she used to in long-
ago days.
"Happy New Year!" she says, as she
used to say then,
Dear Priscilla Prudence Humility
Wren!
—From the Woman's Home Compan-
ion.

Father's Chicken

My mother thinks that father ought to
always have the best,
And she's got him so he thinks he's
better'n all the rest.
She gets his evening paper out when
he comes home at night,
And drags around his easy chair and
tries to use him right.
And when we all sit down to eat she
never blinks a lash,
But hands him out some chicken and
helps us kids to hash.
My mother says that home should be
in our affections first,
But father thinks it's just the place for
him to act the worst.
When he's in town he jokes and laughs
and uses people kind,
But when he starts for home at night
he leaves his smiles behind.
He snarls about the dinner, and he
calls our talk all trash,
So mother feeds him chicken and fills
us up on hash.
But after father's rest I and has had
his evening smoke,
He always feels lots better and some-
times likes to play and joke.
He helps us with our lessons, and he
does it in a way
That makes them entertaining, and
seem just as plain as day;
And sometimes, when we go to bed, he
hands us out some cash,
So let him have his chicken, we'll get
along with hash.
Chas. F. Hardy

Baby

Where did you come from Baby dear?
Out of the everywhere into here.
Where did you get those eyes so blue?
Out of the sky as I came through.
Where did you get that little tear?
I found it waiting when I got here.
What makes your forehead so smooth
and high?

A soft hand stroked it as I went by.
What makes your cheeks like a warm
white rose?
I saw something better than any one
knows.
Where did that three-cornered smile of
bliss?
Three angels gave me a hallowed kiss.
Where did you get this pearly ear?
God spoke and it came out to hear.
Where did you get those arms and
hands?
Love made itself into bonds and bands.
Feet, whence did you come you dar-
ling things?
From the same box as the cherubs
wings.
How did they all just come to you?
God thought about me and so I grew.
But how did you come to us, you dear?
God thought about you, and so I am
here!

George MacDonald.

The Big Red Book.

By COUSIN DORIS.

"Pooh! it's only girls that make
New Year's resolutions," exclaim-
ed Jack Benning, kicking the cat
away from the chair. Bess, his
brown eyed sister, busy with pen-
cil and paper wrote, thought
awhile, then wrote again till
another interruption made her lift
her eyes half-frightened.

"I say sis, it's only fraid-cats
that make those New Year's rules
—yes fraid-cat girls."

"Uh! we boys ain't afraid of
anything—we don't have to make
rules."

"You're a little tin angel, you
are," he sneered teasingly, shov-
ing both hands down two very
shallow pockets. "Well," replied
Bessie, "I think if you would make
a few rules to-day it would be bet-
ter for the cat and dog, mother
and father and I think it would
not be so—so—so—hard for little
sister." "Oh pshaw! what's the
use o' being good any way—
taint no fun."

"I think fun that makes others
suffer isn't fun—it's cruel, it's
right down mean," and Bessie
stamped her feet emphatically.

"Uh! girls are cowards, they're
always afraid of hurting some-
thing—they would never make
hunters or brave men that could
shoot people right down and rob
trains and such like. It takes
boys to be brave."

Jack dropped down on the
couch and stared at the fire-place.
Bess went on writing.

Very soon a little old woman
came into the room and went right

up to Jack as quick as a wink.
And she blinked and blinked and
bowed very low. She was really
the very ugliest woman in the
whole wide world. Jack crept into
a very small place on the couch
but her eyes pierced a hole right
through his body.

It seemed as if an icicle had
cut him in two. Then she drew
out a big red book and squinted
along each page till she came to
one marked Jack Benning. The
letters of his name were written
in green letters that seemed to
stand out as if they could talk.

"Now see here," she said in a
squeaking voice that sent another
icicle through him. "You have
many marks against you for cruel-
ty last year."

"In the first place you hit little
Jessie Smith till her nose bled, so
I have brought her here and you
will hit her again, but instead of
hurting her it will hurt you."

So she beckoned towards the
door and Jessie Smith entered.

Now Jack did not want to hit
her at all but the woman pierced
him with another icy glance so he
hit little Jessie and oh how it
hurt him, and his nose bled and
bled and his eyes smarted and
smarted till it seemed as if he
would die. But he didn't, be-
cause the little old woman was not
through with him.

Little Jessie Smith disappeared
from the room and the little old
woman looked at the next item on
the page.

"You robbed a bird's nest last
spring—you threw the little birds
on the ground and destroyed the
nest. "Now you may rob the
same nest again but you shall
feel the pain this time.

Immediately a tree rose in the
room and near the top Jack saw
three little birds in a nest. Now
he did not feel a bit like robbing
the nest but those awful eyes
looked another hole right through
him, so he climbed up and threw
each bird down and tore the nest
up. But oh, how it did hurt him
when each bird fell. Both of his
arms and legs were broken and his
body bruised terribly. He just
begged to die this time because it
did hurt him so to live. Just
then the mother bird flew to where
the nest was destroyed and pre-
sently Jack felt just as she did.

He cried and ran about and
cried till he had no tears left. It
was just awful to suffer so much.

Why couldn't he die?
But the tree and birds disap-
peared leaving him alone with the
old woman. How horribly ugly
she was! Those awful eyes were
looking for something more.

"You pounded your dog one
day till he howled with pain."
Now you shall have the chance to
pound him again.

Just then poor Shep appeared,
wagging his tail.

"I don't want to, I don't want
to," sobbed Jack. "I like my dog
—I don't want to hit him. It
hurts so to be hurt."

But the awful eyes looked very
sharp at him so he picked up a
club that very strangely happened
to be on the couch near him. He
pounded him, and oh! how Jack
howled. It's bad enough to hear
a dog howl but to hear a little boy
howl is awful. Those beats made
his back throb—he tried to lie
down but his back hurt so he
could not—he tried to walk but
his back hurt so he dared not—he
tried to eat but his back ached
and ached so he could not be
hungry.

Jack wanted to die again but
the little old woman said:

"No, I have a lot of things yet
for you to do."

"You will have to suffer for
teasing others—your sister for ex-
ample. You have broken her
poor little heart many times this
year."

"She loves you, but you are
making her afraid of you and
when you are away from here she
cries because you say such mean
things."

Just then little Bessie came in
and pointed her finger at him
saying:

"Fraid-cat, fraid-cat — Mama's
girl—little tin angel"— and all
kinds of mean things she said till
he felt so ashamed that he wanted
to fight back but he couldn't be-
cause Bessie was a boy now and
very much larger and he didn't
dare to fight back, so he just had
to sit there and bear all of the
cruel teasing till he buried his
face in his hands and cried very
hard.

