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CANADIAN THRESHERMAN -AND- FARMER

CANADA'S FARM
MACHINERY MAGAZINE

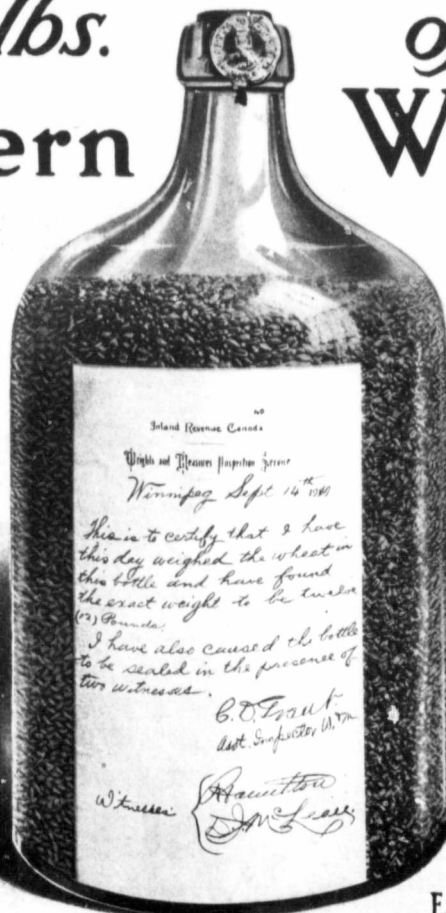
WINNIPEG

CANADA



NOVEMBER - 1910

How Many Kernels *in 12 lbs.* Northern Wheat?



Inland Revenue Canada
 Weight and Measure Department
 Winnipeg Sept. 14th 1910
 This is to certify that I have
 this day weighed the wheat in
 this bottle and have found
 the exact weight to be twelve
 (12) Pounds.
 I have also caused the bottle
 to be sealed in the presence of
 two witnesses.
 B. O. Frost
 Dist. Inspector
 W. L. ...
 J. H. ...
 J. M. ...

E.H. Heath COMPANY LIMITED Publishers

Van Brunt Light Draft Disc Drills

THE VAN BRUNT LIGHT DRAFT DRILL is the one that works in all kinds and conditions of soil. Gumbo, mud or trash do not stop it. In any soil in which horses or engines can travel, the Van Brunt follows and keeps up its good work without missing a foot.



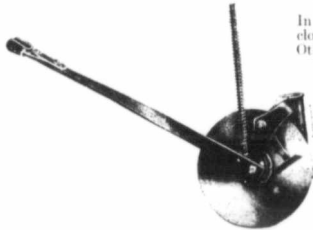
This is the LIGHT DRAFT DRILL. Why ask your horses to pull back and forth across your fields—mile after mile—a Drill that weighs 300 to 400 pounds heavier than the Van Brunt? Why hitch on to heavier, clumsier machines when the light running, easy pulling Van Brunt will go more miles and stand more wear?

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

Light Draft Van Brunt Drills are built for big things and small. They will plant any number of acres for many years and always keep going.

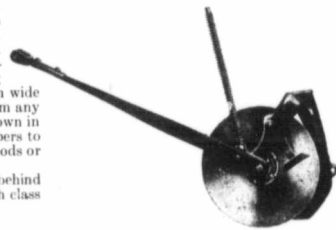
THE NEW VAN BRUNT FURROW OPENER leads the way. In 1900 Van Brunt produced the first successful Single Disc with closed delivery. It revolutionized the construction of Grain Drills. Others have tried to follow. Now we take another step in advance. THE 1910 VAN BRUNT DISC with Boot and discharge opening within the circle of the Disc Blades takes correct seeding sure. The Disc Blades, working in all kinds of soil, open wide furrows, and all the seed gets right to the bottom free from any obstruction. It beats the dirt. All the grain is planted down in the ground at an even depth. No projecting boots or scrapers to hold discs out of ground when going over stones, hard clods or trash.

The makers of the Van Brunt, with 50 years' experience behind them, have produced a Drill WARRANTED to do high class work not only for one season, but for many seasons.



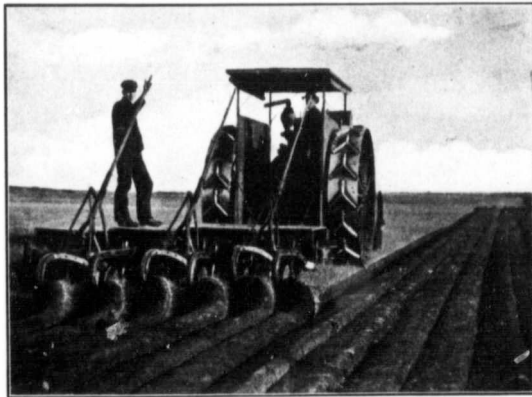
NEW STYLE, 1910

Write for Catalogue



OLD STYLE, 1900

John Deere Engine Plows



A Six Bottom John Deere Engine Plow. Outfit of Jas. G. Henry, Guernsey, Sask.

Note Quality of Work.

A gauge wheel runs between each pair of bottoms making it possible to use rolling coulters in the right way. Beams carry stubble, turf and stubble, or breaker bottoms. And John Deere Bottoms have never been equalled for quality of work and light draft.

We have just published a new book which is the best thing ever put out on engine plows. It is FREE on request. Ask for Package No. 50

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

Labor most advantageously employed is the most productive.

The two men operating the engine plowing outfit shown here will do from fifty to one hundred per cent more work than six men and teams operating single bottom plows.

Therefore, the profit on their labor is greater.

Or, to put it another way, the resulting crop costs less and is consequently more profitable.

This principle of the economical use of labor is one of the essentials of profitable farming.

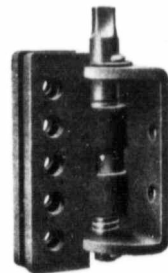
John Deere Engine Plows are built to operate most economically.

And to do the best work.

Here are a few important features.

Indestructible bridge-like steel frame carried on three easy running wheels and covered with perfectly level platform. Plows attached to frame in pairs, each pair being operated by a single lever. One man can operate a John Deere Engine Plow, regardless of size. Each beam point is attached to a screw clevis so plows can be given exactly the right adjustment.

This is the Screw Clevis. Found only on John Deere Engine Plows.



Gives the Plows an Absolutely Accurate Adjustment.

JOHN DEERE PLOW CO. LTD.

Winnipeg

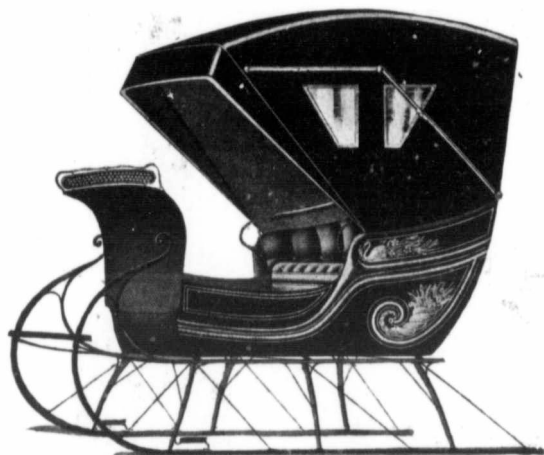
REGINA

SASKATOON

CALGARY

EDMONTON

Brockville Cutters



No. 205 1/2 Lady of Snow
With Top and Storm Slides

Brockville Cutters have been on the market so long that it hardly seems necessary to say much concerning them as they are so well and favorably known, embodying as they do

Originality in design,
Superior trimmings and finish,
Trimmings removable,
Prices right.

This is the popular 205 1/2 style

See the nearest John Deere dealer.

Reindeer Sleighs



No. 28 1/2 Reindeer Sleigh

Made in all sizes with steel or cast shoes

BOLSTERS—Are furnished with straps. Ends of same are ironed, fastened with bolts and rivets, to protect ends of bolster from splitting.

ROLLER RODS—For tongue and reach are full length.

BOLSTER PLATES—Are large and made of steel.

START PINS—Are 3/4 in. plates rivetted to each side of runners to prevent Start Pins from splitting runners.

RUNNERS—Front inside end of runners plated so tongue and reach rollers, as well as rod holes, will not wear.

PAINTING—Orange red, with very neat wide lines of black and fine lines of white striping. Well varnished and very much above the ordinary in smoothness of finish and general appearance.

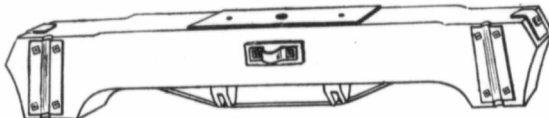
QUALITY and WORKMANSHIP—Made of good straight grained hardwood timber throughout; put together in a smooth, workmanlike manner.

Trussed Bench furnished on

No. 25 1/2, 2 in. x 6 1/2 ft. runners, steel shoe

No. 26 1/2, 2 1/2 in. x 6 1/2 ft. runners, steel shoe

No. 27 1/2, 3 in. x 6 1/2 ft. runners, steel shoe



Reindeer Trussed Bench

Trussed Bench furnished on

No. 28 1/2, 2 in. x 6 1/2 ft. runners, cast shoe

No. 29 1/2, 2 1/2 in. x 6 1/2 ft. runners, cast shoe

SEE THE NEAREST JOHN DEERE DEALER

JOHN DEERE PLOW CO. LTD.

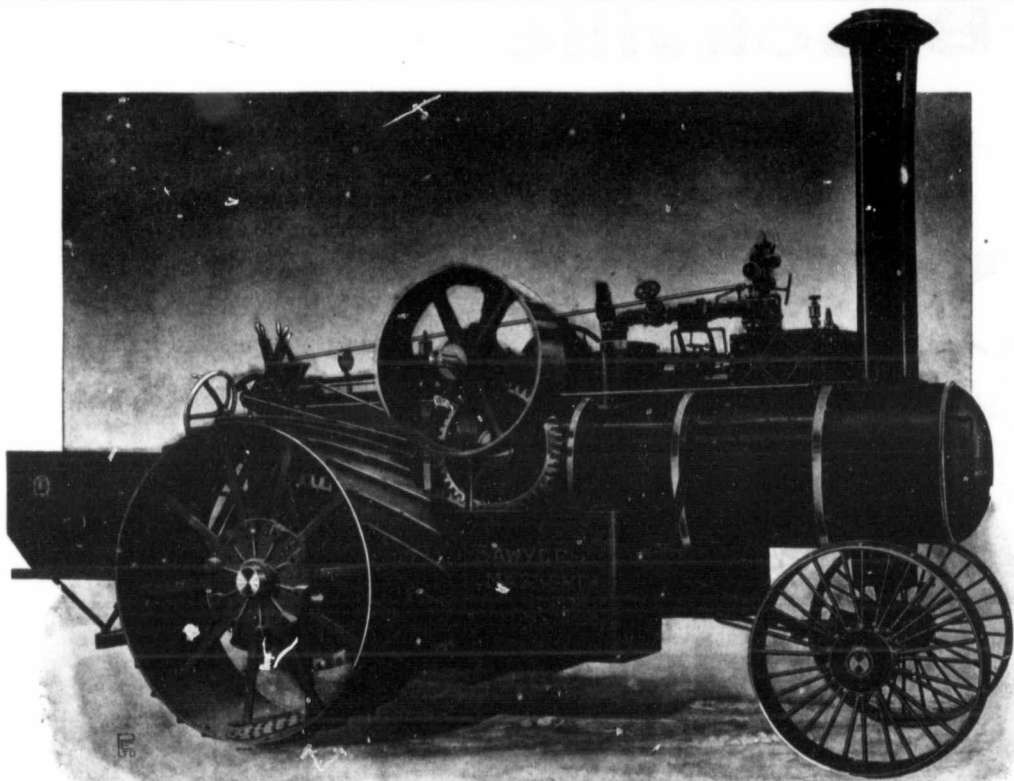
WINNIPEG

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EDMONTON

SASKATOON



Sawyer-Massey Combination Plowing and Threshing Engine.

This Type Built in 27, 30 and 32 Horse Powers.

The popularity of our Combination Plowing and Threshing Engines this year is bringing us in honor and promises of increased patronage exceeding our expectations.

It is an accepted fact that the S-M Traction are the quietest and smoothest running Engines on the Market.

Some of our customers have practically finished a large season's work without the expenditure of a dollar other than for oil or grease.

The way the parts of S-M Engines are made, finished and put together shows why.

A big difference in the cost of production, but to the careful Manufacturer it at least brings reputation.

S-M Goods have been adding to their reputation for thorough construction for years and even greater stress as to care in manufacture is being given by the present management.

Remember also that we are the designers and builders of the "Great West" Separator, which holds the record for clean fast threshing and the saving of grain in all three Provinces.

A good record created and maintained for three fourths of a century has its advantages with the buyer.

Our office at Winnipeg will be pleased to give your enquiries its every attention.

Sawyer-Massey Company, Limited

The Largest Engine and Thresher Works in Canada.

HAMILTON

WINNIPEG

A MAGAZINE
FOR

THE FARM
AND HOME

THE CANADIAN THRESHERMAN AND FARMER

Vol. XV.

WINNIPEG, CANADA, NOVEMBER, 1910.

No. 11.

Good Water and Pure the Farmer's Friend

By L. G. KERCHOFFER.

A CAREFUL survey of agricultural conditions as they exist at the present time will reveal one fact and that is the strange inconsistency of rural life in the lack of consideration which the dwellers therein give to their own personal comfort and health, while they study and use every artifice that will prevent weakness and disease among the animate and inanimate products of their farms. Horse stables are ventilated, while the bedrooms of their children seldom see an open window. Cattle are tested for and protected from tuberculosis, while the family live in a house atmosphere that is most conducive to the disease. Hog cholera is ruthlessly stamped out, while the drinking water affords every inducement for an epidemic of human diarrhoea. Potato seed is treated for scab, oats and wheat for smut, and fruit trees are sprayed for various fungous diseases, while typhoid fever is common in rural communities as a result of contaminated water. In fact it seems as if the farmer is concerned about the health of everything on the farm except himself and his family. Every once in a while we hear of a typhoid epidemic in a certain locality in Western Canada. The number of these that break out would indicate that Western Canada was not a healthy place to live in, but when we get at the real facts, we find that the reverse is true and that 75 per cent. of these typhoid epidemics can be traced to an impure water supply, and that providing the farmers had given the same atten-

tion to good wells and pure water that they had to the care of their live stock, that we would scarcely ever hear of typhoid as an epidemic.

There is, of course, somewhat of an excuse on the part of the farmer as it is rather difficult for him to provide his farm with a good well immediately he turns his first furrow, but there is little or no excuse for any farmer leaving the matter of water supply to take care of itself for three or four

years, while he is getting his farm into shape. If the Banks of Western Canada only knew it, the wisest thing upon which they could lend money would be a good deep well of pure water, for unless the health of a community is conserved, that community as a risk in the way of lending money, is rather a small proposition.

A correct understanding of how and where our water comes from

may be of as much an incentive to secure and keep a pure water supply as it will to know the difference between a good and bad one.

Inasmuch as the source of all water is the rain that falls upon our land, we must look to it to fill our lakes, rivers, wells, etc. The rainfall is disposed of by several means: a part of it runs off the surface into the rivers and lakes, another part of it soaks into the ground to reappear again as

cept to its infection from contamination.

The class of water supplies in which I am greatly interested, and those about which there is the least known, are those from underground sources. For convenience of description, and to the end that the subject may be better understood, it is advisable to divide the underground waters into two classes. First, those which are found in sand and gravel beds, and in some cases where it lies near the surface of the ground, and second, those which are found in deep-seated rock foundations, from which we secure our artesian and deep well waters.

The first class in nearly all localities are flowing under ground as a vast river, although at a very low velocity, possibly only a few inches per day. These waters are usually flowing towards some lake or river. These sand beds occur in the glacial deposits which cover a large portion of the west in the alluvial deposits in river valleys. While scattered widely, they are, however, more generally used as sources of water supply. The amount of water flowing in these beds depends upon the porosity and size of the sand grains, and upon the slope of the formation.

The wells which draw water from this source are our common shallow wells. These wells may be divided into three classes: the open or dug well, the drilled well and the driven well. Commonly a well is simply an opening for the ground water to rise into from its horizon to that of the surface of the earth by either natural or



By no means tempting and certainly not conducive to good health.

years, while he is getting his farm into shape. If the Banks of Western Canada only knew it, the wisest thing upon which they could lend money would be a good deep well of pure water, for unless the health of a community is conserved, that community as a risk in the way of lending money, is rather a small proposition.

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artificial means. In the case of a dug well, or a developed spring, it is a reservoir excavated in the ground water horizon. This reservoir usually consists of a wooden tub two or three feet in diameter by as many feet deep. A well of this kind sunk upon relatively low ground and in a coarse water-bearing sand or gravel, will be satisfactory from the standpoint of capacity, but is the most liable to become contaminated of any of the classes of wells.

Two of the principal difficulties with this form of well are that it does not penetrate far enough below the natural surface of the water and that the water-bearing material is altogether too fine to allow the necessary quantity of water to pass through the small area at the bottom of the tub without drawing fine sand along with it. The tub is not deep enough for the reason that as soon as we begin to pump a well, the surface of the water within the well begins to lower, and, if pumping is continued long enough, it will reach the bottom of the tub, unless the sand is coarse. This may not be plain to some of you, but, if you will go back to the principle that water will always seek its level and that a river flows down its valley because there is a difference in level you will have the principle which governs the flow of water into a well. If there is no difference in level between the water in the well and that outside in the sand beds there can be no flow. The tub, therefore, should be sunk deep enough so that the water surface in the well can lower several feet and still leave a little water in the bottom to cover the suction of the pump.

The other difficulty mentioned can be overcome by driving well points in the bottom of the tub, or a steel cylinder, or a pipe can be sunk several feet below the bottom of the tub, then fill it with coarse sand or fine gravel and withdraw the metal. This will furnish a much larger surface through which the water can percolate into the bottom of the well.

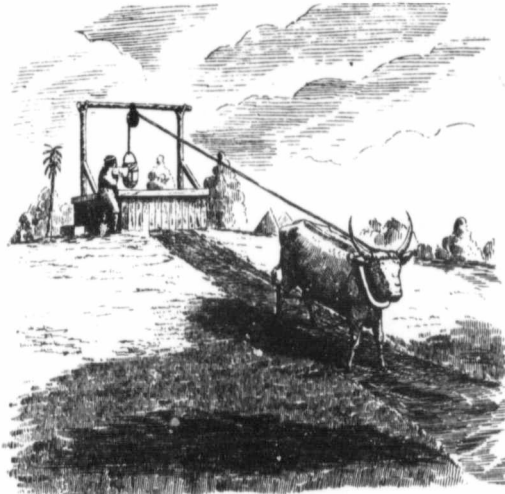
To show the great effect of the size of the sand grains upon the amount of water that can be obtained from a sand bed, a sand that will pass a sieve with forty meshes to the inch will allow twenty-five times as much water to flow through it in a given time as a sand that will pass a hundred mesh sieve. The porosity of the sand or gravel also has a great effect on the amount of water that can be obtained from a given sand bed. A sand having forty per cent. porosity will pass two and one-half times as much water as one having thirty per cent. porosity. By porosity is meant vacant space between the sand grains.

These statements may seem to you a little theoretical and out of place, but I am stating them to impress you with the necessity of sinking your wells into a proper kind of material, and if this is im-

possible, then to get the proper material artificially.

All wells, and especially is this true for those sunk in sand or gravel formation, should be located on relatively low ground. Don't put your wells on a hill. It is the first place to dry up on the surface and it is the place where the ground water lowers

until a porous stratum of sand or gravel is reached, and then insert into the same a large well screen several feet long with its top so arranged that when the main casing is pulled up it will form a tight joint with the upper surface of the shoe on this casing. If this cannot be done, then fill casing with fine gravel, etc.

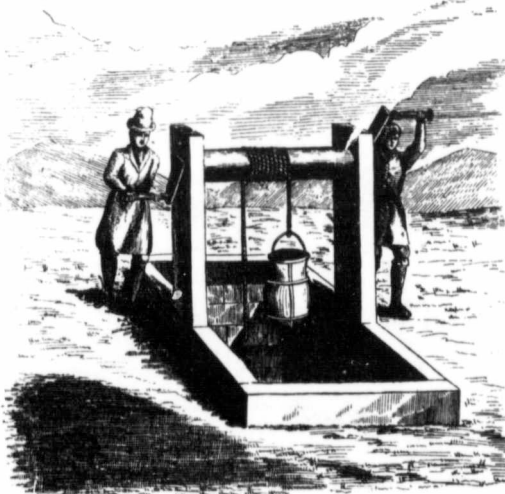


Indian Method of Drawing Water.

the quickest and fastest in time of drought. In the valley, where the ground water is flowing in from every side, is the place for the well.

The objections stated regarding a dug well will apply equally as well to a drilled well where the same does not reach rock. Here the hole through which the water can come into the well is so small

Wells of this type are used in sand beds, and besides being very satisfactory as to the quantity of water obtained from them, they are very well protected from a sanitary point of view. In cases where the pipe cannot be pulled back, as I have suggested, a smaller casing can be inserted so as to remove the material to a depth of six or eight feet, then insert



The Old Windlass Hoist.

that, if the well is pumped for any considerable length of time at a rapid rate the velocity through this small hole is so great that the fine sand is pulled right up into the casing, thereby decreasing the supply of water. The best way to fix a drilled well of this kind, where it is not too deep, is to sink the casing down

the point or gravel and remove the smaller casing. This, of course, would involve considerable additional expense, but would make a much more satisfactory well.

The other type of well in sand and gravel formations, which often causes a good deal of trouble, is the driven well, and the prin-

cipal reasons for this are that no knowledge is had whatever of the character or size of the material through which the well is being driven. The gauze on the point is often stripped off, and in other cases, where it is not, it passes through such fine material as to clog up the screen and thus prevent the flow of any water into it. A much more satisfactory way would be to first sink an open end casing and determine the character of the material, then, when a good porous stratum was found containing water, the well could be driven to this depth and thus insure a good supply. Besides insuring a greater abundance of water, it is a matter of economy that the water should flow into a well freely, because if it is necessary to lower the water many feet to supply the pump, or produce a high vacuum on a well point to get enough water, it takes power to lift the water the additional height or produce the high vacuum. This extra work is an important item when the wind won't blow, or gasoline is twenty-five cents per gallon when an engine is used.

It often happens that a farmer is blessed with having a spring upon his farm, but it may not furnish a sufficient quantity of water, or is located so that he cannot get at it to use the water. However, this spring with a very little work can be made to be of great value. The flow can be greatly increased by excavating at the vicinity of the spring and removing the vegetable matter, which in many cases overlies the formation which supplies the water. In cases where the flow is very meagre, a tub or small reservoir could be sunk down to the sand beds, or at least down through several feet of the overlying muck, and well points driven into the bottom of the same until the sand beds were reached. In cases where the flow comes from rock, it will often be increased by removing several of the surface layers of rock, or excavating a pit down into the rock in the vicinity of where the water appears. This will give some storage and additional surface for the water to percolate through.

The other main class of wells which are important to the farmer are the deep and artesian wells. The name artesian is commonly applied to wells that flow at the surface of the ground, but it is equally applicable to deep wells that derive their flow from a stratum in which the water is under pressure, that is, the conditions are such that, when the water-bearing stratum is pierced by a drill-hole, the water will rise above the upper surface of the water-bearing material. The only difference between a non-flowing deep well and a flowing well is a difference in the relative elevation of the surface of the ground at the well.

The name "artesian" was derived from the province of Artois in France, where, in the year 1800, wells of this class were first

put down. The essential conditions for the existence of artesian wells is a relatively porous stratum to receive and transmit the water lying between two strata that are relatively less porous but not necessarily impervious. An inclined stratum of sandstone with an upturned edge lying between the two layers of limestone or shale furnish this condition. The stratum must be inclined, or its edge turned up as an outcrop to furnish an area for the collection of the rain water and the outcrop must be at a greater elevation than the water-bearing stratum at the well, in order to supply the necessary pressure for a flow to take place through the stratum. There must be sufficient rainfall to soak into the stratum and to keep all of the pores well filled with water. Many other qualifying conditions affect the quantity of the flow or the pressure, but they will not be discussed here.

If the formations which are essential to the production of these wells are wanting, no amount of drilling will bring the water to the surface of the ground. There is, of course, usually some water in most all rock formations, especially if they lie below the zone of permanent saturation due to the artesian head of water below, and in a great many cases regardless of the character of the rock, a supply of water can be obtained that would be sufficient for a small farm, but would not be sufficient for a factory, creamery, village or city supply.

A well drilled in granite to a depth of thirty feet was pumped at a rate of .3 of a gallon per minute and was dry in ten minutes. At the same location a well screen in medium coarse sand furnished three-fourths of a gallon of water per minute for each square foot of screen surface, and the water was lowered one foot by pumping. To make that a little more definite to you, will say if the screen had ten square feet of surface on the same and we lowered the water 8 feet, we could obtain sixty gallons per minute from such a well. Wells drilled in sandstone will yield from .3 to .5 gallons of water per foot of depth drilled into the sandstone from every foot that the water is lowered in the well by pumping, that is to say, if there was one hundred feet of sandstone in the well and the water was lowered ten feet due to pumping, we could obtain from such a well three hundred to five hundred gallons per minute. From this data you can readily see for farm use it is only necessary to drill into a water-bearing sandstone but a short distance in the majority of cases. As to the amount of water that is needed upon the farm, I am unable to give you but very little informa-

tion, and this, as a rule, is not a vital point, because, if a well is fixed in the proper way, as I have above indicated, and is equipped with the ordinary pump having a cylinder two or three inches in diameter with the ordinary stroke of six to twelve inches it will more than supply all the water that is needed on the average farm. There are, of course, exceptional cases where large quantities are wanted for a big herd and for cooling purposes in the dairy, where it would be necessary to make some more careful computations. This would be particularly true where the surface rock was the granite or quartzite and there were no sand or gravel foundations to draw from.

In all cases, whether the supply for the farm is from a well, spring or brook, it should be well protected as to its surroundings. No garbage or other pollutions of any kind should be allowed around the supply. Especially is this true of the dug well, or any supply which does not have a

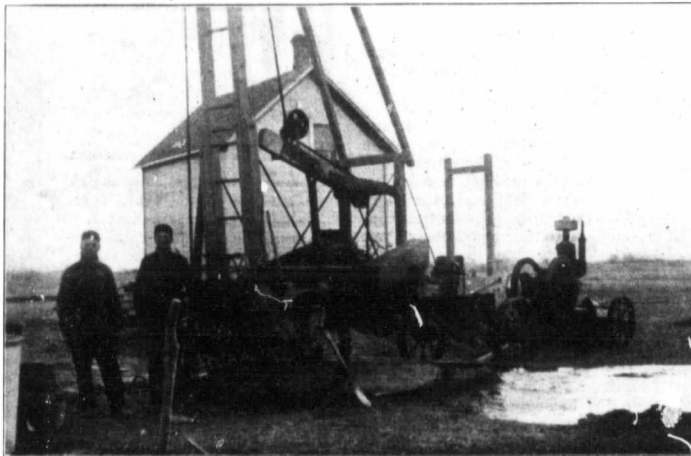
are usually the hardest. The hardness of waters also increases with the depth of the water-bearing formation below the surface of the earth.

At the present time the ordinary shallow dug well is by far in most general use in most of the sections of the West and careful estimates and observation show that this type of well is most susceptible to contamination. The cause is not far to seek. It has been found that bacteria are plentiful only near the surface of the soil; four or five feet down there are but few bacteria in the ground; and soil ten or twelve feet below the surface is perfectly sterile, unless it has within it a crevice or opening so that surface sewage can run down. The great majority of farm dooryards and barnyards are without any, or, at least, adequate means of sewage disposal; all liquid refuse from the cesspool, etc., is permitted to permeate the surrounding soil; organic waste matter from the stable and outdoor closet leeches into the soil and is carried

and pollution have so far advanced as to be evident to the taste or smell.

It is possible, of course, to locate and construct a dug well that it will be practically safe; but this necessitates ideal topographical conditions and continued care and attention. The main things are to locate the well on high ground, where the drainage is towards the buildings instead of from them; to construct and maintain a casing of stone, brick, cement or wood that will be absolutely impervious to the entrance of foreign material from the sides; to bank up the top above the general level and place a covering that will prevent the entrance of undesirable matter from the surface; and to use a pump instead of the old-fashioned bucket and chain. Even then, there is always the possibility of the underground supply being contaminated by percolation from a distance.

The one general type to use is the deep, iron-cased well. Whether it be bored, drilled or driven, if deep enough and if the casing is durable and water-tight, it will be safe. The drilled well most nearly approaches these conditions. This well penetrates the lower rock strata and receives the underground streams that purify themselves by filtration. There is a possibility that the water may become polluted from distant sources, but this possibility is very remote in country sections. The water as touched by the well is almost invariably pure, wholesome and free from bacteria. If the casing is watertight and surface water prevented from gaining entrance into the top connections of the pipe, it is practically impossible to contaminate the water from outside



Drilling with a Stieckey Gas Engine (Courtesy, Armstrong, Quam Co.)

considerable flow, such as a brook or river. Around the well should be placed a good, substantial platform, with the ground draining away from the same in all directions, and the well stoned or cemented up. No waterclosets should be placed less than one hundred feet from the well and farther away would be much better. Where the surface formations are clay or creviced rock, the worse conditions exist for the contamination of the supply. If the surface soil is sand, the danger from contamination is not so great.

From the standpoint of chemical contents of waters will say the waters obtained from sand and gravel beds and those from the sandstone in an area where there is little limestone present are the softest and contain the least amount of other chemicals which discolor objects or form deposits in pipes or in utensils. The waters from limestone formations, or from areas where these rocks are the surface formation,

into solution or in precipitation to every surrounding point. The surface soil thus becomes filled with disease and poison producing bacteria. Consequently, a shallow well in which the water comes in contact with this polluted surface soil, or in which the surface washings can gain entrance, is the well that yields a contaminated water supply.

For these reasons the shallow dug well fails in its purpose. The area of the surface opening, usually with little protection, offers every inducement for the direct admittance of impure material from the surface, and the many little openings in the ground permit it to penetrate downward and affect the underground supply. Unless carefully protected, all manner of creeping and crawling vermin, rats, mice, and even the smaller domestic and wild animals, often find their graves in these unsanitary wells. This is evident when the periodic cleaning of the well takes place, which occurs only when the putrefaction

sources. Drilled wells very frequently have well pits, from 8 to 12 ft. deep and 3 to 4 ft. in diameter, which are sunk around the shaft, either before or after drilling, for the purpose of protecting parts of the pumping apparatus from frost. If not tightly covered, these may serve as a prominent factor in the pollution of a well, serving as catch basins for polluted water of recent surface origin. Modern well drillers, however, usually take all precautions that will remove such possibilities.

One important point to remember is that the physical condition of water does not always determine its purity. A good water should be free to taste, odor and color; but a water may fulfill these conditions and still be contaminated with bacteria. To be definitely certain of the purity or impurity of a well, a sample should be subjected to a chemical and bacteriological analysis. However, if a small sample of

Continued on page 54

The Economical Aspect of the Rural Telephone

In March 1876 Alexander Graham Bell patented the telephone. The patenting, however, amounted to very little for it took two years of hard work to convince the people that his invention was anything better than a toy. The first switch board in the world was installed at New Haven, Conn., January 25, 1878. It was made out of a packing box and brass strips. This gives some idea of how very rapidly this great invention has been developed. When North America awoke to the importance of the telephone every city from coast to coast wanted a telephone exchange. Considering the crudity of the telephone art at that time the problem of filling this demand must have been appalling. Here was an engineering problem, which is to-day conceded as the most difficult and complex in elec-



Winter has no terrors for the farmer whose home is equipped with a telephone.

trical science, confronting a company which could not find men to solve it. There were no telephone engineers because there had been no such thing as a telephone.