Just then the cat came in and
the little old woman looked up

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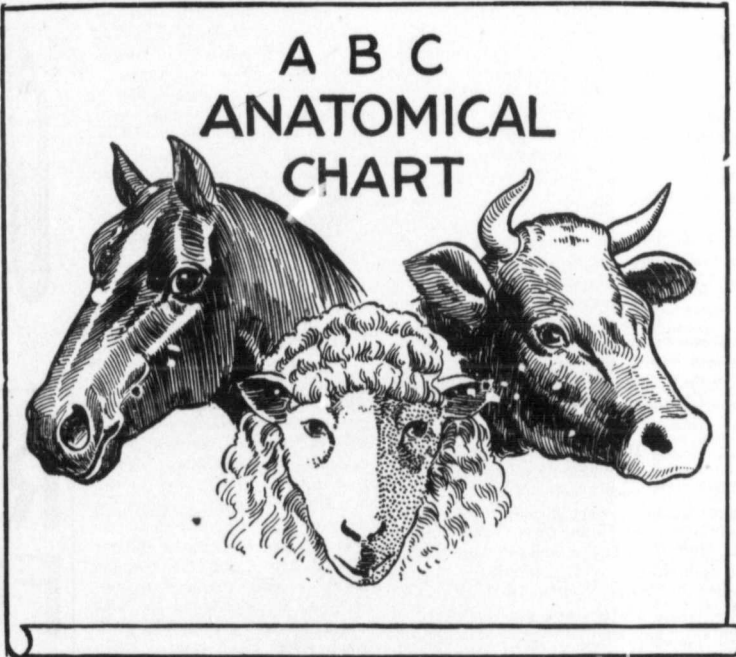
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saying, "you have only just begun,"

"You kicked the cat very often right on the stomach—now kick again."

Of course Jack did not want to at all, now, since he realized how much he had hurt things all year.

But the awful eyes again pierced a hole through as before so he got up and kicked the cat, whereupon he himself doubled all up with the worst cramps you ever heard of. It was worse than anything he had ever suffered. The ordinary stomach ache was nothing compared with it. And there the old woman stood and grinned and grinned while he yelled just with pain.

She would not help him or sympathize or do anything to relieve him of the pain. He thought if she would only be sorry it might be a little easier for him to bear but she was as indifferent as he was when he kicked the cat so many times.

His legs were all drawn up with pain and he got worse and worse till he was ready to die. He began to speak his last words to his sister before his departure from this world, when the wood fell in the fire-place and he sat up half awake.

Rubbing his eyes he opened them—the pain was gone and all was as quiet as before he had dropped to sleep.

Bessie was still writing. "I say, little sister, give me your pencil and paper," he commanded. "I think I'll make some New Year's resolutions after all."

Lesson For Girls.

OLIVE OIL IN COOKERY.

OLIVE oil is an easily digested fat which makes blood fat and weight. Animal fats when entering the stomach float upon the surface of its content, hindering the action of the digestive fluids. They also contain germs which cause fermentation and decomposition. So that the stomach becomes rancid and makes the conditions favorable for gastric catarrh, etc. The use of olive oil will strengthen the digestion of the chronic dyspeptic.

Pure olive oil passes through the stomach and mingles with the food, just as cream will mingle with water, making it the choicest and most palatable of all foods, because it contains the largest amount of nutriment, its total amount being nearly one hundred per cent, while the best grains and legumes contain less than ninety per cent; animal meats from twenty-two to twenty-eight per cent, and vegetables contain still less.

Two tablespoonfuls of pure olive oil impart more nourishment than a pound of meat or a

cup of butter, without taxing the digestive organs or the alimentary canal.

SMOTHERED CHICKEN.

Split a tender chicken down the back, after it has been pickled, singed and wiped with a wet towel. Season it with salt and pepper, and put in a dripping pan in the oven, with one cupful of hot water, and cook until tender. Mix two tablespoonfuls each of olive oil and flour to a smooth paste, and spread over the chicken as soon as it begins to brown. After the oil and flour have been placed on the chicken, baste it every ten minutes with the drippings in the pan. When the chicken is tender take it out of the pan and keep it hot while making the gravy.

GINGER BREAD.

One cupful of molasses, one cupful of brown sugar, one cupful of shortening, one cupful of sour milk, one level teaspoonful of soda, one and one half cupfuls of flour, one tablespoonful of cinnamon, one small tablespoonful of ginger, salt and two well beaten eggs the last thing.

SHORTENING.

Pure olive oil can be freely used in all cooking operations where butter or lard is called for, but as the oil makes a more perfect mixture, a less quantity should be used. In a general way no change is necessary in the methods followed, and muffins, fritters, cakes and pastry made with good olive oil will be much more tender, more delicious and more easily digested.

MOLASSES COOKIES.

Make in the usual way, using the proportions of one half of oil to one cup of molasses. Made in this way cookies are much more nutritious than made with butter, and are more healthful.

WHEN YOU GO TO MAKE CAKE.
Do not use poor materials of any kind.

Do not over mix. Mix lightly but fully.

Do not use old or rancid or oily nut meats.

Do not use poor butter, or weak, damp sugar.

Do not use poor eggs, and discard all watery whites.

Do not use butter with an excess of salt in it; wash it out.

Do not, when using baking powder, add it as it is, but sift it into the flour.

CREAM TOAST.

Toast bread first and butter it for the gravy take four tablespoonfuls of flour and thin it with milk.

Put a little butter in a pan and let it get hot, adding a little hot water, and then stir in the flour and milk; boil four eggs until hard; dice the whites of the eggs and stir in gravy; mash the yolks

of the eggs fine and sprinkle on top of the gravy when poured on toast.

LEMON BUTTER.

A spread for bread or crackers.

Three eggs, one-half pound of sugar, one heaping dessertspoonful of butter, juice of two lemons Boil five minutes, stirring to keep from burning.

FRUIT COOKIES.

One cupful of butter, two cupfuls of soft sugar, three eggs, one half cupful of sweet milk with two even teaspoonfuls of cloves, one teaspoonful of cinnamon, one cupful of seeded raisins, one half cupful of citron, five cupfuls of flour.

ORANGE BUTTER.

Juice of three large oranges, grated rind of one orange, one cupful of sugar, yolks of four eggs, whites of two eggs, two tablespoonfuls of butter. Beat all together, boil till thick as honey, stir to keep from boiling over. Serve cold. Will keep in a cool place for several weeks.

I trust my girls are learning to cook. Cooking is the very finest art you can learn and it will be of great help to your mothers as well as yourselves. Will you write and tell my about your experiences in testing these lessons in cooking. I will close with an exercise of puns on pies.

Cousin Doris Letters.

Dear Boys and Girls:—

I am anxious for the boys and girls to write me letters describing their favorite game. I will give a prize of a book to the boy who will send in the best letter describing a game and also a prize book to the girl sending in the best letter describing a game. In this way our boys and girls can learn to play new games and we all shall have a splendid time during the year. Trusting I may receive many letters from our boys and girls and wishing you all a Happy New Year, I am

Sincerely,
Cousin Doris,
Fairville, Sask.

Dear Cousin Doris,—

This is my first letter to your valuable paper. I live on a farm ten miles from three towns. I think I would rather live on a farm than in town. We live three-quarters of a mile from school which is used for church.

You are picking on a very good subject I know it will interest me. We had a lot of stooking this year so my sister and I helped. I did not go to school this summer or fall. I like to ride horseback, and am fond of reading.

My father keeps a good many cows, horses and turkeys. We had bad luck with the turkeys this year. The weasels killed most of them. We found four turkey hens in a bunch all dead with their heads under their wing.