But the work had to be done. The only way to learn how to do it was to learn by doing. So one year they began with an apparatus as crude as you and I would make if someone told us to go out and build a telephone exchange to-day. Next year something better was discovered, and all the work of the previous year had to be torn out and thrown on the dump.

Thus the great art of modern telephony was acquired—experiments were tried and the telephone by a process of experiments tried, and they in turn discarded and superceded by something still newer and better. To augment the difficulty hundreds of cities, towns and villages were earnestly demanding service. While the evolution of the telephone by process of experimentation was going on, necessarily at the expense and inconvenience of the users, the character

of the service and the cost to the subscriber, can easily be appreciated.

In less than twenty years the sum of the experiments had resulted in the standardized and perfected equipment; at the same time exchanges had been established at practically every important point, connecting hundreds of thousands of subscribers. Long distance telephones across the continent had become an achieved fact. When the apparatus was perfected of course the service was vastly improved. When it became standardized and could be used for the full term of its durability, the price naturally was greatly reduced. Thus with the inducement of improved service and lower prices and with completely equipped plants to manufacture the apparatus in unlimited quantities, the possibility for the growth of the business became at once apparent. Hundreds of thousands of telephones were installed in the course of the next decade.

The Bell Telephone Company which was the parent company and which is the largest one in existence to-day, grew from 600,000 stations in 1909 to 5,000,000 stations in 1910. Until about 1905 the entire growth was confined to cities and towns; but after completing the service at urban points attention was directed to the rural sections, and here began one of the most remarkable epochs in the history of telephone development.

In less than five years over a million telephones were installed in the homes of farmers. About this time the farmer began to take hold of the telephone proposition himself and thousands of independent rural lines were established. In the districts where timber was plentiful it was an easy matter for him to get the telephone poles on his own farm and to build a rural line at a very small cost to himself and to his neighbors. It is a fact that the farmer has spent more money for the rural telephone than he has for any other one invention in the same length of time. A great many of these rural telephone lines were bought up by the larger companies, as it became difficult for the farmer to secure long distance connection. But if we travel over the country to-day, especially on the other side of the line, we will still see thousands of these little rural telephone lines in use. They have saved the far-

mers millions of dollars in ways too numerous to mention. They have created a spirit of satisfaction on the farm that has turned thousands of young men countryward rather than towards the large industrial points. Go into hundreds of thousands of our farm homes to-day and the ring of the telephone is a familiar sound.

The value of telephone service to the farmer needs no further comment. Instances without number might be given from actual circumstances where the



The family are safe with a telephone.

telephone by a single call has paid for itself many times over. There is, however, a certain aspect to the importance of the rural telephone—the cause of the farmer which has not been duly emphasized. It is its influence upon the economical conditions of rural life.

It has often been said in reference to agricultural organization that you cannot get the farmers to pull together. The "Farmers' Alliance" is said to have failed for that reason. Attempts have been made to organize the farmers in certain localities to hold out against low prices for produce and not sell their crops until they could get a certain price. The failure of this plan in practice might be partly due to the fact that a farmer is compelled in some instances to sell his crops almost at any price to get money for urgent necessities, yet it is absurd to say that a majority of the farmers are in this condition. The chief reason that it has always been impossible to organize the farmers effectually is simply because of the isolation of the individual members. In order to get men to act together it requires not only a leader, but the leader must be in almost constant touch with his constituents in order to hold them together by the strength of

his purpose, the clarity of his reasoning and the magnetism of his enthusiasm. It is easy enough to keep men in line when you are present with them, the time they get away from you is when they are alone with their thoughts and nobody present to answer the little whys and wherefores of the doubting mind. A good complete rural telephone exchange binds the people of a community together as effectually as if they were in the same village. No matter where the isolated farmer lives, nor how impassable the winter storm may render the lonely lane leading to his home, the telephone keeps him in touch with a hundred friends. There are few people who realize it, but the rural telephone is uniting the farmers in an organization as compact as that of any social or commercial organization in our cities.

Another thing the rural telephone is doing is keeping the farmer's son and farmer's daughter on the farm. By destroying the isolation of farm life it is making the home attractive to the younger people. Young men are fitting themselves at the agricultural college for a life on the farm, for life on the farm has become as congenial as life in the city. Bright young women are marrying these men, and their children will represent a still higher strata of intelligence for the future progress of the farmer.

And again, the rural telephone has made a distinct change in the



What is the price of wheat? The telephone knows. farmer's business methods. By keeping the farmer in constant touch with his markets the rural telephone is said to have increased the farmer's annual income five per cent. To-day, instead of asking the merchant to buy, the farmer can wait until the merchant asks him to sell. In other words he does not load his produce on the market wagon by guess and when he gets to town with his load place himself at the mercy of the buyer. Nor does he have to take the word of the itinerate buyer as to price and demand. His long distance rural phone renders the markets of the state available at a few moments' notice. The in-

Continued on page 10



Saskatchewan as a Field for Dry Farming Operations

Paper Read by Honorable W. R. Motherwell, Minister of Agriculture for Saskatchewan, before The Fifth Dry Farming Congress, at Spokane, Washington, October 1910.

Whether or not the term "dry farming" has come to stay, is immaterial, but the fundamental principles that underlie this system of farming will endure forever, with, of course, such variation in detail as location and the evolution of time may warrant.

Some sensitive people dislike the term "dry farming" on the ground that it is a reflection on their country and an admission to the world at large that their district is subject to drought. Admitting that this is correct, is it not better to face the situation boldly and prepare for it on the principle that "for warned is forearmed" and that nothing in the end is gained by pretending to have what you have not. The meteorological records of Saskatchewan go to show that we have an average annual precipitation of about seventeen inches, and there is no getting away from the fact that this is usually looked upon in more humid countries as only about one-half the amount necessary to grow profitable crops. Thus the climate of Saskatchewan is sufficiently dry that until a few years ago it was thought to be impossible to grow cereal crops in the greater portion thereof. Intelligent tillage methods, however, timely applied, have demonstrated in every district that crops can be grown with very much less precipitation than was supposed, provided the moisture is systematically and economically taken care of. As a matter of fact the dryness of our seasons is, in one sense, our salvation, as reasonable drought is essential in most districts to ensure the maturity and saving of cereal crops in our ordinary short growing seasons. But a dry climate to be a blessing must be prepared for, otherwise it will blight and disappoint the hopes of the husbandman.

Since dry farming has become a popular term, and its principles recognised as scientific, many critics have claimed that this method involves nothing more nor less than the methods that our fathers followed in Eastern or other climes, known as good farming. While it is admitted that dry farming is good farming, it cannot, however, be claimed that good farming is necessarily dry farming. Good farming in some countries may consist among other things of getting rid of superfluous moisture, while dry farming, among other things always involves economising nature's water supply. In all semi-arid regions the besetting hindrance to successful farming is drought, consequently the basic principles underlying dry farming must and do imply a system of scientific and timely tillage, such as will best

offset the dangers of scanty precipitation—in other words we must accomplish in the growing of crops with an average annual precipitation of seventeen inches, what more humid countries accomplish with a much more generous rainfall.

How It Is To Be Gone About:

In the pioneer days of Saskatchewan, scores and hundreds of settlers left the country believing that no solution of this problem was within the realm of probability, but, as has often previously proven the case "necessity was the mother of invention" and the sturdy pioneer farmers of those days, assisted by the experimental farms and the agricultural press, demonstrated very clearly that our strong retentive heavy clay soil was capable of producing good crops with very much less, even, than seventeen inches of annual precipitation. While this is true, it must be admitted that this could not be done year after year in succession without stopping at varying intervals of three or more years and storing up moisture under a system of approved and improved modern summer tillage (commonly called summer-fallow) that will be alluded to later.

Some writers have undertaken to lay down a hard and fast rule with regard to the best method of tillage to pursue under semi-arid conditions, but so far as Saskatchewan is concerned such rigidity applied to our varying soils, altitudes, exposures, precipitation, and climatic conditions, would only lead to loss and disappointment. Variations in method must and can be pursued without departing from principles, and herein lies the importance of every farmer understanding something of the science of soil physics in order to have the ability to prescribe such crops and tillage methods as will meet the requirements of his particular farm, just as a physician prescribes to suit the individuality of his patient.

The following features usually identified with dry farming where longer and warmer seasons prevail than in Saskatchewan, and considered by some to be fundamental, should be carefully noted as to their applicability where fat lands and shorter growing seasons are the general rule:

First.—Summer-fallowing at intervals of every third year, or thereabout.

Second.—Deep ploughing.

Third.—Deep sowing.

Fourth.—Thin sowing.

An examination of these points in some detail might be profitable at this time.

Summer-fallowing:

The modern summer-fallow was introduced into Saskatchewan over twenty-five years ago, not for the purpose of renewing a worn-out soil, as was once commonly thought, but for the purpose of getting the soil into the best condition to absorb moisture and then holding it there for the use of succeeding crops. Thus the shortage in each year's precipitation was overcome, and full crops insured. In order to do this thoroughly and most effectively in Saskatchewan, it was found that the land intended for fallow after receiving some form of fall tillage should be ploughed as early as possible in the spring after seeding that it might be in the most receptive condition to fully absorb and save from waste all the early and later rains. This should be immediately followed by surface tillage to put the necessary non-conducting soil mulch on the top to intercept capillary movement and prevent loss of moisture by evaporation. By this system the soil, if thoroughly and intelligently handled, will be found moist to a depth of five or six feet, and a sufficient reserve of moisture for the growing of at least two successive crops is secured, even though drought should occur. This system was practised for many years, and is to a large extent in vogue yet. In the annual report of the Indian Head Experimental Farm as long ago as 1889, Superintendent MacKay in speaking of the best tillage methods to pursue in the then North-West Territories, says, in part, as follows:—

"Our seasons point to only one way in which we can in all years expect to reap something. It is quite within the bounds of probability that some other and perhaps more successful method may be found, but at present I submit that fallowing the land is the best preparation to ensure a crop. Fallowing land in this country is not required for the purpose of renovating it, as is the case with worn-out lands in the East, and it is a question yet unsettled how much the fallows should be worked, but as we have only one wet season during the year, it is found beyond doubt that the land must be ploughed the first time before this wet season is over if we expect to reap a crop the following year. Land ploughed after July is of no use whatever unless there is rain in August, which very seldom comes to any great extent. A good harrowing should succeed the ploughing, and all weeds or volunteer grain should be kept down by successive cultivation. Above all it is of the greatest importance that

the first ploughing should be deep and done in time to receive the June or July rains."

Thus it will be seen that the more important foundation principles of dry farming were understood and practiced in Saskatchewan years ago, although much improved upon since. But with the passing of time, cheap land, root fibre and humus, many advanced and thinking farmers are now searching for a more economic, permanent, and less extravagant system of farming. The profitable returns under this method have caused land values to increase so rapidly that it now seems a waste of capital to have one-third the tillable acreage idle each year. Furthermore, this system, while restoring nothing to the soil, rapidly dissipates its humus, and thus, as the years go by, reduces its capacity to absorb and retain moisture. While summer-fallowing is recognized yet as the very foundation stone of successful agriculture in Saskatchewan, still it can, and will, I believe, be supplemented by other intelligent tillage methods which will lengthen the time between fallowing seasons and obviate the necessity of such a large acreage being idle each year. If the care that is put on summer fallow to conserve moisture, be followed up in each succeeding year by all discing immediately the harvest has been taken off, and by a more generous use of the diamond harrow at every available opportunity—even in many cases after the grain is up in the spring, and by packing, the reserve of moisture in the fallow could be made to extend over a longer period than two years. Instead of summer-fallowing a quarter section five inches deep every third year, would it not be more economical to fallow one-half that amount say ten inches deep, thus assuredly storing up a much larger amount of moisture and extending its benefits over a longer term of years. The more frequent use of the disc and drag harrow before referred to, would not only help to control evaporation, but also kill innumerable weeds that frequently prove such a continual drain on the soil moisture. To plough ten inches deep could only be advantageously done in Saskatchewan by sub-soiling, and this will be referred to under the next heading.

Deep Ploughing:

Too much indiscriminate advice to plough deeply under all circumstances in Saskatchewan would be unwise and misleading, and must meet with disappointing results; but that all clay soils should be stirred deeply at least after being broken up,

is becoming more and more apparent. Deep ploughing to increase the soil's capacity to store moisture at intervals of say ten or twelve years, to be followed by shallow ploughing or surface tillage in intervening years to hasten early maturity, is now thought to be the ideal method in many localities. The danger of too frequent deep ploughing is obvious. Should it be followed by a dropping season the growth of straw will be too rank, and maturity retarded, which tends to run the crop into the period of early fall frosts before harvesting is completed. Nevertheless deep tillage is necessary to provide against drought particularly, and will be accompanied by the risk of slow maturity only in the first succeeding crop. This risk could be off-set by special attention to packing and growing for the first year crop suited to such a condition of soil. During the subsequent eight or ten years the land should be ploughed to a normal depth of say four to five inches, which will tend to hasten maturing and yet provide a satisfactory seed-bed. I believe that sub-soiling will in time become a recognized necessity, particularly in our heavy clay soils that are, under shallow tillage, comparatively impervious to moisture. Under present conditions a great deal of the copious rainfall of June and early July runs off into adjoining sloughs, creeks, and coulees, and is lost, whereas if sub-soiling had been performed even once this excess of rain would freely percolate into the soil as it fell and remain there in reserve to be drawn upon during a period of subsequent possible drought. This is one way whereby all of us can assist in conserving one of the most important natural resources of our semi-arid open plains—the rain and snow fall.

Sow Deeply:

We do not know who is responsible for teaching the agricultural heresy that sowing deeply insures the crop against drought. The argument implies that a shallow rooting plant can be converted into a deep rooting one simply by planting deeply. But anyone who has given any attention to cereal growth must have noticed that any of the small grains, if planted in a moist soil deeper than about two and one-half inches will, immediately upon showing the surface growth, assert its shallow growing tendencies by throwing out a new set of rootlets about one and one-half or two inches below the surface, or immediately below the moisture line. Thus with us it is a mistake to sow too deeply with the idea that such a practice assist in resisting drought. In addition too, this too deep sowing has other serious disadvantages, such as delayed germination, disposition to smut, tardy maturity, and a weakened vitality of the plant generally.

Sow Thinly:

All the best thinkers in the dry farming world claim that better results can be secured from moderately thin sowing than from thicker sowing. The usual reasoning of those who support thick sowing as being best in dry countries, is that it will produce a heavy thick foliage, which by quickly and thoroughly shading the ground economises and conserves much moisture. But a little inquiry into this popular fallacy will soon dispel it. Recognizing that the moisture supply is our limiting factor in crop production, with a given amount in a cubic yard of land it is obvious that, say fifty plants, will exhaust that moisture more quickly than a less number would do, as each plant is a miniature suction pump continually drawing upon the soil moisture and evaporating it through its leaves. This process is accelerated by the dry winds which sometimes blow during the hot summer. Given, however, a good reserve of moisture in the land and a reasonable number of plants thereon, the ill-effects of such drying winds are not only averted but turned to good account by stimulating rapid maturity. Were the cubic yard of soil in question loaded with one hundred plants instead of fifty it is evident that its moisture would be exhausted in about half the time, and that the supply would be insufficient to meet the heavy demands made upon it during a period of drying winds and excessive evaporation. On the other hand if the cubic yard of soil has been deeply worked in a district where the soil is peculiarly retentive of moisture, and precipitation is unusually generous, too thin sowing would induce excessive stooling and correspondingly delayed maturity, both of which must be avoided in Saskatchewan.

What then should govern us in the amount to sow? If our previous reasoning is correct, that thick sowing is likely to be more susceptible to damage by drought, while too thin sowing runs one into danger of frost, this is a question in the solving of which the tiller of the soil will require to exercise sound judgment, based upon local conditions. As much discretion as would be used in loading a team for a trip to market should be exercised in determining the amount of seed to be sown on an acre of land, for as many factors enter into the question. Just as the weight, condition, and temperament of the team, the nature of the load and the condition of the wagon, the character of the trail, its present condition; its length, and the weather on the day in question, all enter into the decision as to what load shall be hauled, so the mechanical condition of the field, its probable reserve of moisture, the stage to which the season has advanced, the presence or

absence of weeds, and the variety of seed being used, are among the factors that must be considered by the careful farmer when he is determining the quantity of seed he will sow to the acre. In short, land should be sown according to its knot capacity to carry a large or small crop. Experience has demonstrated that in Saskatchewan the quantity of wheat to be sown per acre should vary from three pecks to two bushels.

In Saskatchewan the season just closed has given ample and profitable opportunities to study the system of dry farming practised here as against the methods of newer settlers who have brought their old-time practices with them, and who invariably let go old methods with a great deal of natural reluctance. While the eastern half of Saskatchewan, being that portion east of the third meridian, certainly had slightly more precipitation than the western half this season (15 and 11 inches respectively) that fact in itself does not account for the marked difference in the crops in these respective areas. A great portion of eastern Saskatchewan has been settled for from ten to twenty-five years, and farmers located therein are familiar with the best methods of tillage necessary to secure the best results under semi-arid conditions. In the western and newer portion, however, large tracts of land have recently been taken up by settlers unfamiliar with such conditions, or possibly insufficiently equipped with the result that such have experienced some loss and disappointment during the summer of 1910, and yet ample rain fell practically throughout the whole province to give profitable and satisfactory results, had the principles underlying dry farming been understood and carried into effect. Saskatchewan, however, as a whole has a magnificent crop, even with the dry season it has just passed through. Where approved methods of tillage have been practised the results have been most gratifying—the yield in many localities running from twenty-five to forty bushels of wheat to the acre, while the provincial average on acreage sown will not exceed approximately fifteen bushels. Had the principles of scientific farming been observed throughout the whole province it is believed that the total yield of wheat for this season instead of being approximately seventy millions would have bordered around the one hundred million mark. But the newer settlers are not discouraged by any means as they see what has been accomplished by the occasional experienced settler, one or more of whom is to be found in almost every new locality. With such innumerable illustrations to be found on all sides in Saskatchewan during 1910 of the imperative necessity of employing dry farming meth-

ods of best and most satisfactory results are to be obtained, it is confidently expected that the cause of scientific soil culture will be given such an impetus that it will be only a matter of a few years until practically all, will accept this teachings.

In the foregoing I have dealt with some of the dry farming teachings which, while doubtless applicable to more southern climes, have in practice been found to require modification to suit conditions in Saskatchewan.

In the short address that I was privileged to make before this Congress last year, the importance of early ploughing, subsequent thorough top tillage, and a firm seed-bed, was dwelt upon and this has been purposely omitted on this occasion. If it should be my fortune to again appear before this world-wide convention, I shall endeavor to give some of the reasons why the various mechanical operations usually practised under dry farming methods, while simple in themselves, invariably give such surprising and gratifying results.

The Economical Aspect of the Rural Telephone.

Continued from page 8

Increased income made possible by the rural telephone is giving the farmer more money to put back into the improvement of his farm and into the comforts of his home. The result will be a better farm and a happier and better farmer's family in the next ten years.

Furthermore, the rural telephone is an insurance against all dangers due to isolation. Fire, sickness, marauders and accident might ravage any unprotected lonely home, but the telephone places every neighbor in the community immediately available in case of danger. Evil doers are wary of the telephone-protected community, for in a minute news can be flashed miles in every direction, and chances for escape successfully cut off. This feeling of security which the telephone gives to the farmer's womenfolk makes a happier, healthier household. And the opportunity that it gives the farmer's wife to kill the monotony of her daily life by calling up anyone of a dozen neighbors at a moment's notice renders her daily life brighter and happier. Good cheer and happiness is conducive to health, the result is a brighter and happier home, and one where ideals and ambitions are bigger and better in every way. Supposing the son or daughter is away to a distant city visiting or in school, the long-distance telephone puts them as closely in touch as if they were at the next farm home. While it may never be used for this purpose, yet the long-distance possibility is a wonderful source of comfort and security.

These are all facts which go toward making the rural telephone the radical revolutionizer of modern farm life.

J. I. CASE ENGINE GANG

WON OVER FIVE COMPETITORS



FOR DESCRIPTIVE CIRCULAR, WRITE

CANADIAN SALES AGENTS

THE HARMER IMPT. CO.,
WINNIPEG, MANITOBA

MANUFACTURERS

J. I. CASE PLOW WORKS
RACINE, WISCONSIN

At the Hutchinson, Kansas, State Fair, eight Engine Gang Plows were exhibited. Six of these, including the **J. I. CASE**, entered a plow contest. Result—a unanimous decision by ten judges that the **J. I. CASE is the Best.** This is what they say:

"We the undersigned witnessed the work done by the Engine Gang Plows at the State Fair at Hutchinson, Kansas, on September 14th and 15th. The four-bottom **J. I. CASE** Engine Gang did better work than any other plow in the field. It also laid the dirt over smoothly and covered all trash while the others left the dirt in ridges and did not cover the trash. This four-bottom plow did more work in the same length of time than any other plow in the field, although all of them had from six to twelve bottoms."

Signed by ten men whose names will be given on request.

"Magnet" Cream Separator Warehouse In Winnipeg.

The Petrie Mfg. Co., Limited, Hamilton, have completed and are moving into their large and finely constructed warehouse on Henry Avenue, in this city.

The building was designed by Capt. Peters, Architect of this City, and it certainly reflects credit on his ability. The contractors were Messrs. Carter-Halls—Aldinger Co., Limited, who have carried out the design, making it one of the very finest warehouses in the city.

The building is exceptionally well situated, being on Henry Avenue at the foot of Tecumseh Street, just one block north of Logan Avenue, and right in one of the most desirable positions in the city.

The Petrie Mfg. Co., Limited, manufacture the Canadian Cream Separator the "MAGNET," which has been successfully introduced into every Province in the Dominion.

The great success that has attended this machine has been on account of its strong and durable square gear construction, its easy operation and perfect skimming.

The invention by this Company of the famous one-piece skimmer, so easy to wash, only from three to five minutes required to wash all parts, has quite revolutionized the Cream Separator business.

The progress made in introducing this machine has been rapid, entirely owing to the first class work done by it, the great

saving of labor, and marked increase in the profit of the dairyman.

The Company is permanently locating in each province, building a warehouse on R. R. Spur property for that purpose. They erected a fine building on track property on Rose Street, Regina, in 1909. The warehouse above mentioned just completed in Winnipeg, is to be followed next year by similar buildings in Edmonton and Vancouver, for which purpose track property has been bought in these cities.

The Petrie Mfg. Co., Limited, are Cream Separator specialists, with over twelve years' experience in the manufacture of the "MAGNET," with assets of over three quarters of a million dollars invested in their factory and the various provinces, which is a positive guarantee to every "MAGNET" purchaser that their interests will be fully safe guarded by this company.

A Deaf Telegrapher.

Peter A. Foley, the "lightning taker" of Portland, Maine, is said to be the most wonderful telegrapher in the world. Foley is totally deaf, an affliction which ordinarily would be supposed to make telegraphy an utter impossibility, but since he became deaf Foley has developed what may be called a sixth sense, and by touch and sight he can detect the finest movements of the instrument and correctly interpret them.

His nervous system is a part and parcel of telegraphy, and by the sense of touch in his fingertips he takes messages transmitted from the ends of the continent.

He can also read a message by watching the sounder. With his left forefinger placed lightly on the sounder he can, by his wonderful sense of touch, take a message as accurately as any man in the office. His feat is said to be the most wonderful thing any telegraph operator has ever accomplished.

Mr. Foley insists that he needs no more consideration than any operator, for he can read the fastest transmitting without the slightest difficulty, and his record of mistakes in a year is said to be smaller than that of any other operator in the office.

Mr. Foley's hearing began to fail rapidly eight years ago. He was then considered the best operator in the Portland office and every effort was made to help him. The manager of the office arranged the receiver so it would make a louder tick, but in a short time he was unable to hear even this.

There appeared no alternative but failure. No operator in the world had been able to work after he had lost his hearing. The manager didn't wish to send a good man away, so he was set to doing common work at the same salary he had received as an operator.

One day he announced that he would soon be able to go back to his old position. The manager was dumfounded. That a deaf man could be a telegraph operator was too much to credit. But Mr. Foley was able to prove that he could do it.

He was soon able to read a message merely by watching the sounder. This was not the full extent of his achievement.

By many days and nights of practise he developed such an accurate touch to his finger-tips that he was able to read and receive a message. In a short time his sense of touch and sight restored him to the profession which it had seemed inevitable that he must abandon.

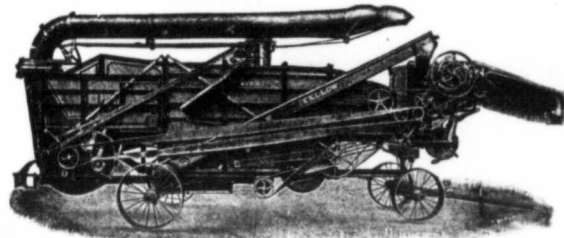
A New Line for Western Canada.

The Janesville Machine Company, Janesville, Wis., has just closed an arrangement with the American Seeding Machine Company of Winnipeg, whereby the latter firm will become their selling agents for Western Canada.

The Janesville Machine Company manufacture an extensive line of plows, harrows and weedeers, which in the hands of the American Seeding Company, should enjoy a profitable trade among the farmers of Western Canada. An advertisement of these goods will appear in a later issue.

You Get all these Improvements

Here are Some of the Things Originated by the Avery Company



Some of the Things Originated and Introduced by the Avery Company in the Avery "Yellow Fellow" Separator

We originated, and were the first to put out, the big tooth called the "Jumbo." This tooth has been made from the start out of razor steel by an original process of forging and tempering, the wearing corner being hardened. No other maker had up to the time of its construction, used the spring washer and hexagon nut, or designed the cylinder so that all the teeth were alike. This saved confusion in keeping a stock of teeth on hand with which to make replacements if ever needed, but it was soon demonstrated that extra teeth were seldom called for to make replacements; horseshoes, wrenches, stay chains, axes, pitchforks, by the dozen, and other pieces of foreign material found their way to these cylinders by accident, and it was discovered that these teeth could not be damaged by these foreign elements. The cost of the cylinder teeth is not much, but the time required to put them in while the machine and the help is standing idle makes it very expensive. And all this great loss of time and enormous expense has been successfully met and done away with in the construction of the Avery cylinder with its superior teeth and construction.

We originated the belt reel which is of great convenience in winding up, unwinding, and taking care of the main belt.

We originated the double belting system from cylinder to crank shaft, the system of belting all of the important functions of the thresher direct, from the cylinder shaft, such as the fan, the shoe, the separating device, and the beater, thereby driving these elements in proper speed relation to each other and giving wider belt surface from the cylinder shaft back.

We originated the system of driving the weigher from the bottom, which we continue to use with great success, thereby eliminating all belts and chains previously employed.

We originated the wind stacker without gears, with the fan located inside of the frame work and driven with a straight open belt direct from the cylinder shaft, said belt provided with a tightener whereby the belt can be adjusted while in operation.

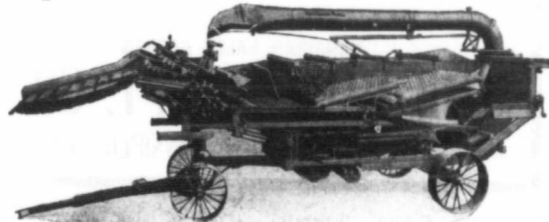
We originated the band cutter and self feeder with reciprocating knives and a governor located on the crank shaft whereby the crank shaft and all of the feeding mechanism, including the carrier, would stop when the speed of the cylinder fell below threshing speed.

We originated and put into practice a method of construction whereby the feeder could be attached securely to the separator and held in position without the use of legs or other device to support it from the ground while threshing.

We originated and put into practice an elevator for returning the tailings from the shoe to the cylinder driven from the tailings auger with the lower sprocket extending the carrier chain below the point of delivery, whereby clogging was prevented, and an opening beyond the delivery spout which permit the tailings to travel over the spout and deliver on the ground in case of the choking of the down spout, and thus prevent choking of the elevator in the head. No other construction had previously been produced possessed of this very desirable feature.

We were the first in the manufacture of separators to introduce the steel axle for carrying the weight of the machine on the trucks. Previous to our introduction of the steel axles, wood axles had been used with the result that numerous break-downs, causing delay and loss of time and money, occurred.

We were the first to introduce in a separator, and have patented, an extendable pole of liberal proportions and so designed that it may be lengthened for horses and shortened when pulling the separator with engine.



We originated and were the first to construct a thresher on the principle of driving the conveyor pan, the separating table, the vibrating tailer and the end shake shoe all from one crank shaft in such a manner as to have the shaking parts counter-balance so that the machine would run so steady that a glass of water could stand all day on the weigher head without losing a drop, except by evaporation, and that too while threshing at a speed fast enough to excite the admiration of the delighted owner and everybody in the neighborhood who had the pleasure of witnessing the machine in operation.

We were the first to originate and put on the separator the cylinder drive pulley filled with compressed paper, and in such a manner as to eliminate all anxiety about the lagging coming loose in the middle of a hot day on a rush job, but, nevertheless, so constructed that after years of wear, replacement can be made in the field at slight expense and little loss of time.

We originated and were the first to put on the market a really successful Belt Guide, and the only one today that carries the belt on the center of the pulley in a high wind, when the engine is several feet out of line.

YOU GET THE MOST FOR YOUR

Other machines may have some of these features—copied from the Avery or prompted by our introduction of them—but no other machine offers you anywhere near all of them—you get them ALL only in an AVERY. This evidence of improvements designed and introduced by the Avery Company will show you that the Avery Company is progressive—that we are pushing ahead—that we are

EVERY COMPANY, 675
HAUG BROTHERS AND
 Canadian Jobbers

Only When You Get an AVERY

That You Get When You Buy an Avery Engine or Separator!

We were the first who adopted that marvellous separating device known as the I.X.L. which hunts around in the straw for the last kernel and gets it, and we have furnished it to our customers because we recognize its merits and know that they will be pleased with it.

We originated the pivoted cylinder box which was possessed of that natural tendency and inclination to get into line in striking comparison with that old stationary type which if ever in line had to be scraped there by a thorough mechanic and then it spent the rest of its days trying to get out of alignment.

We were the first to adopt the use of a rubber feeder web on the Band Cutter and Self Feeder, something that would run noiseless and without much wear, that would take up all the loose grain and deliver it into the machine without wasting a large portion.

We originated and provided a practical adjustment for the rear of the concave holders, as well as the front, which enabled the operator to adjust the concaves for the different kind of grain. The value of this system of adjustment is greatly appreciated by the purchasers and owners of Avery machines.

We introduced and were the first to put into practice the cross rods under the deck of the separator to make the frame work so rigid that it would run through a series of years without twisting and causing the shafting to cramp in the boxes and prematurely wear out.

We were the first to introduce and put on machines the levelling jacks attached to the separator, a great convenience for levelling and holding the front of the machine rigid with the trucks while threshing.

We were the first manufacturers of threshing machinery that ever had the nerve to send out men during the threshing season in the various states where our machines were in operation and make tests for the benefit of our customers, as to the actual amount of waste grain that was going into the straw stack, and then publish a correct report of these tests, after putting out a guarantee that these machines would save over 99.52 per cent of the grain.