My studies at school are arithmetic, history, writing and literature, grammar, drawing and geography. My favorite studies are drawing and geography. I remain your loving cousin, Bertha May

(Will the writer of this letter kindly send me her name? C.D.)



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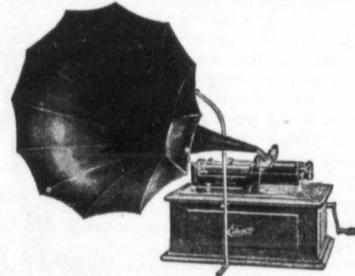
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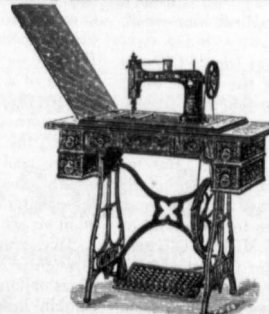
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I HAVE no great likin' for thim meself," said Patsy Moran, skilfully lighting his pipe from the one that Tim had silently handed him and settling back comfortably on his end of a Central Park bench; "yet 'twas only me good luck that saved me from bein' wan of thim."

The phlegmatic Tim smoked peacefully on without comment, but Patsy, who required no other



"Patsy," says he, "it's frinds we are first, and wan of us is a polayecman afterwards."

response from Tim than his presence, continued reminiscently:

"Yis," he said, "but for good luck and a bit of my own judgment I'd be tremblin' for me job on the polayce force this minute—dependint for the rint on whether I could get it from Hinissey for not seein' his place was open Sunday mornin' whin I was takin' a drink over his bar, or whether me sergent had already took ivry-thing Hinissey had for the offense of havin' it, tellin' him he might keep the rest if he would report me for drinkin' on duty. Sure, and in the place of that I'm me own master of meself, livin' free and comfortable by industrious burglin' and drivin' the polayce distracted, may the devil dance on the blue backs of thim—hiven forgive me for sayin' so!

"But they was a time whin I was timplint into wantin' a job on the force, and this was the way of it. 'Twas in me early twinties, and faith, it's the fine, upstandin' lad I was in thim days, with all the women gittin' beyond thim-selves entirely over me, and me that careless and go-lucky. It was only me good luck saved me from wan of thim the same day it kept me from throwin' meself away on the polayce force, and if iver a man made his way with a woman with ivrything ag'inst him—well, I'll be tellin' ye.

"It was me and Dinnis O'Toole with the eyes of the two of us on the same polayce job, good friends as we was—sure, I loved him like a brother and he treated me like-wan, bad cess to him! But we was frinds thim, and whin the word come to us that the man holdin' the wires to the givin' of that job was old Michael O'Grady up in Westchester County, Dinnis comes to me and says he, with wan of thim lady-trust-me looks from the big eyes of him: 'Patsy,' says he, 'it's frinds we are first, and wan of us is a polayecman afterwards,' he says, noble.

Patsy Moran and the Orange Paint

By ARTHUR SULLIVANT HOFFMAN

Illustrations by Henry Raleigh

"Yis," says I, swellin' with pride at bein' so honorable.

"We're playin' fair and the best man wins," he says.

"Yis," says I.

"Thin," says he, "let the two of us go up together to old man O'Grady's place in the country and settle it wanet and for all like gentlemen, lettin' him choose atween us. Are ye with me?"

"I wouldn't be lettin' ye go alone for worlds," says I, still feelin' honorable and turnin' cold at the thought of him goin' to O'Grady unbeknownst to me. "It's the true frind ye are and I'll not be goin' back on ye."

"Will it be this afternoon, thim," he says.

"Sure," I says, takin' quick thought of the new clothes I was wearin' and knowin' Dinnis couldn't raise the money by afternoon

into the ditch and quits speakin', whin who should we be meetin', drivin' along in his bit of a cart, but old man O'Grady himself!

"We stops him, both talkin' to wanet, but afore we could tell our business he says he must be goin' on after the mail and for us to wait where we was and ride home with him whin he comes back. Which we done, or begun to do, only by this time we was so nervous about each other that Dinnis wandered around in the woods and I stretched out on the grass by the roadside.

"I was watchin' him, suspicious, but primsintly I rolled over and went to sleep, with the warm sun shinin' down on me back, knowin' me wits would carry me through with O'Grady if I didn't wear thim out with usin' thim afore-hand.



"It's a wise man that knows whin a fool has the best of him."

for better than the shabby wans on the back of him.

"So up we went. O'Grady, havin' made his pile, was livin' comfortable on his own place in the country and addin' to it, bein' a capacious man, by keepin' his hold on politics on the East Side. He was so rich his home was a matter of a mile from the station and we went the way on foot, takin' no sorrow of it, for the sun was shinin', the flowers bloomin' ivry-where, and the bees hummin' soothin' and pleasant-like—and the country's a fine place to go to whin ye can come back ag'in.

"We was trudgin' along through a bit of woods, nayther of us talkin' much by reason of thinkin' how he could git a medal from O'Grady for bein' fair and honorable whilst he was makin' the other look like the last words of a drunken man before he falls

"It was Dinnis woke me, and the eyes of him was bulgin' out like eggs.

"Tare and ages!" he says, "what's happened ye?"

"Me?" says I, blinkin' me eyes.

"Who's done this to ye, Patsy?" he goes on, fairly yellin' at me. "What devil has been at ye whilst I was away? Oh, wirra, wirra, man, if O'Grady iver sees ye now it's more like he will be killin' ye than anything else! 'Here,' he says, 'roll over ag'in and let me see the back of ye wanet more. Holy saints, look at that, now! "Down with Tammany!" across your shoulders! And runnin' crooked down from it—hold still but one minute—no true Irishman iver done that—"Bless Boyne Water!" And down wan leg is "Ireland for the English!" and along the other

with the Pope!" and startin' from your hip-pocket is a blasphemous suggestion to the polayce! Ivry letter of it all in orange paint! Och, man, if O'Grady iver sees but wan letter of that ye're lost intirely, and by all the powers here he comes now, jaunтин' along in his bit cart, though he ain't seen us yet! Keep your face to him—no, they's no time to be lookin' at it now—and crawl back where ye can sit with your back ag'inst this tree and your legs flat out along the concealin' ground, and don't move annything but your tongue whilst he's with us! I'll do what I can, but for the love of hiven, sit tight!"

"With the first words of him me brains threw the sleep from thim and me heart stopped beatin' with sickenin' fright of what he was sayin'. I could see immediate that thim words painted on the back of me would murder all me chanets with O'Grady—and me fine new suit, besides! Young as I was, I seen it was no time for mere thinkin'—me wits was quick to tell me that—and in less time than it takes a potaty to roll into a barrel I was serunchin' and wormin' and wigglin' along on me back—alanna, thim poor clothes!—and was sittin' tight ag'inst a big tree with me legs flat out along the ground and niver wan of thim yellow letters showin', praise be.

"And whin that, Old man O'Grady, havin' come close by with his head down a-studyin', looks up and sees us. "Whoa!" says he. "Well, gentlemen, here I am and ready for ye. Will ye be gittin' in with me, or has your frind changed his mind, Mr. O'Toole?" he says, put out over a young man like me showin' him no more respect than not to git up whin he come.