We were the first to introduce a fan in the separator provided with bands to equalize the blast on the shoe and overcome the cross currents of air which had previously given the thresherman so much trouble in properly cleaning the grain.

We were the first to encourage the manufacture and to adopt the Cloz & Howard adjustable sieve that would enable the thresherman to change his shoe for the different kinds of grain at the side of the machine, and without stopping.

When you consider all these things it should convince you that the Avery "Yellow Fellow" Separator is without question the most original and improved machine built to-day—and that's the kind of a machine that will make you money and you'll be proud to run.

MONEY BY GETTING AN AVERY

always looking out for and designing better things for the thresherman—and you will realize that in placing your order for an Avery you get the latest and most up-to-date machinery that can be bought.

Write and tell us about what you are thinking of buying and get our prices. Complete catalog sent at once on request.



When You Get an Avery Undermounted Engine You Get the Only Engine on the Market To-day with a Design and Construction Suited to Up-to-date Methods of Threshing and Plowing

The only Undermounted Traction Engine built. The only right design for an engine that is to be used for heavy pulling as well as belt work. All railroad locomotives are built with the Undermounted type of construction. Railroad companies have proven by years of experience that this is the best design of an engine for pulling. Then isn't it reasonable that a Traction Engine that is to be used for heavy pulling such as plowing, grading and other heavy work should also be built Undermounted.

The Top or Boiler Mounted Construction does very well for threshing and ordinary Pulling—we also build such an engine for that class of work—but when a man wants to use an engine for Plowing and such work he ought to have an engine BUILT FOR THE PURPOSE—and not an engine built over from a style never intended at first for anything but belt work and simply built over and called by the name of a Heavy Plowing or Hauling Engine.

Because the Avery Company believed that a man ought to have an engine built to meet the needs of modern work, they designed the Avery Undermounted Engine, for all-around Traction and Belt Work. It is the leader among Traction Engines today. It is a Powerful Puller and will last years longer at heavy work than any other engine. It is guaranteed until worn out against leaky cap screws attaching any brackets to the boiler. This is one of the worst troubles with Topmounted Engines for the boiler is punctured all full of holes for attaching brackets, and the strains of heavy plowing and pulling are constantly causing leaks. The Avery Undermounted Engine is the only engine that will relieve you of all these troubles—it's built to do it, and we back it up by the only guarantee covering leaky cap screws that has ever been made by any company.

You get all this and more when you get an Avery Double Undermounted Engine.

Iowa St., Peoria, Ill., U.S.A.

NELLEMOE CO. LTD.
 Winnipeg, Canada



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. H. HEATH
PRESIDENT AND MANAGER

E. W. HAMILTON
SECRETARY

F. C. BRAY
TREASURER

"Everything begins and ends with the soil."



THIS IS YOUR MAGAZINE AND YOU CAN MAKE IT WHAT YOU WILL

OUR GUARANTEE

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

OUR next issue will be our big Christmas Special, and we are going to give you something real good. There will be the usual filled-to-the-brim-and-overflowing amount of advertising of the cleanest and best that we can secure, and the reading matter will be all kernel, with the shell removed. We have gathered it from the four corners of the earth and if you enjoy the reading of it one half as much as we have enjoyed getting it together for you you will be more than satisfied.

You will receive the publication well in advance of the Christmas holidays and we believe you will find it about the first indication of Christmas good things that you will receive in 1910.

You as a reader of "The Canadian Thresherman and Farmer" have doubtless never before realized that you have more than an ordinary interest in this publication. This is not so true of all publications as it is of this particular one. The reason for it is this. Nobody ever receives our publication without having first paid for it. When you send us in One Dollar for a year's subscription we are under obligations to you to supply you with twelve consecutive issues of this magazine. You may look at it anyway you

choose, but if for any reason we did not supply you with the issues subscribed for we are in duty bound to give you your money back.

You, however, have more of an interest in this paper than a financial one. A publication in Western Canada with only one or two thousand farmers on its subscription list would not be worth a pickayune to anyone. The success of any publication depends very largely upon the law of volume. The more subscribers, the bigger and better the magazine, the larger its advertising clientele, the more profits for the publisher, and in turn an increase in his disposition to spend more money to make a bigger and better paper. No publisher, no matter how much money he may spend, or how clever he may be, can turn out a first-class publication unless the readers give him their hearty and loyal support. It is a case of "In numbers there is strength," and the greater the number of readers that any publication enjoys, the larger and better it will be. That is why we have offered to our readers such extra large inducements to spur them on in their efforts towards getting us more readers.

Have you ever stopped to think that if you, as a reader of The Canadian Thresherman and Farmer, would get us one new subscription and that every other reader would do likewise, that our subscription list would double? Western Canada covers a large area and it would be an impossibility, practically speaking, for us to provide men enough to reach every farmer and induce him to subscribe to our magazine. This magazine, however, goes into practically every post office in Western Canada, some one in that neighborhood having subscribed for it.

We thus reach every community and if our readers will but take a small amount of time to pass the good word along for this magazine we will not only be enabled to double our subscription list, but we will be enabled to treble it and quadruple it, or even multiply it by ten. We do not ask you to do this for nothing, but we reward you handsomely for your efforts and we know that we are going to get results.

Accordingly we have laid our plans for another year largely on future prospects. We would not be warranted in making any such expenditure in an editorial way as we have planned with our present subscription list, but we feel of a certainty that there is going to be a hearty response to our efforts to get subscriptions, and that when the time comes we will have a list of bona-fide, paid up subscribers that will more than warrant us in paying out the money that we have laid out.

Farmers and Thresherman of Western Canada, this is your publication. We cannot exist without you. You know it if you will only stop to think, and so do we, and we will give you just as good a publication as you allow us to give. It rests entirely with you.

Now won't you get out and help us? Just pass the word along. Don't keep all the good things to yourself.

This winter will doubtless see the largest campaign in tariff agitation in Canada that has ever been witnessed in its history. It has resolved into the question of the "Farmers" vs. the "Privileged Class." The great bone of contention seems to be farm implements. Canada has built up within the past ten or fifteen years a few very creditable farm implement manufacturing industries, and there is not the slightest question of a doubt but that the tariff wall has made it much easier for these industries than otherwise.

In building up this tariff wall the Government purposed to have two things in mind; first, that of protecting home industry and secondly, to prevent United States manufacturers from unloading their surplus on to this country without providing for the expense of a suitable distributing organization. The first question is largely a matter of politics. The latter question, however, has more to do than it first appears. We will take for example a threshing machine concern which has no idea of maintaining a selling organization in Canada. In average years the United States is in a position to take care of its entire out-put. We will assume, however, that there is a comparative crop failure in North Dakota and Minnesota and the other border states, but that Canada has in general a fairly good crop. What would be the result? This concern, without contributing a dollar towards Canada's revenue or Canada's financial support, will place a few men in this territory, do a small amount of advertising, sell as many goods as they can and hie away across the line with the money.

We hear much in this day and generation regarding conservation. There is conservation of the soil; there is conservation of natural resources, and why not, to a reasonable extent, conservation of industries? The question is a long one and in so far as the other side of the line is concerned, has been threshed out and discussed on practically every political platform that ever was built. We have had protection and free trade, a tariff for revenue only, etc., etc., discussed time and time again, until it is not so much of a question of what the few want—it matters not which few; but it is a question of what is best for the country at large.

This is a matter for the farmers who are planning to go to Ottawa this winter to seriously consider. The movement itself is a laudable

SUBSCRIPTION RATES

Postage prepaid, Canada and Great Britain, \$1.00 Per Year.

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

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

All subscriptions must be paid for in advance and are positively discontinued at date of expiration unless renewed.

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

Advertising rates furnished on application.

Where the smoke of the Traction Plowing Engine was first seen

The Traction Plowing Engine was originated by Americans. Today, America is the greatest user of traction plows. The work of taming the great Northwest was found years ago to be much too large a proposition for animal power to negotiate. This brought forth the traction plowing engine.

And now, the opening up of new sections of cultivating larger areas and of making old fields produce larger and better crops falls almost exclusively upon the tractor. The M. RUMELY Company was one of the pioneers in the field of traction plowing. Years ago, they recognized that the strains upon the plowing engine were enormous and that only a specially designed engine could possibly withstand them. We, ther, designed the

Rumely Steam Plowing Engine

and constructed it so that "from track to stack" it would withstand any and all conditions and strains met with when plowing.

The RUMELY Steam Plowing Engine is rear mounted, rear axle and counter shaft brackets are one solid piece of wing construction. It is double geared—so the engine pushes itself straight ahead from the rear. This construction entirely does away with the possibilities of vibration, side play or twisting of the counter shaft and sagging or tipping in of the drive wheels.

All gearing made of steel and semi-steel. Shafting and crank shaft are superior to United States Naval Specifications. Gearing, shafting and crank shaft in all RUMELY Plowing Engines are proof against breakage. We guarantee it.

For Authentic Information

Our Farm and Traction Expert, L. W. Ellis, located at the Home Office, will answer any and all questions pertaining to economical methods of

proper equipment for traction plowing. Mr. Ellis was formerly connected with the Government Department of Agriculture.

M. Rumely Co.

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Regina, Sask.



M. Rumely
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Please send me your
Steam Plowing Catalog.

Name _____

Town _____

County _____ State _____

I own _____ acres in _____

Will you do custom plowing? _____

Rumely Branch Houses and Distributing Warehouses are located in the cities shown. This wide organization insures prompt and efficient service in deliveries, etc.

The Advantage of the Farm Machine Upon the Farm

By ROBERT WHITEMAN of the M.A.C.

In this age of continual improvement, we are apt to think lightly about the vast amount of machinery at our disposal, machines which lessen labor, and shorten the time of seeding and harvest. In order to more fully appreciate what the modern machine has done for us, it is necessary to go back over the past, and carefully follow step by step the great line of advancement along these lines. And we wonder as we read early records, how the people of that time ever accomplished what they did with such crude implements. They were men of strong physique, brought about by days of toil from sunrise until sunset, not on a modern self-binder, but with the old-fashioned sickle, bending over in a hot sun, grasping a handful of grain with one hand, while with the other he wielded the sickle. Truly he earned his bread by the sweat of his brow. And we of today sometimes grumble at our work but how easy ours is compared to those early husbandmen.

The early plow consisted of a bent piece of hard wood, sharpened at one end. This was drawn by men, it accomplished what we would consider very poor results, just loosening up the soil and not turning sod over as do our plows. For centuries this plow was the only method of cultivation. After this we read of oxen being used for motive power, the style of plow remained but oxen instead of men were used. Even with such a crude implement good crops were grown, but, of course only in small quantities. The first improvement made on the plow was to cover the point with iron; these were used chiefly by the early Egyptians, it was vastly superior to its predecessor on account of its being lighter to draw and at the same time making a better job. No improvement was made on this form of plow until the Dutch perfected a new model, consisting of a beam, with moldboard and two handles. This form was the forerunner of our modern plow, its work was better than older styles because of the fact that in going through the ground it raised the sod on to the moldboard, turned it over, and deposited it on the ground upside-down. This form of plow was brought over to Yorkshire, England, where in latter years we find some of our noted plowmen. Its importation into England in 1730 was the beginning of a vast series of improvements, and in 1785 the first plow was made with a cast-iron share. Later the same inventor, Robert Ransome, found a way to temper it, giving hardness and durability; also he invented a clevis, enabling the operator to adjust the width and depth of furrow.

To America, however, is due the credit of greatest improvement in farm machinery. In the plow alone Americans have devoted their lives in perfecting the old styles into our more modern types. Among these men were Thomas Jefferson and a few years later Daniel Webster. Webster's plow was a massive affair, some twelve feet long, requiring several pair of oxen to operate it. Not until 1833 was the steel plow thought of, when in that year John Lane made the covering for the moldboard out of an old saw. The people who tried it found out that a better job could be done on account of its cleaning qualities. Before this plows merely rooted through the ground but the steel took on a high polish and made a nicer furrow. In 1864 F. S. Davenport produced one with wheels and a seat for a man to ride. This was the first attempt at riding plows and the demand for it has caused great changes until to-day the gang plow has the preference. In this paragraph the development of the plow alone has been followed but along all lines of farm machinery we have the same thing occurring from crude implements with man furnishing the motive power until to-day we have the steam and gasoline tractor turning over thirty acres per day. Truly the century just past has been one of marvelous advancement.

In the preceding paragraphs one thing looms up as we read and it is why did the people of past ages manufacture a set of implements and then for centuries continue using the same crude tools? There is only one reason for it and that is a higher civilization. People living five hundred years ago were ignorant of any other thing than that of trying to produce a livelihood. They never read any papers bearing on their work because they were not in existence. Therefore, they were satisfied in their own narrow sphere and contentment with your life means no advancement. It is the man who strives for better things that is not satisfied with his present life, there always being a feeling that his sphere is too narrow and he turns his attention to broadening it, the result usually is some improvement on existing conditions, which not only he, but the world reaps the benefit. Thus in past ages the people were satisfied with their narrow world, simply because they knew no other, but just as soon as people began to learn of other things then they came to see that improvement was necessary and from out the darkness of ages past machinery has developed until to-day we have our modern machinery continually in the limelight of advancement. In-

\$500 FOR THREE DAYS WORK

A boy in Edwards County, Kansas, persuaded his father to let him have 30 acres to try the plan of disking ground to be sowed to wheat immediately after the harvester, the ground to be plowed two or three weeks later. His older brother also had 30 acres adjoining his field, which he put in in the ordinary way, the same as his father did 100 acres. The soil was the same, the seed wheat was the same, and the rainfall was the same. The only factor that differed in the history of the crop was the disking of the wheat stubble immediately after the harvest. Yet the wheat threshed out 46 bushels and 10 pounds to the acre for the ground that had been so treated, and the brother's yield was only 25 bushels. That was about the average for the 190 acres of the farm also. Wheat at 90 cents would pay the boy who disked before time to plow about \$500 for three days' work.

A farmer in Decatur County, Iowa, raised 109 bushels and 40 pounds of corn on an acre of ground. He says: "I attribute my success in raising 109 bushels and 40 pounds of corn from a measured acre of ground mainly to the thorough preparation I gave the ground with the disk harrow."

Here are two instances the one a grain grower, and the other a corn grower, both of whom attribute their great success to the use of the disk harrow. The grain grower was in a district where rainfall is not as abundant as it is where the corn grower lives, yet both raised bumper crops.

Do you need any stronger evidence to convince you that the disk harrow is essential regardless of the climatic conditions?

The thing to be remembered is that following the binder with the disk harrow is hard on this implement and little is to be gained if the disks do not pulverize the ground sufficiently to make a mulch for moisture conservation.

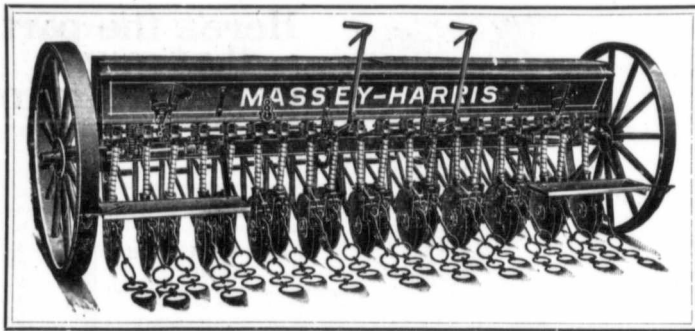
The International disk harrows are strong enough to do this kind of work. The frames are noted for their rigidity and strength; they hold the gangs in the correct position at all times, so that the harrow must do good work. Consequently, the farmer who follows the harvester with an International disk harrow can always feel assured that his time and labor are being expended to the best possible advantage. These harrows are made to give good service; they do not have any contrivances upon them to catch the eye of the farmer upon the sales floor and disappoint him in the field. They give satisfaction.

See the nearest I H C local dealer for full information on these implements, or, write direct to nearest branch house for catalogue and pamphlet (The Disk Harrow), a book containing information of value to every farmer regardless of his place of residence.

Canadian Branches: International Harvester Company of America, at Brandon, Calgary, Edmonton, Hamilton, London, Montreal, Ottawa, Regina, Saskatoon, St. John, Winnipeg, Yorkton.

INTERNATIONAL HARVESTER COMPANY OF AMERICA
(INCORPORATED) CHICAGO U.S.A.





SHOE, SINGLE DISC AND DOUBLE DISC BOTTOMS INTERCHANGEABLE.
SIZES 16, 20, 22 and 24

NEW MASSEY-HARRIS DRILL

Proven During Past Year

Stands Absolutely Without an Equal

1911 Model New No. 11 Drill may now be seen and obtained at MASSEY-HARRIS agencies all over the country. For the coming season we are offering the same drill which, on its introduction to the West last spring, received such a hearty welcome and enormous sale.

- Seed furrow is correctly shaped, all seed is sown at a uniform depth; no bruised kernels
- Heavy Γ beam runs entire width of machine, making exceedingly strong frame
- Grain Box is the largest supplied on any drill on the market
- Wheels are built extra strong, and have four inch tires

There are many other reasons why your drill should be a "MASSEY-HARRIS."

The Agent will explain them to you

ventors in those early times had extreme difficulty in getting the people to grasp a new idea which would lessen their labor. This appears strange to us because we are accustomed to so many changes taking place that it is no surprise to see improvements being made on the machines we use. But it must be remembered that these people had been used to the old-fashioned plow, sickle, etc. Their fathers before them had used nothing else. Therefore anything new was looked upon with suspicion. We read in old books about the invention of iron-plated plows and of how farmers would not use them for a long time claiming it would poison the soil, making it unfit for crop production.

The farms of olden times were small, one of from fifty to one hundred acres in extent was considered extremely large and the amount of men required to run it would to-day manage two sections of land. In spring time the ground was dug up by one of those plows mentioned above and harrowed by a brush drag consisting of a square frame into which were fitted cross pieces of hardwood. These crosspieces had holes bored in them and were fitted with hardwood pins about six inches apart; a little later these were replaced by ones of iron. The land, as mentioned before, was harrowed several times with one of these harrows and left to do its best toward producing a crop. Then at harvest time the

farmer would get four or five men each armed with a sickle, and from daylight in the morning they would toil, bending down, grasping a handful of golden grain and cutting it. When a sufficient amount to make a sheaf had been gathered it was bound into bundles with a band of straw. After the grain was sufficiently dry it was drawn in and placed on the barn floor where it was left till the winter months. A flail was used to separate the grain from the straw, then the mixture of chaff and grain had to be separated. In order to do this they waited for a windy day, when on opening the barn door and by throwing the grain into the air the chaff blew to one side of the building leaving the cleaned grain in a pile. A little later fanning mills were introduced which made the farmer independent of the wind. Such were the laborious methods of olden days. The year was one continuous round of hard labor, recreation was almost unknown and the young folks who did not settle down to hard work as soon as they were of sufficient size to stand it were considered as good for nothing. No wonder they were unread, and without a knowledge of affairs going on in the world. In fact very few of the young at least, ever exceeded the bounds of their native county and one who had travelled a few hundred miles was considered quite a distinguished traveller. We have a good example of this in Lorna Doone,

when John Ridd travelled to London the people of his locality looked upon him as a great traveller. But we must remember that in those days the only way to reach a point was by horseback or stage coach, making it necessarily slow. What a difference to-day! By the aid of modern invention distance is almost annihilated.

We will now compare the social life of a farmer living one hundred years ago and one of the present day. The old-time farmer was a man who had to depend altogether upon hard work in the fields for the support of his family. This being the case he toiled from early morning till late at night, working as has been mentioned before, with the most crude implements. His day's work over rest was necessary, therefore visiting neighbors was a thing reserved for very special occasions. The young grew up with only one idea, that being work, they, too, seldom mingled with their fellows and the result was little social intercourse with their friends, making the farmer a quiet, reserved man, one who depended upon himself alone even in business relations. This latter is to some extent present among us. We do not feel quite like trusting our neighbors and this thing is what debars the farmers from joining together and forming one giant company for their own mutual benefit. But what a change in the social life of our present day farmer. Modern

labor-saving machinery has so reduced his toil that he is enabled to visit his friends and thus he is gradually becoming a man full of ideas, not merely of his own but of his neighbors also. Modern machinery has so added to his wealth that he is enabled to travel, no longer is it a matter of wonder among the people of a community if one of their number takes a trip across the Atlantic during the winter months. We, of to-day, undervalue what farm implements are doing for us, by their use the old-time drudgery has been obliterated. No more is it necessary for man to toil throughout the summer's day, cutting his crop with a cradle; nor is it necessary to use the flail in threshing. The machines in use to-day cut down the time of seeding and harvest seventy-five per cent, giving the farmer more leisure time for reading and social intercourse with his fellow men.

From an educational standpoint, modern machinery has done more for the present generation than any other thing in the world to-day. Before the day of self-reapers, who heard of agricultural colleges? Why such an idea would have been laughed at as preposterous. They thought an education was absolutely necessary for those going in for professions, such as doctors, lawyers, ministers, etc., but the farmer needed no education other than could be gained from the experience of his neighbors. Even to-day you will find those who tell

you that a college education is thrown away on the man intending to return to the farm but thank goodness they are very rare. One hundred years ago a higher education for the farmer was unnecessary, his implements were crude, therefore his methods of farming also were crude. But with the great advancement during the past century conditions have changed. Farming is now considered one of the finest professions, requiring a more scientific knowledge. Modern machinery has brought this about, by their use we can now apply not only experience of years to our work but also what is taught in schools of scientific agriculture. Each year sees vast improvement in farming; more and more is the brain being used displacing the work of the hands; and each succeeding year sees the farmer being raised higher and higher in the opinion of the world and within the next few years the farmer will be where he should be, namely, heading the list of professions. It is his by right because he is the producer of the world's supply of bread. But the one thing which is doing this for him is improved farm machinery and in closing one thing must be impressed upon the reader and that is, remove the modern machine from the farm and within one year conditions would be what they were one thousand years ago, that is sufficient to show what machinery is doing for us to-day.

Learn to Farm Right.

Never before in the history of Western Canada has so keen an interest been taken in scientific methods of tilling the soil. In every district there are striking examples of the value of such methods. These examples are to be found every year but they are not quite so noticeable in favorable seasons as they are in seasons like the one through which the West has just passed. Here and there, in districts where conditions were the most unfavorable, are to be found farmers who because of their better and more scientific methods of tillage have crops very much superior to those of their neighbors. Examples of this kind make people think and when it is remembered that crop reports from every part of the West have emphasized the value in a dry year of scientific methods of tillage it is not surprising that there should be such a widespread interest in better methods.

The indications are that the Manitoba Agricultural College will be crowded to capacity this Fall and that great interest will be shown by the farmers in the extension work of the new colleges recently organized in the Provinces of Saskatchewan and Alberta.

These agencies are admirable but working alone they cannot reach for many years more than a small percentage of the farming

population. It is the general experience all over the American Continent that less than two per cent. of the farming population ever see the inside of an Agricultural College. The trouble is that the average farmer is too busy a man to leave home for any extended period of time. In the winter he has plenty of spare time on his hands, but he is nevertheless tied to his farm. It is difficult to get responsible help to take charge of the "chores" while the owner is away, and even in the slack time the farmer is still tied to his farm.

It is surprising, therefore, that it is only at this late date that an educational institution has been founded to meet the special requirements of the situation. The solution of the whole problem is the correspondence method of instruction. It has been the custom for the alleged funny men in the comic papers to joke about correspondence schools but the fact remains that the instruction given by reputable correspondence schools to city boys and bearded men who could not spare the time to attend classes has put thousands of them in responsible and well paid positions. There is no reason why agriculture cannot be taught by mail as successfully as anything else.

It is not surprising, therefore, to learn that an institution known as Correspondence School of Scientific Farming of Western Canada, Limited, has been founded in Winnipeg with the object of teaching practical and scientific methods by correspondence.

The course of instruction consists of a number of lessons in printed form. These lessons have been prepared by several of the most competent and practical agricultural authorities in the West, and the whole course is under the supervision of a man who is acknowledged as the leading agricultural authority in Western Canada. Every lesson bulges with practical hints, teaching the same methods which have enabled the experimental farms this year to get as high as 54 bushels of wheat per acre.

However, this is only part of what the School offers. Every student will have his difficulties and these are explained to him by mail. There is an examination paper attached to every lesson and the School's staff of permanent instructors examine the answers sent in. These examiners are practical agriculturists and when they find the student does not thoroughly understand a lesson they write him full explanations of his difficulties. In short, the student gets by mail the same kind of close personal attention that he would get in a class room. He can complete the first course now offered during the coming winter and start next season's operations much better equipped than he has ever been before. The advertisement of the School appears on another page of this issue.



Here's the part that must Stand the Strain

We see engines, much too often, too, that are equipped with monstrous, cumbersome drivers, with a rim of iron held intact by a network of wrought iron rods—they are not only clumsy and unsafe, but add tons of unnecessary weight and require a constant waste of power.

A Rigid Built-Up Steel Wheel

similar to that with which the engine is equipped, we believe, makes a substantial foundation for an engine.

Built up of a tire of rolled steel, flat wrought iron spokes with a T-head construction, chilled iron hub and V-shaped malleable iron lugs, all riveted solidly together, without any bolts to work loose nor threaded rods to pull out, this wheel is amply strong to outlive any other part of the engine, and at the same time it is compact and adds no unnecessary weight which will constantly cause a drain on the power.

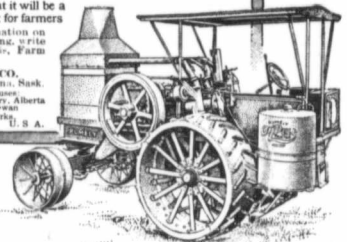
All Parts Strong and Rigid

Just as the drive wheels of engines are built up of solid, rigid, unyielding construction, so is every other part in engine designed to withstand severe duty and heavy service.

We build engines so that it will be a profitable investment for farmers

For authentic information on any question of price, or write to our Mr. T. W. Ellis, Farm and Tractor Expert.

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Agents wanted in unrepresented districts. FRED. W. PACE, Local Manager

Send Ten Cents AND GET The Farmers' Home Journal
A WHOLE YEAR

The Farmers' Home Journal is edited by a man who lives on a farm. Then the paper is printed on the farm, and in fact it is the only paper which is actually set up and printed on the farm.

It is not a farm paper, but a paper for the farmer, containing good articles on poultry, and giving some bright interesting stories.

The price is only ten cents a year, and you would do well to send ten cents in stamps or a dime to-day by mail and receive the paper for a year.

The Editor of the Farmers' Home Journal is Mr. J. R. Cote, who contributes the Poultry Articles in this paper, and if you desire to get a good paper, send ten cents to-day, and get it for a whole year.

Mention The Canadian Thresherman and Farmer when Writing.

ADDRESS, J. R. COTE, Editor
The Farmers' Home Journal, Chatham, Ont., Canada

Young Farm Boy's Advice.

A sixteen-year old farm boy makes the following interesting contribution in an exchange to the discussion of shock or stack threshing:

I am a farmer's son, sixteen years old. I think the best plan is to thresh from the stack. Although shock threshing may be best in some places, experience has taught the people of this section better. About eight or ten years ago some of the neighbors tried threshing from the shock and the time they had is worthy of notice. Some of them had large crops. The machine, six or eight wagons and teams and a number of extra hands were secured, but just about the time they started it began to rain. The hands and teams were kept and fed for several days at great cost, threshing when they could. And since then there has not been any wheat threshed from the shock in this neighborhood. The one experience was enough to satisfy them.

Here are some of my reasons for threshing from the stack:

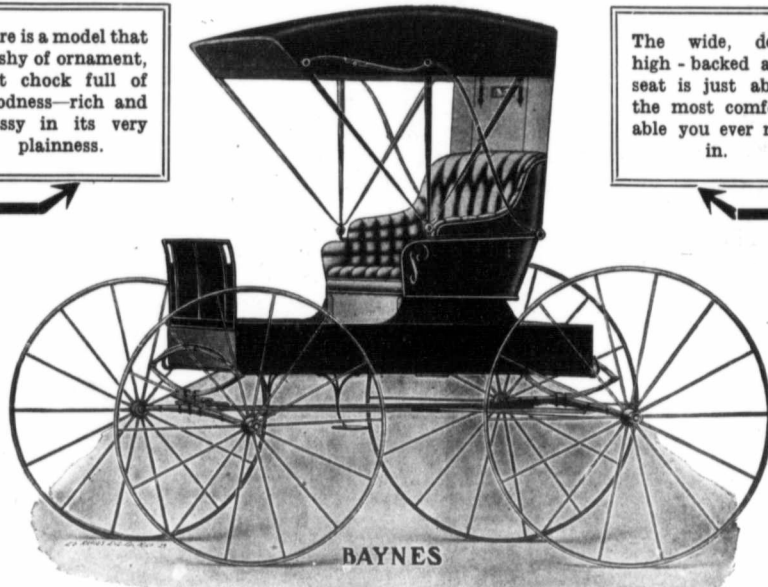
1. After every storm some of the shocks are to reshock and cap.
2. If it is low ground there is often much loss from floods.
3. If the weather is wet much of it molds.
4. More cost is attached to threshing from the shocks, owing to the hiring of extra hands and teams.
5. If the grain is left in the shock any length of time a great deal of it is lost or destroyed by birds.
6. When it is stacked it goes through what is known as the sweat, a process which adds to the plumpness of the grain, while if it is in the shock, it appears to become lighter.
7. If it is left in the shock the straw turns black and is unfit for feed, especially oat straw, while if stacked it can be baled and makes excellent roughage.
8. If the wheat is left in the field for some time that which the machine fails to save is lost, while if stacked this grain could be saved by pasturing cattle and hogs on it.

The Villain in the Piece.

The tariff discussion re farm implements in Western Canada waxes hot. The farmer has come to the conclusion that the smallest piece of pie has been allotted to him, and perhaps it has; but in all discussion there is the other side. An old reader of this magazine at least believes in this two-sided theory, and sends us the following clipping from Toronto Saturday Night in support of his ideas. We reprint it as so much material for thought. Our only purpose in so doing is to see justice rendered where justice is due.

Here is a model that is shy of ornament, but chock full of goodness—rich and classy in its very plainness.

The wide, deep, high-backed auto seat is just about the most comfortable you ever rode in.



No. 484—Auto Seat Buggy

BAYNES BUGGIES

If you want a turn-out that stands out from the crowd, not because it's flashy but because it's good, select No. 484. If your dealer hasn't one of our catalogues write us direct.

The Baynes Carriage Company, Limited, Hamilton, Ont.

We need Local Agents all over the West—if you are interested, write us direct or to our Western Agents.

A. C. McRAE, Winnipeg, Man.

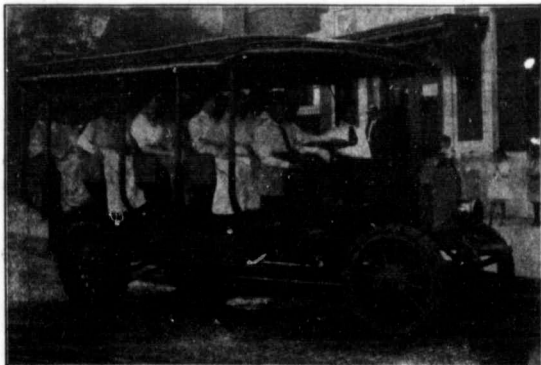
W. J. BELL, Saskatoon, Sask.