"Well, sor," says Dinnis, "it ain't his mind he's wantin' to change. You see sor," he says, givin' me a black eye right in the start of it and leavin' me no chanet to tell me own lies, "it's not over strong he is—Moran's the name, sor, Patrick Moran—and the walkin' was a bit too much



"Are ye a luntyie?" says she, gaspin' for breath."

for him. The sun makes him this way, sor, but he gits all right

Write Gaar-Scott Early in Nineteen-Ten Lest Later You Write, "It Might Have Been" The Saddest Words of Tongue or of Pen

THIS year we are rounding out our third quarter century, and appropriate to the anniversary occasion we are issuing the finest, largest and most complete threshing machinery catalog ever put into the hands of threshermen. The considerably reduced print of the front cover conveys only a slight idea of its striking beauty. It is lithographed in seven colors, both front and back. The engraved title page tells the story of our unparalleled substantial growth. Its reading pages are well illustrated with the members of the "Tiger Family" and the dismembered members, and what is still better, they give absolutely dependable information about the largest and most practical line of traction engines built by any manufactory on the Continent, and our new 1910 Model Thresher.

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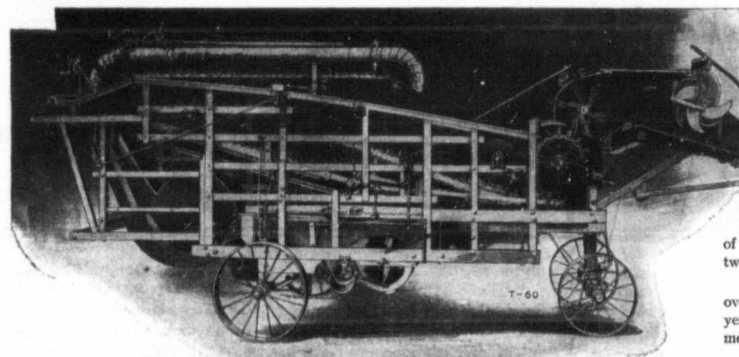
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MASON, MICH., Sept. 21, 1909.

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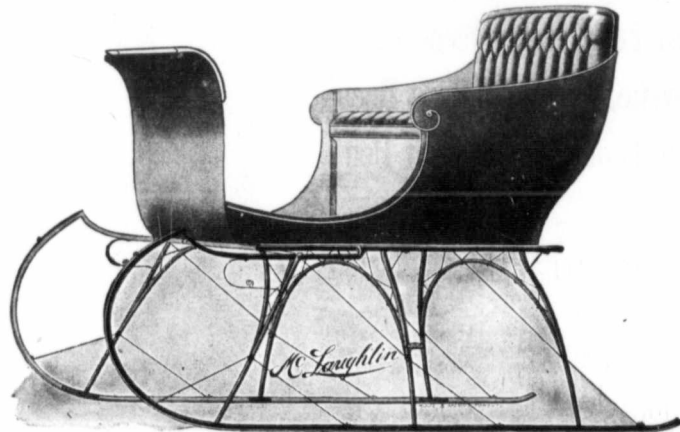
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OSHAWA, ONT.

ag'in whin he can rist his back ag'inst something for a bit.'

'Did ye iver hear the like of that from wan that was a frind! It made me so blunderin' mad that niver a word could I say ixcept to take off me hat polite, prayin' the saints they was no orange paint on the back of me arm, and not darin' to move from where I sat!

'Sure,' says Mr. O'Grady, 'and that's a pity. What can we be doin' for ye?' he says, gittin' down from his cart.

'There was me chanet and I took it. 'Mr. O'Grady,' I says, 'sure, it's troublin' ye too much I am, sor, but if ye could just be settin' down and talkin' to me soothin' a few minutes I'd be right ag'in in no time. It ain't want a year I git these spells, and thin only from eatin' pickled beets with horseradish on thim,' says I, knowin' they ain't no chanet for invalids on the polayce.

'Och, it's meself will do that same,' says Mr. O'Grady, 'and little enough.'

'Just a minute, sor, and axin' your pardon,' puts in Dennis. 'Patsy, Patsy,' says he, tinder as a woman, the devil snatch him!—'don't ye mind how Dr. Ryan says the wan thing ye're *not* to do whin ye're this way is to talk with annybody whatever?'

'Ye lie, ye dirty blackguard!' I says, losin' hold of meself, but keepin' pasted to the tree. 'I

niver went to Dr. Ryan in me life, and they ain't any such man anny-ways! Don't I know what—'

'Patsy dear,' says Dennis, like it was hurtin' him, 'quiet yoursilf down! Och, come away, Mr. O'Grady, sor! It's killin' him we'll be after doin'. If ye'll be takin' me into your cart I'll be acceptin' your kind bid to go

and legs. 'And if iver—'

'Don't be ragin' at thim as is doin' their best for ye, Patsy dear,' he says, still lookin' sorrowful, 'for if it's much worse ye're gittin', I'll have to ask Mr. O'Grady to 'hlp me roll you on your stummick and pound your back like Dr. Ryan said!'

'It's a wise man that knows



"So hlp me Hiven, they was't a mark on me!"

home with ye where I can be settlin' the business the two of us come out for, with no trouble to me frind. It's what the doctor says is best for him—to be left quiet by himsilf.'

'Now the black curse of Shielygh on ye, Dennis O'Toole!' I yells at him, bein' beyond meself, though not movin' me back

whin a fool has the best of him. I give up; besides, the two of thim was already movin' toward the cart. I commenced callin' Dennis all the evil names that come to me—which was all they was—but I seen him touchin' his head with his finger and whin I shut me mouth to listen, he was sayin' to Mr. O'Grady, says he:

'Oh, no, sor, he don't mean nothin' by all that. 'Tis only the fit that's on him and they's no offense to be took. Other times he's a daycent man, though—'

'And with that they climbed in and away they went, leavin' me blind and chokin' with me anger.

'I was so busy cursin' to meself that it was some minutes afore it come to me to look at thim blamed letters on me back. And thin, so help me, I was afraid to look! Sure I was that it was Dennis himsilf put thim on me—it stood to reason no one would be wanderin' round the country with a can of orange paint waitin' for some Irishman to come along and go to sleep on his stummick so he could paint nefarious writin's on the innocent back of him! At the thought of thim I fell to swearin' ag'in prodigious, and was just goin' to draw up wan leg and read it whin I heard some wan singin'. A woman's voice, and a sweet wan, it was—and I begun pressin' me headlines to the ground closer than iver.

'Thin I seen her through the trees comin' down a bit of a lane into the road, and faith, few is the women I've laid me eyes on afore or since could equal that wan! Her hair was blacker than annything ilse ixcept her eyes, and the red cheeks and lips of her would 'a' made the berries in her pail look like they was snowballs.

Traction Engineering

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"A fine afternoon to ye," she says, goin' right along on her way.

"Sure," says I, "and if ye'd said that same afore ye come, I'd 'a' been answerin' that it was not like to be!"

"Och," says she, laughin' a bit of a laugh that made me heart feel like a repeater. "But is it in trouble ye are?" her voice fillin' out with kindness so I nearly forgot the paint that was keepin' me where I was.

"I was till you come," I says, laughin' back at her, "and now I'm like to git in it worse than iver," I says.

"Och," says she, "go long with ye! Can't I be stoppin' long enough to be civil but ye must begin blarneyin' like ye'd known me all me life long?"

"Sure," I says, still settin' tight ag'inst me tree and all the earth me legs could cover, "I've known ye iver since I first met ye, and that's all anny wan has done. And as for blarneyin', was they iver a man laid eyes on ye without tellin' ye what he saw?"

"Yoursilf," says she, laughin', with the dimples comin' all over the face of her.

"Mesilf indeed!" says I, and I could see she was bein' drawn to me by the way I was settin' there indifferent whilst she stood in the road. "Wasn't I just sayin' I saw a worse trouble for me than anny that have gone afore?"

"She give me a look out of taim black eyes of hers that set me strainin' at the tree-trunk I was leanin' me back ag'inst. 'Meanin'," says she, "the trouble of gittin' up on your feet whin a lady speaks to ye?" she says, tossin' her pretty head and leadin' me on.

"Faith," I says, "I'd be up on me feet and down on me knees the same minute if—" says I, "if—" I says, surprised at where I'd got mesilf to and eastin' round for anny kind of sensible reason for bein' a bit of stickin'-plaster on the face of the earth whin they was a girl like that callin' to me from the road.

"Ye seem to be in trouble ag'in," says she, "It's like to become a habit with ye, and where's the glib tongue was waggin' so easy a minute gone?"

"It ain't me tongue's at fault," I says, meantin' to blame it on me heart and quiet the poor girl, only just thin I begun noticin' how many of thin big black ants they was crawlin' around the ground and wanderin' over me hilpless form. It's me that hates bugs

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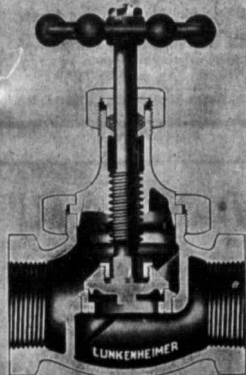
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worse than the blessed St. Patrick 'hates snakes and 'twas me immediate intintion to jump straight up in the air, brushin' the little devils off me with all me hands and feet, but I raynimbred thim murderin' yellow letters printed up and down the back of me, and callin' up all me will-power, I set where I was. Mind ye, it was fair wild I was with thim—they was eight of thim animals on wan leg of me—but such will the pride in him do for a man, and the love of women! And good come of it, for it was wan of thim lunnytic ants scourin' up the toe of me shoe and down the sole of it, not havin' sinse enough to go around instead of climbin' over, that give me a idea; and so quick was all this that 'twas but a second after she was done askin' that I outs with the answer.

"It ain't me tongue," I says, wan eye on her and the other wan on the biggest of thim ants what was ballyhootin' round the bottoms of me trousies, debatin' would he be explorin' inside, 'and hiven knows it ain't me heart that's keepin' me here, but me foot," I says. "I sprained me ankle on that stone forninst ye in the road and would ye mind throwin' it as far as ye're able into the woods?" says I.

"Och, ye poor man!" she says, comin' toward me as I knowed she would. "And why ain't ye takin' off your shoe afore your foot swells in it?"

"Bring a stick with ye!" I says, the wan big ant havin' disappeared from me view and another wan startin' to hunt for him.

"Do what?" says she, but doin' it. "Be careful of yoursilf there!" she goes on, for I was movin' me legs back and forth like they was pendulums, but keepin' thim tight to the ground and not alarmin' the ants to speak of. "It's goin' for help I'll be," she says, still comin' toward me.

"At thim words me stummick collapsed with fright of me bein' picked up and her readin' thim mortfyin' letters on me, and right on top of that she come close enough to see it was low shoes I was wearin' and both me ankles as trim and tidy as iver they was.

"Ye big gomerall, ye was lyin' to me!" she says, stoppin' short.

"'Yis, I was," says I, "but in the name of hiven give me the stick!" I says, the second ant havin' gone over the idge of me trousies' leg. "And what might your name be, so I can be thankin' ye?" I says, reachin' for the stick. "And won't ye sit down and rist yoursilf?"

"Take it!" she says, throwin' it at me. "And it's none of your business and I want no thanks from the likes of ye and I won't!" say she, answerin' ivrything at wanet.

"Thank ye annyways," I says, beatin' me shins with the stick

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without movin' me back from the tree, 'and ye will and what is it?'

"The saints in glory be among us!" says she, watchin' me whip-pin' meself. 'What ails ye?'

"It's punishin' meself for lyin' to ye," I says, 'but I misdoubted would you believe me if I told ye the truth.'

"Ye might be tryin' the truth wancet to find out," she says, forgittin' to stay mad from bein' a woman and curious, and lookin' prettier every minute.

"Will ye sit down friendly-like, thin, and what was it ye didn't say your name was?" says I, brushin' a ant off me shoulder and shiverin' at the thought of him gittin' down me neck.

"I'll be stoppin' a minute, havin' time on me hands," says she, her curiosity killin' her, 'and me name is just what you said I didn't say it was, me not knowin' yours anyway,' she says.

"Oh, mine," says I. 'The last of it's Moran,' I says, tellin' her the truth by reason of knowin' she wouldn't believe me, but that

don't matter since it's just like ivry other man's—your own at the word from ye. Me own name is Patrick,' I says, 'but Patsy's easier. And I'm not wantin' the last of yours the day, seein' as 't's not likely to stay unless all the single men loses the power of speech and can't make signs. And if I'm not knowin' your own sweet name,' I says wonderin' was it the old granddad ant ticklin' me over me knee, 'there's naught left but to call ye mavourneen and other things that come out of the heart of me,' says I, givin' her a look and sighin' painful.

"It's Katy, thin," says she, dimplin' so I had to keep me eyes on me back to raymber thin purgatorial letters on it, 'and ye needn't be beatin' yourself anny more with that stick,' she says, 'if ye'll be tellin' me the real truth intirely.'

"Niver mind that, Katy dear," I says. 'I can't forgive meself for lyin' to ye and it keeps the bugs off, but will ye be offend at the truth if ye have it?' I says, me wits furnishin' me with a splendiferous reason for bein' a porous-plaster.

"If ye can stand tellin' of it I want, it's me will be tryin' to put up with the hearin' of it," she says, smilin' at me and showin' the white teeth of her so I was minded to get up with all that outrageous printin' on me and take me chamet of lookin' a fool.