M. C. DREW & SON, Vancouver, B.C.

Why should the manufacturer always figure as the villain in the piece? One asks this question after having perused during the past month a hundred or more editorials on the subject of tariffs and reciprocity which have been published in various parts of Canada. The general tone of such editorials is that the manufacturer is a party to some sort of conspiracy to rob the consumer, and the dictum of the free trade doctrine invariably places him beyond the pale of consideration. Now, one has no intention of entering into a discussion of the pros and cons of free trade. It is a doctrine with as many ramifications and phases for academic consideration as that of transubstantiation. But one does propose to say a word in behalf of the manufacturer as he figures in the history of Canada. Thirty-five years ago there were those who believed that this country was destined for ever to be an agricultural community. Because the Hebrew patriarchs happened to be agriculturists who played their game craftily as Jacob did when he wanted to get a share of Laban's sheep, it has been assumed that there was something sacred in the calling. When, however, the National Policy brought Canadian manufactures into being, Canada entered a new phase. Her cities commenced to assume the outward aspects of a wealthy civilization. Her smaller towns became transformed from cross-roads depots of exchange into centres of industry, with all the social and civic life that centres around industry. The successful manufacturer (and by him one means the practical man and not the promotion agent and the merger expert) is the captain general of an army great or small. His brain directs the operation of this army, and on its efficiency depends not only the quality of the output which shall supply the needs of others, but the sustenance, well-being and livelihood of the homes which grow up around an established industry. The weekly pay envelope is in almost every case the sustaining force of a home, or at any rate, of a home that is to be.

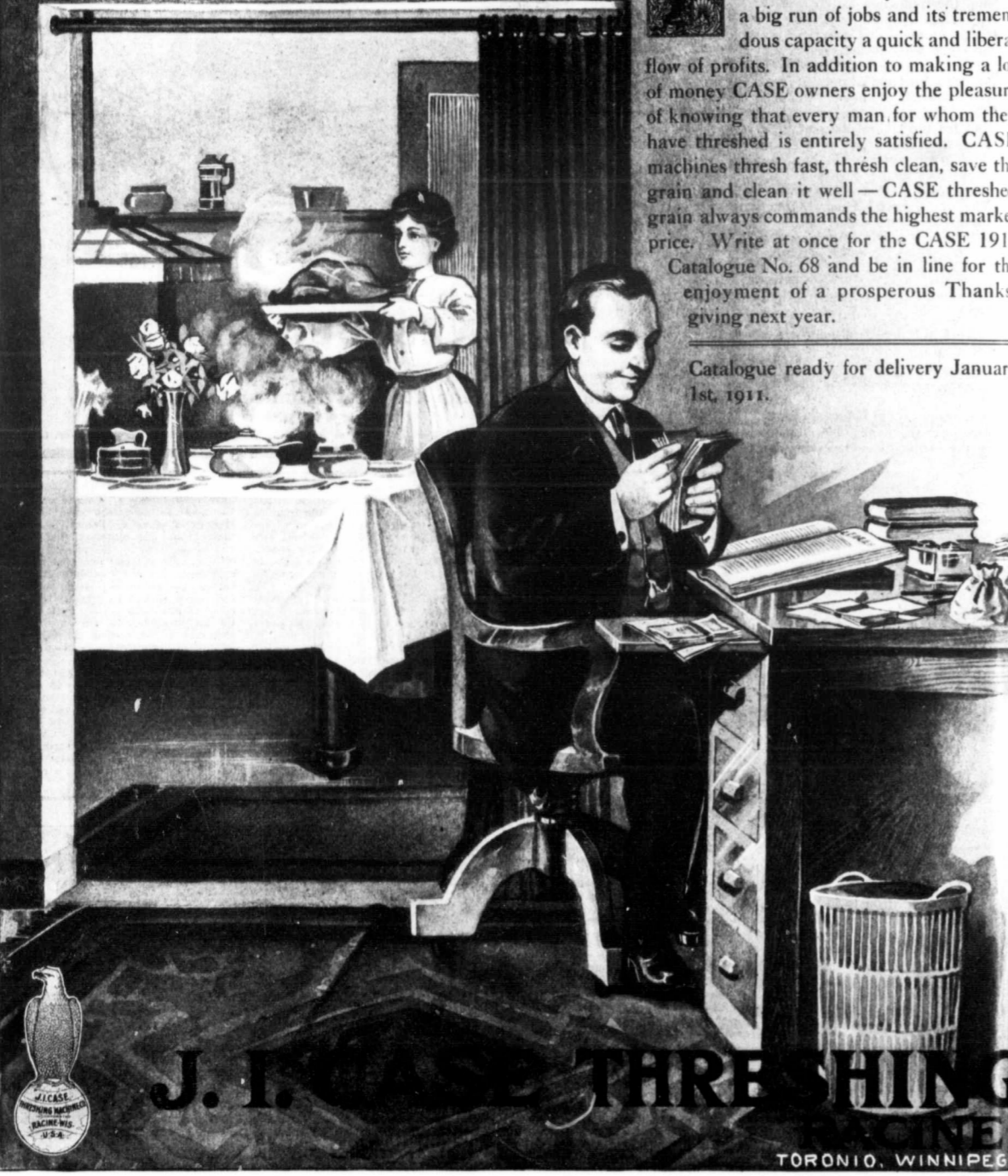
The Canadian manufacturer who has guided his business through the troubled waters of trade for a quarter of a century has been a hero. If he has any hair left on his head it is probably prematurely white. He has had his dark days; his bad years; his struggles with the banks; his encounters with the inexplicable phenomena of hard times; and his sickening sense of defeat when face to face with the problem of over-production. If he fails in business it means temporary loss of livelihood to more than the population of two rural townships. When he is compelled to lay off his men it is a catastrophe. His family and he may enjoy many luxuries, but he has assuredly earned them with every fibre of his system. In the army of men who from 1878 onward have engaged in the struggle to make Canada something more than a pastoral community there have been as many wrecks as there

have been successes. Failure or victor, the manufacturers who have been the creators of our cities deserve something better than the contempt that is bestowed on them in this reciprocity discussion. An editorial one read recently suggested that the Canadian Manufacturers' Association in its opposition to reciprocity wished to prevent the Canadian farmer from getting better prices for his products. It will surprise the city man to learn that the farmer is getting so little for his labor. One can buy manufactured goods as cheaply today as one could a decade ago, but the prices of food have doubled and trebled. The city man is asked to applaud some measure of reciprocity which will no doubt further increase the cost of living, just because the agriculturist is the traditionally sacred personage, and the manufacturer, in the distorted concept of the fiscal doctrinaire, is ever the villain of the piece.



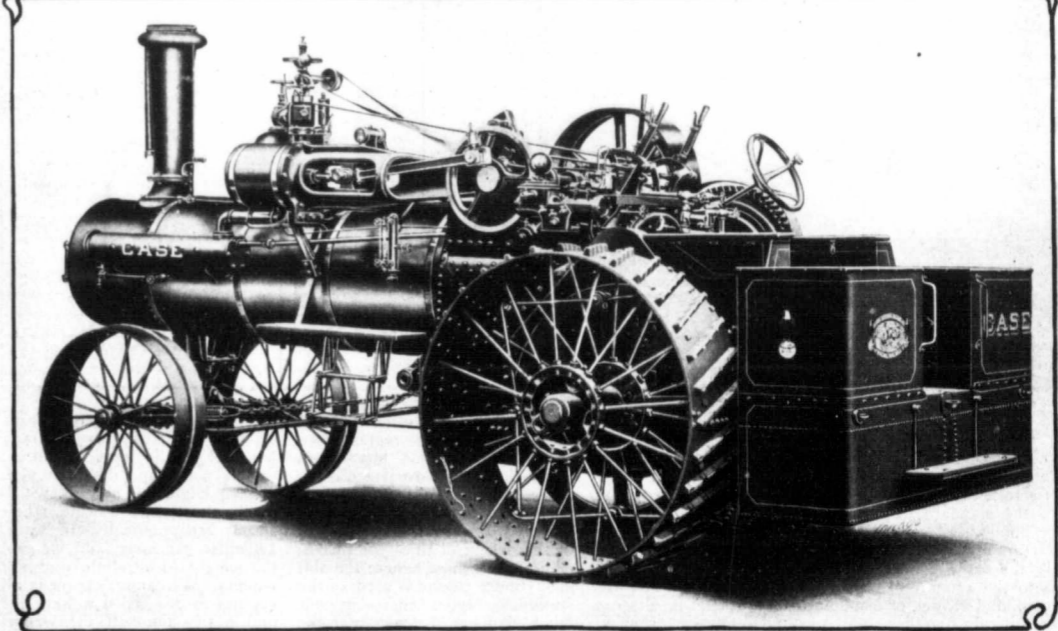
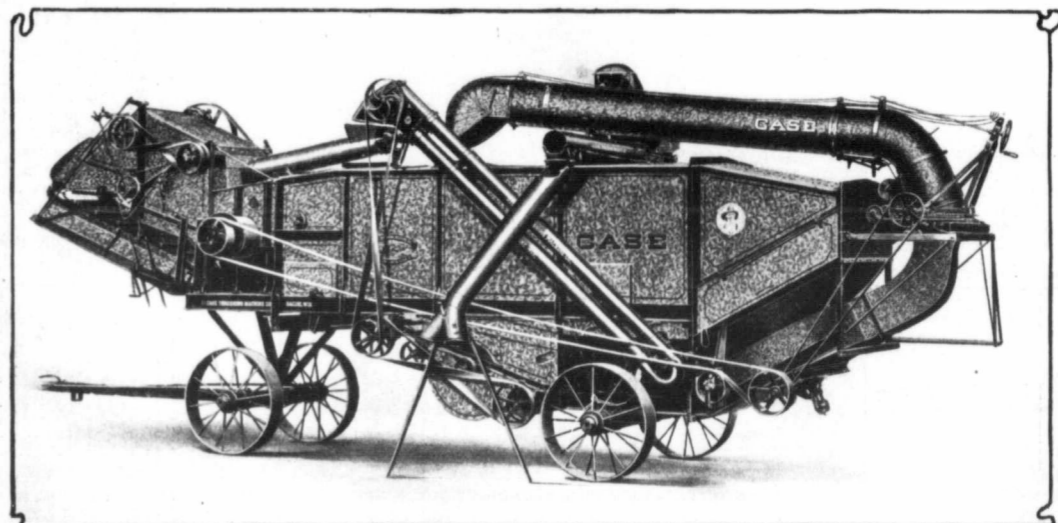
An Avery Farm Tractor equipped as a pleasure wagon.

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THE well-known reputation of CASE Machinery assured them a big run of jobs and its tremendous capacity a quick and liberal flow of profits. In addition to making a lot of money CASE owners enjoy the pleasure of knowing that every man for whom they have threshed is entirely satisfied. CASE machines thresh fast, thresh clean, save the grain and clean it well — CASE threshed grain always commands the highest market price. Write at once for the CASE 1911 Catalogue No. 68 and be in line for the enjoyment of a prosperous Thanksgiving next year.

Catalogue ready for delivery January 1st, 1911.



J. I. THRESHING MACHINE CO. INCORPORATED
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Chicago
ENG. CO.

Course in Gas Engineering

Conducted by D. O. BARRETT.

This month we begin a new series of lessons that will continue for two years. These will consist of a number 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 I.

Winnipeg Motor Contest 1910

To anyone who is at all interested in the progress of the gasoline engine in the traction field the results of the Winnipeg Motor Contest deserve serious consideration. The importance of such an annual contest as this is growing each year as the number of manufacturers of this type of machine is increasing. The various machines are brought together on a common battle-ground where their advantages and adaptability for any particular class of work can be shown. A friendly strife is promoted among the manufacturers impelling each to do his best on that type of machine which he is

the knowledge of the majority of the people may keep pace with the rapid developments that are being made in this field. In many sections of the country at the present time gasoline or kerosene operated traction engines are a curiosity and in order to supplant the common prejudice it is sometimes necessary to "show" people.

While many interesting results have been tabulated by the judges of the recent contest the author feels that some deductions may well be set forth as more plainly showing what these results really mean. To this end he has compiled a table of values which has been calculated directly from the data as given in the

automobile industry. Manufacturers learn firsthand what their machines are capable of doing and the results are always awaited with great interest. In the tractor field it is all the more of a necessity that some means be employed whereby the prospective purchaser and also the student may accurately learn what can be done.

Taking up the subject of weights as found in the first six columns of the table it is found that—first, about 70 per cent. of the total weight of the tractor is on the rear drivers. While not so noticeable with the gasoline rigs yet with the steam engines those having the greatest percentage of weight on the drivers

would be interesting to know just how great a proportion of the weight could be placed at the rear and still have sufficient at the forward end of the rig to prevent it from leaving the ground under a heavy pull. Of course, this depends upon the location of the draw-bar, the closer this being to the ground the greater its effectiveness in keeping down the forward end.

For engines 3, 9 and 18 the weight on drivers per pound of draw-bar pull varies from 2 to 2½ pounds. Of course the draw-bar can only be taken into consideration in a general way as the power delivered also depends upon the speed at which the engine is travelling. Naturally the

WINNIPEG MOTOR CONTEST, 1910

CLASS	Entry Number	MAKER'S NAME	CALCULATED RESULTS FROM JUDGES' REPORT																								
			WEIGHTS						PISTON		PRICE		FUEL CONSUMPTION						EFFICIENCY								
			Total Weight Pounds	Weight on Drivers Pounds	Percentage of Total Weight on Drivers	Weight per Max. h.p. Pounds	Wgt on Drivers per 1 h.p. Pounds	Wgt on Drivers per 1 h.p. Pull lbs.	Piston Displacement per Max. h.p. Cu. In. per Min.	Piston Displacement per Max. h.p. Cu. In. per Min.	F.o.b. Winnipeg Dollars	F.o.b. Winnipeg Dollars	F.o.b. Winnipeg per lb. T.W. gal. cu.	Per h.p.-Hr. 2 hr. Run Imp. Gal.	Per Max. h.p.-Hr. 4 Hr. Run Imp. Gal.	Fuel per acre Imp. Gal.	Fuel per Day Case, Ker. Gal.	Coal-Lb.	Thermal Eff. per h.p. 2 hr. per cent.	Thermal Eff. per D.B. h.p. Per Cent.	(D.B. h.p. x 100) (Eff.) b.h.p.	Speed of Eng. in P.M. per Hr.	Acres per Day of 10 Hours	Cost per Day Case, 20c 1 Gal. Ker. 10c 1 Gal.	Cost per Acre as Preceding Cents.		
INTERNAL COMBUSTION	A. Up to 20 h.p.	1 Int. Harv.	10,500	7,100	67.6	677	161	4.16	11,214	15,260	1720	111	16.4	.101	.115	3.23	23.2	19.5	9.58	73.5	2.51	7.2	\$4.64	64.6			
		5 Avery	6,000	2,500	41.6	312	208	1.27	21,653	46,870	2900	130	41.6	.179	.175	3.37	25.2	11.0	6.87	46.1	1.68	7.5	5.04	67.0			
		B. 21-30 h.p.	2 Avery	12,000								2000		16.7	.175					11.2							
			3 G'ld. Sh'ply, M'r.	11,000	7,800	70.9	321	177	2.4	9,392	25,500	2300	67.4	20.9	.105	.127	3.28	35.4	18.7	6.98	36.9	1.45	10.8	7.08	65.5		
			4 Int. Harv.	14,200	10,100	71.2	630	252	4.12	9,578	13,745	2300	102	16.2	.092	.120	2.19	29.6	21.4	10.46	69.5	2.41	13.5	5.92	44.0		
	C. Over 30 h.p.	6 Birrell	22,000	15,000	68.2	756	313				3200	110	14.5	.171	.172	4.86	50.0	11.5			1.35	10.3	10.00	92.2			
		7 Gas Tract.							16,547	23,960	3000	85.5		.144	.189	2.42	41.1	13.6	11.5	69.0	2.00	17.0	8.22	48.3			
		8 G'ld. Sh'ply, M'r.	17,730	12,600	71.1	457	242	3.00	15,912	33,480	2775	71.6	15.6	.158	.182	3.89	52.8	12.0	6.86	47.6	1.66	13.6	10.50	77.6			
		9 Int. Harv.	20,990	15,040	71.7	439	314	2.05	12,857	17,410	2700	56.5	12.8	.085	.115	2.11	53.6	23.2	12.9	73.8	1.80	25.4	10.72	42.3			
		10 Kinn. H'nes	19,000			379			14,165		3400	67.8	17.9	.092	.068			21.4									
		18 Gas Tract.	17,500	12,000	68.6	325	250	2.22	9,630	19,635	3500	65.0	20.0	.092	.106	2.20	40.5	21.3	12.4	49.2	1.84	18.3	8.10	44.2			
STEAM	D. Up to 60 h.p.	11 Rumely	26,700	17,800	67.5	544	342	3.24	12,860	23,930	3400	69.2	12.7	.145	.182	3.46	70.5	11.4	7.3	53.8	1.80	20.2	7.75	36.3			
		12 Case, 36 h.p.	17,475	13,575	86.0	292	350	3.91			1812	30.2	10.3				2070			37.2	2.34	13.1					
	E. 60-90 h.p.	13 Avery, 60 h.p.	26,000	18,000	69.3	370	450	2.61			3200	33.2	12.3				3150			36.0	1.89	21.4					
		14 Case, 75 h.p.	25,800	20,400	79.1	274	425	2.98			2594	27.5	10.0				3530			50.1	2.59	29.3					
		15 Avery, 90 h.p.	36,000	24,000	66.7	289	462	2.08			4000	32.2	11.1				5420			52.5	2.13	36.3					
	F. Over 91 h.p.	16 Case, 110 h.p.	40,460	31,560	78.0	313	439	2.90			3744	29.0	9.3				3960			58.0	2.58	3.99					
		17 Rumely, 120 h.p.	46,480	30,980	66.8	346	516	2.90			4300	32.0	9.3				4570			41.3	1.96	37.9					

* Gasoline, 18,500; Kerosene, 19,500, B. t. u. per lb. The table is based on the judges' score sheet and the figures are correct only in so far as that sheet was correct.

promoting and offer to the public something of which he can justly say "Well done." No man would deliberately take his product into such a test, knowing it was not up to the standard demanded by the public.