"Thin here it is," says I, solemn and trembly-like, 'in three words. I've seen the world, Katy darlin', and the most contemptible creature in the whole of it is him that makes a fool of himself runnin' round after a woman, bleatin' like a sheep whin she takes notice of him, and squealin' like a litter of pigs whin she pretinds she don't. I was but the makin's of a man whin I took me solemn oath that if iver the heart of me went out to a good woman and a pretty wan, divil the step would I be traipsin' after her, lastways till she'd come to me first. Lad as I was, I knowed 'twas only a good woman would have sence to see that belike I was the better man for not bein' a fool afore marriage, and the less likely to be a divil afterwards. 'Twas a big oath I took, and niver in all thin years was they need of it, but this day, Katy darlin', I says, makin' me voice rich and sweet, and lookin' at her in a way I'd learned was worth doin', 'but this day, Katy darlin', the time has come on me! The minute me eyes was blissed by the sight of ye comin' down the lane I begun sayin' over and over to meself, 'Patsy, me boy, Patsy, me boy, if ye move but an inch from where ye are, ye'll spind all the rest of your life after ye're dead in purgatory!' And meself answers me back immediate,

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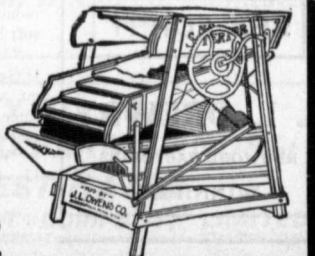
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"It was a long speech, but a good wan, and it made the pretty face of her red as thim red flowers, whatever the name of thim is, and her lookin' at me like she was tryin' to see into me heart itsif.

"Are ye a lunytic?" says she, gaspin' for breath.

"Yis," says I, shakin' wan of thim devil-chasin' ants off me bare hand, 'but not till ye come,' I says.

"And thim she comminced to laugh, though I couldn't be tellin' was it from the quick wit of me answer to her or just by reason of her bein' a bit hysteric over the man's strength of me courtin'. But me own face I kept lookin' mortal sorrowful, though the whole of me was squirmin' all over with the ants I could feel on me, and was they real or not I don't know, but they might as well 'a' been.

"But not all of it—thim armies of bugs and thim fool paintin's on me back that kept me nailed down to wan spot like I was a lid to it—wasn't holdin' me from makin' me way with a woman. She was pretindin' to be a bit proud at the first, but I explained to her how me settin' still was but a compliment to her and if she would be humerin' me oath for the wan day, after that I would be crawlin' around for her like all thim other fools did, which suited her complete and tremindous. It wasn't long afore she come over close enough for me to be holdin' wan of her hands, me still usin' me free wan to knock off thim owdacious ants.

"And now, Katy darlin'," says I, 'it's business I'll be havin' in these parts to-morrow and belike after that, and,' I says, 'ye didn't git all the berries they was, did ye, mavourneen? Couldn't ye be comin' by here after more of thim to-morrow?' I says, 'squeezein' the soft hand of her, encouragin'.

"And do ye think Katy O'Grady has no more to do than go wanderin' about waitin' for some wan that will forgit he iver met her?" says she.

"Whin I heard 'O'Grady' me blood quit circulatin'.

"Do you think that? she goes on, lookin' at me, pleadin'.

"I ain't thinkin'," I says. But I was, and at wanet me wits told me that if she was old man

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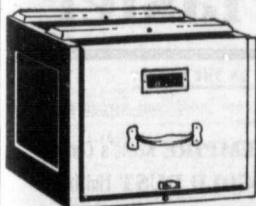
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O'Grady's daughter, here was me chanet to beat Dinnis' out after all by workin' on the poor girl's heart and makin' an alley of her.

"And is it Mr. Michael O'Grady is your father? I asks, careless-like.

"The same," says she, "and do ye know him?"

"Thin I told her as much of the truth as I thought would be doin' her no harm, but also narratin' impressiv' how Dinnis had been after persuadin' me to take a bit of a nap, me bein' tired from workin' so hard and thin wint and slipped off to the old man, tellin' him I was just a frind who'd come along for company, which would 'a' been true if it had happened, and maybe it did.

"Anyways, I went to work in earnest and if I'd been makin' love to her afore, after that I fair drewed the heart out of her. It was almost like makin' love to old man O'Grady himself, though the face and winnin' ways of her was enough in thimselves. I'm not the man to be boasin' of such things, but it was but a short time till I could see meself in a polayecman's uniform arrestin' Dinnis for bein' alive, goin' home ivry night to me father-in-law's sumphus residence in the country and sindin' out the servants to kill all the ants they was on me estates.

"Thin ants was wonderful ristless, and by this time I could feel crowds of thim scramblin' round all over me underneath me clothes, playin' they was Coney Island and Wall Street and elction night all to wancet. I niver knowed there was so many ants and ivry wan of thim was barefoot and diggin' his toes in. The cold chills run up and down me back and me stummick felt like it was a Charlotte Roose. Ivry wanet in a while wan of thim would bite me, meanin' no harm, but just investigatin'—and me all the time nailed down to the seat of me own twousies be thim painted and blasphemus letters I was sittin' on, niver darin' to move me back from the tree for all the ants nor all Katy's inticin' ways. Anny other 'man would 'a' run screamin' and clawin' from the place, but me will power is me strong point, and I stayed where I was, makin' love to a woman and the polayee force, and lyin' like the father of all lies to prove all thim I'd told afore and was intindin' to tell later on. But I will say this: If I was thrown into the tormints of hell this minute I would but wave me hand easy-like and make enemies on ivry side by findin' fault with the feeble way they was doin' things.

"Katy was makin' it no easier for me. 'Give ye a kiss, is it?' says she, replyin' to wan of me suggistions I'd made whilst tryin' to separate two of thim ants what had met on a street-corner and

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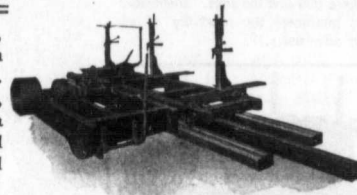
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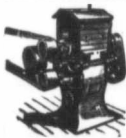
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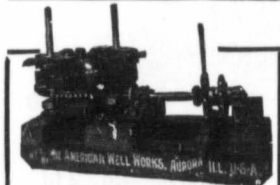
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was havin' a free-for-all on me bare skin. 'Come over and give ye a kiss, is it? And ye settin' there mumbly about a oath ye took whin ye was drivin' the pig home in the Old Country! And did ye take anny oath about makin' the woman do the runnin' after? Och, Patsy dear, if ye was meanin' the half of what ye've been sayin' to me—and faith, 'twould not be runnin' after me to move over but the few feet they are between us!

"Can ye guess bein' put like that, and me with the back of me lookin' like a plate of alphabet soup! And wouldn't 'Doin with the Pope and Tammany! be a fine card for the daughter of Michael O'Grady, and her blushin' and waitin' for me to come to kiss her!

"At the sound of some wan comin' along the road I begun givin' thanks to all the saints, wan by wan and all together, and Katy come to her feet, grabbin' up her berry pail, but afore she could reach the road she gave a little squeal:

"'Och,' she says, stoppin' in her tracks, it's me father himself!

"And him it was, and Dinnis O'Toole, walkin' arm in arm as thick as ye please.

"'I'm glad of that same,' says I. 'Now do ye be leavin' it all to me, Katy darlin', and we'll give Mr. Toole what he's deservin', bad seran to him, and me oath would 'a' been busted to smithereens if they'd waited but the wan minute more!

"Just thin old Mr. O'Grady claps his eyes on her, 'And what are ye doin' here, now' he calls out to her, 'gabbin' with a wan what's a stranger to ye? If I wasn't knowin' him too sick to move, I'd be boxin' both thim ears of yours!

"'Sick?' says she, lookin' first at me and thim at him.

"'Yis,' says the old man, close to her by now, 'he was so sick in the head of him that his friind Mr. O'Toole here—me daughter Katy Mr. O'Toole—had to leave him here like the doctor said, till he come to. And are ye feelin' a bit better, Mr. Moran, and no offense to ye?' says he, lookin' down at me ag'in the tree.

"'Sick!' says she ag'in, disgusted, but barely noddin' to Dinnis, who was bowin' and scrapin' to her with the eyes of him stickin' out of his head. 'Why,' says she, 'he was tellin' me he'd took a oath—I was but passin' the time of day to him as I win't by,' she says, seein' she was makin' trouble for herself. 'He said he'd took a oath to—to—but—'

"'Oath?' says Dinnis, laughin', the spalpeen! 'Faith, I'm bettin' all me hopes of Paradise I can be guessin' it was wan of two things! Come, now, Patsy me boy,' says he, actin' like he was payin' me a frindly compliment, 'which wan

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Two Rebuilt Threshing Outfits: 22 H. P. Port Huron Compound Traction Engine No. 6007, equipped with steel gearing and all plowing attachment. 36 x 40 Port Huron Rasher Separator No. 6509, with all attachments. Price F.O.B. Winnipeg, Man., for full outfit \$2,500.00. 21 H. P. Port Huron Compound Traction Engine No. 6203, steel gearing, all plowing attachments. 36 x 40 Port Huron Rasher Separator No. 6280, with all attachments. Price F.O.B. Winnipeg, Man., for full outfit \$2,500.00. These outfits have been thoroughly rebuilt, painted and varnished, and ready for immediate shipment. We guarantee them the same as we do new machinery. Write CANADIAN PORT HURON CO., LTD., WINNIPEG, MAN.

was it? Have ye been swearin' off ag'in on gallivantin' after the girls, or was it the liquor ye put your oath on this time? Sure, he says, turnin' to the others, 'it's his tinder conscience makes me like him, and if girls would be leavin' him alone and he wasn't so good-lookin', he'd make less trouble for the hearts of them. As regardin' the liquor, now, I'm not sayin' but what—

'Ye're a murderin' liar, Dinnis O'Toole!' I yells at him when I could catch me breath from the treach'ry of him, mixin' the truth with black lies to ruin me chancet with Katy and the old man! 'If I could be gittin' on me feet I'd break ivry bone in your sneakin' body!' I says, chokin' with the rage that was on me and cursin' the paint on me back that kept me from killin' him.

'Oh,' says he, swellin' up the chest of him, 'words is easy things, but I'd be makin' ye eat them ye've just spoke if ye wasn't out of your head with the sickness, and can't ye take a bit of jokin' from a frind?' he says. 'And what is the matter with ye, anyway?'

'Hell was heaven by the side of that minute. Here was that big lynn' gomach insultin' me and spoilin' me last chancet with Katy and the polayee force, and me growin' in the ground like I was a toadstool! I could see she was talkin' to Dinnis a bit from spite, believin' I'd been desayvin' of her and thinkin' me a coward and a lunnytie besides that, and O'Grady himself, the old spancelled goat, was regardin' me like I was two lunnyties and drunk wans at that. Dinnis, the wretch, was smilin' wan of him sweet smiles of his and whisperin' to Katy confidential, seein' himself on the polayee force for ever by reason of bein' married to O'Grady's own daughter. And that not bein' enough to torment me, I begun feelin' thim ants ag'in crawl'n' all over me, furious.

'All to wanet me quick wits and me good judgnint come back to me and I seen that havin' nothin' to choose from, they was but wan thing to do. I couldn't in anny way look more of a fool than I was lookin' already and I might as well be showin' Dinnis up for another, and maybe, by destroyin' his chancet with the both of them, I could build up me own ag'in. And annyways, whin ye've fell from the elivinth-story window they ain't no more can happen ye after hittin' the ground.

'Listen, Mr. O'Grady, and you, Miss O'Grady,' says I, lookin' up at them, and with the sound of me own voice I seen how fine me plan was and that Dinnis was as good as done for. 'I'll tell ye the whole truth from the beginnin' and ye can judge atween the two of us!'

'At wanet Dinnis quit whis-perin' and wint a bit white in the face, but I wint right on, keepin' me eyes on all three of them and tellin' thim all of it—how Dinnis betrayed our agreement and painted thim blasphemous letterin's on me, so he could ruin me with his lynn' tongue whist I was helpless—me Irish pride keepin' me from movin' so anny wan could see me back—clean down to the lies just off the oily lips of him, but omittin' about Katy and wan or two other things.

'It done me good to see O'Grady beginnin' to scowl at Dinnis as I wint on with me story, though Katy laughed a bit wanet or twict. As for Dinnis himself, ye couldn't tell what was goin' on inside him, but his face was red and his lips twitehin' so I thought he was on the edge of cryin'.

'But the impidence of him! The minute the last word was out of me mouth he steps up to old man O'Grady, bold as ye please, though his mouth was still trimblin' round the corners.

'Mr. O'Grady,' says he, his voice shakin', 'whin ye are through listenin' to me excited frind Mr. Moran, I'll be askin' another word with ye about whin I'm to join the force. And at the same time, sor,' he says, sinkin' his voice so Katy couldn't hear him, but I could, bein' nearer, 'and at the same time, sor,' says he, easy and cheerful, 'I'll be askin' your permission to pay me court to your daughter!'

'Old man O'Grady spun round on him and give him a look like he would bite him, and Dinnis turned his back and run, throwin' himself down on the ground a little ways off and rollin' about with his face covered with his hands and his body shakin' like his troubles was murderin' him. The old man turned to me wanet more:

'Git up, thim, and let's see thim letters on ye, me frind,' says O'Grady.

'Faith,' I says, blushin', 'they're that humiliaytin' I ain't seen thim meself yit, but the shame's none of me own for all that, though I'm wishin' Miss O'Grady would be lookin' the other way; I says, gittin' up slow by reason of wan of me legs bein' asleep, and turnin' me back round to him.

'Just thim Dinnis let out a laugh like he was a lunnytie entirely and the next minute O'Grady busted out himself and Katy joined in with thim, laughin' so it made me weak with the shame of it!'

'I made wan grab at me coat, tearin' it off me and twistin' round at the same time to see the backs of me legs, and—so *hip me hiven, they wasn't a mark on me!*'

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EXPLANATION.—First find the Implement Wanted and the Number opposite will be the Number of the Concern, in the first column, that handles it.

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8-BRANDON & ROBERTSON, Brandon.
9-BURRIDGE-COOPER CO., Winnipeg.
10-CANADIAN FAIRBANKS CO., Winnipeg, Vancouver.
11-CANADIAN MOLINE PLOW CO., Winnipeg.
12-CANADIAN PORT HURON CO., Winnipeg.
13-CANADIAN RUBBER CO., Winnipeg, Vancouver.
14-CANADIAN STOVER CO., Brandon.
15-CARBERRY IRON & WOOD WORKS, Carberry.
16-CARBERRY STACKER CO., Carberry.
17-J. I. CASE T. M. CO., Winnipeg, Regina, Calgary.
18-CLAPIN CO., Calgary.
19-COCKSHUTT PLOW CO., Winnipeg, Regina, Calgary, Edmonton.
20-CRANE & ORDWAY, Winnipeg.
21-DEERE, JOHN PLOW CO., Winnipeg, Regina, Calgary, Edmonton, Saskatoon.
22-DE LAVAL SEPARATOR CO., Winnipeg.
23-DURHAM RUBBER CO., Winnipeg.
24-EMPIRE CREAM SEPARATOR CO., Winnipeg.
25-GAAR SCOTT & CO., Winnipeg, Regina, Calgary.
26-GAS TRACTION CO., Winnipeg.
27-GRAY-CAMPBELL CO., Winnipeg, Brandon, Moose Jaw, Calgary.
28-HAMILTON PULVERIZER CO., Winnipeg.
29-HAUG BROS. & NELLEMOE, Winnipeg and Calgary.
30-HARMER IMPLEMENT CO., Winnipeg.
31-HART-PARR CO., Portage la Prairie.
32-HELGESEN, H. T., Winnipeg.
33-HERO IMPLEMENT CO., Winnipeg.
34-INTERNATIONAL HARVESTER CO., Winnipeg, Regina, Calgary, Edmonton, Saskatoon, Brandon.
35-LOUDES HDWE. & SPECIALTY CO., Winnipeg.
36-MANITOBA HAYES PUMP CO. LTD., Morden.
37-MANITOBA IRON WORKS, Winnipeg.
38-MANITOBA WINDMILL & PUMP CO., Brandon.
39-MASSEY-HARRIS CO., Winnipeg, Regina, Calgary, Edmonton, Saskatoon.
40-MAW, JOS. & CO. LTD., Winnipeg.
41-MCKENZIE A. E., Brandon.
42-McLAUGHLIN CARRIAGE CO., Winnipeg.
43-MORAE, ALEX., Winnipeg.
44-MELOTT CREAM SEPARATOR CO., Winnipeg.
45-NEEPAWA MFG. CO., Neepawa.
46-NICHOLS & SHEPARD CO., Regina, Winnipeg.
47-NORTHWEST THRESHER CO., Brandon.
48-ONTARIO WIND ENGINE & PUMP CO., Winnipeg.
49-PARIS PLOW CO., Winnipeg.
50-PARSONS-HAWKEYE MFG. CO., Winnipeg.
51-PETRIE MFG. CO., Winnipeg.
52-RAYMOND MFG. CO., Winnipeg.
53-REEVES & CO., Regina.
54-RENNIE, WM. SEED CO., Winnipeg.
55-RIESBERRY PUMP CO. LTD., Brandon.
56-RIMELY, M. CO., Winnipeg, Calgary, Saskatoon, Regina.
57-SAWYER & MASSEY CO. LTD., Winnipeg.
58-SHARPLES SEPARATOR CO., Winnipeg.
59-STEEL-BRIGGS SEED CO., Winnipeg.
60-STEWART & NELSON CO. LTD., Brandon.
61-STEVENS, JOHN & CO., Winnipeg.
62-SYLVESTER MFG. CO., Brandon.
63-TIDHOPE-ANDERSON CO., Winnipeg, Regina, Calgary.
64-VIRLEN MFG. CO., Virden.
65-VULCAN IRON WORKS, Winnipeg.
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67-WATERS ENGINE WORKS, Winnipeg.
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The Farmer and The Hart-Parr

A FEW YEARS AGO traction cultivation was practically an unheard of thing. The number of farmers who made use of this method were so few and so scattered that little or nothing was known of the advantages of tilling the soil by mechanical power. The steam engine had been developed

for belt driving purposes and had not yet been used to any extent for the purposes of plowing, seeding, harrowing, discing or breaking. To the "Modern Farm Horse,"—The Hart-Parr Gas Tractor—belongs the real credit of bringing to the attention of the farmer the advantage of traction cultivation. It was the pioneer in this work, blazing the trail as it were, through all sorts of objections and all sorts of criticisms, before the farmer finally took hold, realizing that there was something in traction cultivation for him. He had tried steam to a greater or lesser extent and had found that it was cumbersome and not always adapted to the work he had to do. Unless he were an exceptionally large farmer and could employ his engine over a considerable length of time, the waits and delays for steam and the amount of time required to get his engine ready, cut a serious slice off his profits. He also found that in wet seasons that there were days at a time that he dare not take his engine upon the land because of its heavy weight and its tendency to mire.

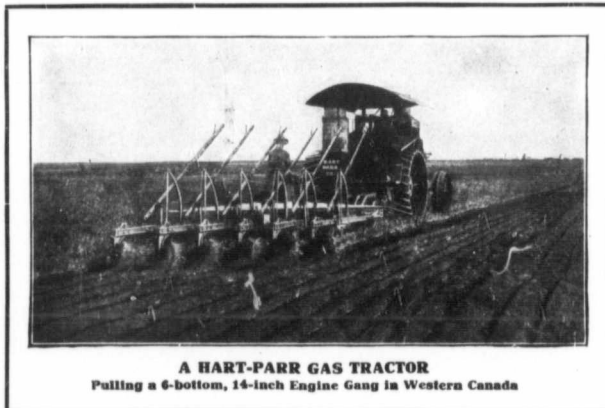
The Hart-Parr Gas Tractor was designed with all these difficulties in mind. Full consideration was taken of the fact that the farmer wanted a mechanical power that was ready for service every day in the year, no matter what the condition of the weather. This power must be quick, it must be strong, it must be cheap and economical; consequently the gas tractor was decided upon as the only machine that would fill the bill. The mechanical power that plows and sows and harrows and discs and breaks receives

no small amount of punishment. Therefore, the machine that develops this power must be of sufficient weight and strength to stand the strains of traction cultivation, and every bolt, bar, beam and pinion of The Hart-Parr Gas Tractor was designed with these working strains in mind. The result was that when

"MODERN FARM HORSE" THE HART-PARR GAS TRACTOR

Hart-Parr Gas Tractors started out to show the farmers what could be done with a mechanical power in cultivating the soil, they never once turned back. They forged straight ahead and while many have and are still attempting to follow the "Modern Farm Horse," it is a matter of record that the Hart-Parr is in the lead. Its users at first could be counted in tens but soon it became necessary to count them in hundreds, and it is now impossible to count them in anything but thousands, and each and every one stands a living testimony to the fact that The Hart-Parr Gas Tractor is the cheapest, most durable and most efficient source of power for farm purposes that is to be found upon the market to-day, nothing being excepted, either animal or mechanical. You as an up to date, progressive farmer, living in Western Canada where there are millions of acres yet to be placed under cultivation,

are certainly on the look-out for anything that will reduce the cost of crop production and at the same time increase the yield per acre and the number of acres under cultivation. You want to start the year 1910 right. You want to make it the biggest year yet and you do not want to lose sight of anything that will help you make it so. Without delay, for spring will be upon you before you know it, get in touch with the Hart-Parr—the "Modern Farm Horse." We have followed the traction cultivation proposition so carefully that we can tell you just what you need to suit your requirements. Let us know your situation and we will put you in touch with the best money making proposition you ever had upon your farm.



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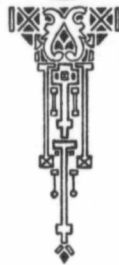
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