Very few tractors are operated under precisely the same conditions either as to the amount of load, kind of load, kind of fuel, or attention. The bringing together of these different types of machines shows to the prospective customer the salient and distinctive features of each. Such a contest is, also, an eye-opener to many people who do not realize the strength of this comparatively new force in the traction field. A campaign of education is necessary in order that

official report. A careful study of these results will serve to bring anyone to a closer realization of the success which is being attained in this particular field. The promoters of the contest are to be congratulated upon the excellent work which they are doing and though there will always be dissatisfaction and disappointment the final results can only rebound to the good of the industry in general. The necessity of such a contest is felt when one understands how the number of manufacturers is increasing. Automobile contests are, to a great extent, promoted by the lovers of the sport, yet contests like the Glidden Tour are not to be classed with these and what a boon this particular one is to the

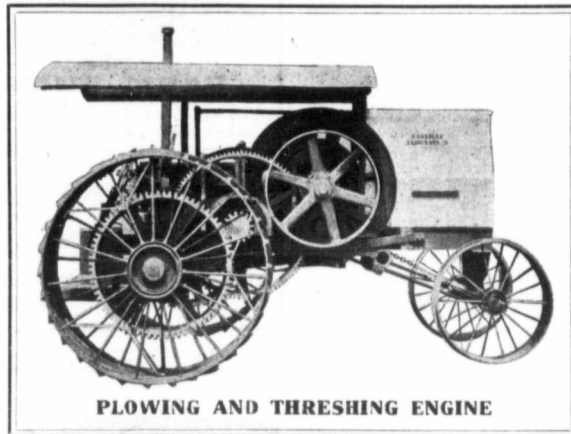
delivered the greatest amount of power at the draw-bar and also scored the greatest number of points in their respective classes. It seems that this matter of weight on the drivers would be worthy of serious consideration in the design of this type of machine. Of course, where the single-cylinder engine is used, of the stationary type, there is not much choice in the matter as the size of the gearing regulates the position of the engine especially so where only one intermediate shaft is used. With multiple cylinder engines the conditions allow of more variation but we find no gasoline tractor which has as great a percentage of weight on the drivers as the steam rigs aforementioned. It

engine which is geared the lowest will have the greatest draw-bar pull or the least weight on drivers per pound draw-bar pull. Taking engines 9 and 18, which made the best showing, their speeds are practically the same, 1.8 miles per hour, and we find the weight to be slightly over 2 pounds. We cannot expect in all engines of this speed to have the pull nearly one-half the weight on the drivers as may be seen from some of the other engines, some even having a slower speed. However, we might say that 3 pounds is a fair average taking all engines into consideration, that is, the tractor will exert a draw-bar pull equal to one-third the weight on the drivers, at the ordinary traction speed.

FAIRBANKS-MORSE TRACTOR

We are glad to announce that our Gasoline Tractor is now ready for distribution to those desiring a **Reliable Plowing and Threshing Engine**. This is a **Tried and Tested Engine** and will uphold the reputation for **Reliability** held by our Portable and Stationary Engines.

MANY
EXCLUSIVE
PATENTED
FEATURES
OF
DESIGN



PLOWING AND THRESHING ENGINE

Slow Engine Speed
Ensuring Long Life and
A Paying Investment
Heavy Frame and
Truck
All Gears
Heavy Cast Steel
Battery and Magneto
Ignition

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SASKATOON

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Another item of which we often hear much as being an advantage which the gasoline tractor holds over its steam brother is the lightness of weight for the power delivered. Taking an average of all the gasoline tractors (omitting No. 6 which had the plows attached) the weight per maximum brake horse power is 455 pounds while the same for the steam rigs was 297 pounds. Of course, the steam engine is able to stand heavier overloads for short intervals than the gasoline engine but this should not be taken into account as lowering these results as this overload capacity is very likely to be used in the operation of the engine.

The weight on the drivers per one inch of width is found to be much less with the gasoline than with the steam rigs. The average for the first is 226 pounds while for the latter it is 440. This does not take into account the extension rims which are used on the steam rigs as ordinarily they are supplied with narrower rims than the gas tractors. With the extra rims the weights are approximately the same.

Columns "g" and "h" give the number of cubic inches of piston displacement per minute per maximum brake horse power and also per draw-bar horse power. It is somewhat surprising to see the variance of these results. It is usually conceded that the larger engines of the slow-speed type are more efficient than the high-

speed multiple-cylinder engines of the same power, but it will be seen that it does not necessarily follow that the power can be produced with less displacement. Engines 1, 4 and 9, all manufactured by the same company and of approximately the same cylinder displacement per revolution though No. 9 runs at a slightly higher speed, vary considerable in this respect, No. 4 doing the best of the three. A fact to be noticed here is that the maximum load which the engine desired to pull was named by the manufacturer. In automobile contests the class to which the engine is assigned is predetermined by the cylinder displacement. These results show the need of some ruling similar to this and which is also only fair to the entrants. Looking at engines No. 7 and 18, made by the same concern, of the same type, No. 18 produces a horse power on 9,630 cu. in. displacement per min. while No. 7 requires 16,550 cu. in. The engines, both having the same stroke, ought to be able to develop power in the ration of the piston areas, namely, .196 to .230 or .855 to 1. However, No. 7 only delivered 65 per cent. of what No. 18 did and with a higher speed.

In the same manner No. 10 (having the same stroke) should deliver more power than No. 18 in the ratio of 503 x .307 to 599 x .230 (piston area times r.p.m.) or 1.12 to 1. What is actually delivered was 93.5 per cent.

No. 3 shows the highest efficiency in this respect while No. 5 gives the lowest. No. 5, however, is of the high speed automobile type of engine and could not be expected to compare with the others. Column "h" was calculated merely as of interest in showing the capacity of engine necessary for a draw-bar horse power. Nos. 1, 4, and 9 here show up the best since they had the greatest draw-bar efficiency.

The price has been reduced to terms of maximum brake horse power and it is found that the small engines are the much more expensive in this respect. The average price for all engines in Class C per max. b.h.p. is \$69.3 although, as we stated before, this value would be raised above normal by those engines which were not actually developing their maximum power. For steam engines the average price is \$30.7. It will also be noticed that there is much less uniformity in price among the gas tractors. This is due mainly to the various types of engines used while with the steam tractions there is very little difference in either the cost of building the engines or the boilers among the different manufacturers. The cost per pound of total weight was inserted merely to give an idea of the manufacturing cost per pound.

One of the most important items to be considered in the purchase of an engine is that of fuel consumption as this will be a controlling factor in the cost

Goes Like Sixty

Sells like Sixty
Sells for Sixty-five **\$65**

A perfect engine for pumping, grinding, sawing wood, corn shelling, churning, washing machines and all farming purposes. Larger sizes for feedcutting, threshing, silo filling, and all heavy farm work.

GILSON GAS AND ENGINE
GASOLINE

FREE TRIAL - WRITE FOR CATALOG - ALL DEERS
Gilson Mfg. Co. Ltd.
1 York St. Toronto, Ont., Canada

of operation of the engine during its entire lifetime. First of all, those having the best fuel economies were the winners in their respective classes with the exception of Class C where the economies ran very close. With engines No. 1, 4, and 9, the fuel consumption decreased as the cylinder capacity increased, the lowest value obtained being .085 Imp. gal. per h. p.-hr. for the 2 hour run. No. 10 gave the remarkably low value of .068, on the 1/2 hour test.

It is a recognized fact that the fuel consumption of a gasoline engine at its maximum load is greater than at a load somewhat less. We find this to be true of all the tractors, both steam and gasoline, with but two exceptions, Nos. 5 and 10. As before

Continued on page 36

Gas Engine Experience Department

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

Costs Perfectly Kept

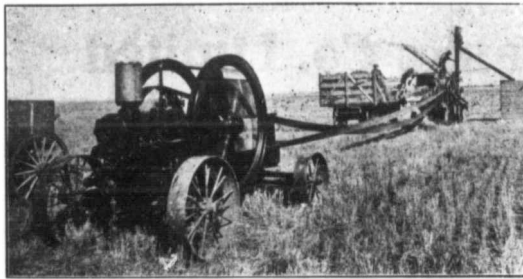
Yours to hand requesting information in regard to my experience with Traction Engines for Farm Work.

I have tried the steam, gasoline and kerosene and I find kerosene the most economical and quote you the following figures: In the year 1909 I cut and plowed at the same time 280 acres, pulling six 14 inch. Cockshutt plows and eight-foot Massey-Harris binder. I averaged sixteen acres per day and the cost was as follows:

Fuel, 50 gallons at 16c.	\$8.00
Engineer	5.00
Plowman	1.50
Binderman	1.50
Board for three men ...	3.00
Oil and Grease	2.00

	\$21.00

Or an average of \$1.31 for cutting and plowing per acre.



Gasoline Threshing Outfit of Horne and Smith, Howard, Sask., consisting of a 25 h. p. Manitoba Gasoline Engine and a 28 x 40 Nichols & Shepard Separator.

This year my crop ripened all at once and I was unable to plow and cut at the same time; consequently I pulled three eight-foot Massey-Harris binders. I made an average of 80 acres per day and costs were as follows:—

Fuel, 50 gallons at 16c.	\$8.00
Engineer	5.00
3 Bindermen at \$1.50..	4.50
Oil and Grease	2.50
Board for four men....	4.00

	\$24.00

Average per acre for cutting 34c. In plowing and harrowing I have made an average of 26 acres per day at the following cost:—

Fuel, 50 gallons at 16c.	\$8.00
Engineer	5.00
Plowman	1.50
Board for two men	2.00
Oil and Grease	1.50

	\$18.00

Average cost per acre 69c.

In considering these figures it is necessary to understand that we make no stops for meals. That in plowing, all corners are cut round and there is no turning. From the time our machine starts out in the morning until it stops at night it is on the move continually, barring accidents. Meals are brought to the men and

they eat as they go, only making stops once a day for about fifteen minutes to replenish fuel and water.

In the Fall I thresh with a 36-60 Reeves separator, high weigher, self-feeder and wind stacker all complete. I have a Hart-Parr twenty-two horse power engine, which has been in actual service for six years. It has never been overhauled until this year when I placed about \$200.00 repairs on it, which covered a magneto and oil pumps, they not having been on the engine when manufactured.

My engine is in first-class shape and I believe is good for ten years yet if properly handled. While I have always been used to steam and up to the last few years very much prejudiced against gasoline rigs, yet I am now led to acknowledge that the gasoline rigs are the best, espec-

ially where the water is so poor for steam purposes.

Hoping these figures will cover what you desire I remain,

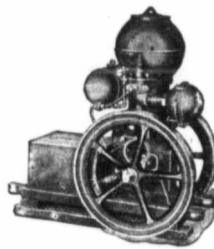
Yours sincerely,
H. C. Pierce,
Ridgway Farm,
Wadena, Sask.

Gas Tractor the Coming Power

I have been reading the Canadian Thresherman for about six months and have read nearly all of the different letters written by brother threshermen. We do not own an outfit of our own, but have the overseeing of one.

We operate a Hart-Parr 22-45 Gas Tractor and a 33-52 Gaar-Scott separator with Perfection weigher and Uncle Tom's stacker, which makes a very good two man outfit. We have threshed over one thousand acres with this outfit this fall with only four teamsters and two men for pitchers. We would have had a bigger crew if we could have gotten the men.

As we have an 880 acre crop ourselves, we do not do much outside threshing. Our best day's run was 1110 bushels of wheat and 476 of oats and moved a mile and a half. We have a big oil tank which holds about



The Manitoba Gasoline Engines

Never fail to satisfy. Are made in every size for all kinds of work. Are Simple, Reliable and Durable. Hopper-cooled and Frost Proof.

The latest addition to our line is the

Manitoba

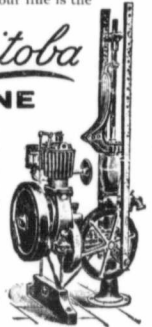
FARM PUMP ENGINE

A 1 1/2 h. p. air-cooled combination engine and pump jack. Can be attached to any iron pump in two minutes. Just the thing needed on every farm. Will pump your water, run your cream separator, churn, fanning mill, grindstone, etc. Always ready for business. Works just as well in mid-winter as in summer.

Write to-day for special engine catalog C. We also manufacture power and pumping windmills, grain grinders, steel saw frames, pumps, etc.

THE MANITOBA WINDMILL & PUMP CO. LTD.

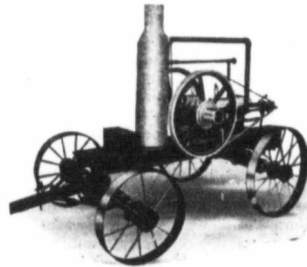
BOX 301 BRANDON, MAN.



Winter Power — Winter Work

Is furnished and carried out by the Farmer who has

“THE IDEAL LINE”



Ideal Gasoline Traction Engines are winners. Built in sizes 20 to 35 h.p.

Ideal Gasoline Engines adapt themselves to every power job on the farm. They are wonders for Efficiency, Durability, Reliability.

Ideal Engines are guaranteed in every detail to be constructed of the very best material and by skilled workmen.

Stationary or mounted from 1 1/2 to 50 h.p.

Ideal Grain Grinders “Canada’s Standard”

Built exceptionally strong and so nicely designed that it is very easy on power. Has sectional plates and all wearing parts are lathe turned. Large hopper capacity. An endless belt can be used with this grinder. Get an Ideal Grinder this winter and save one half your feed by crushing it. Then pay for both grinder and engine by crushing one or two days per week for your neighbors.



Ask for Catalogs.

Goold Shapley & Muir Co., Limited

230 Princess St., Winnipeg, Man.

Factory: BRANTFORD, ONT.

Cut Your Operating Expenses

I H C gasoline tractors are fast replacing the cumbersome, time and money wasting steam traction engines. Each year is adding to the already long list of practical demonstrations of the superior economy and efficiency of I H C tractors.

In the 1910 Farm Motor Contest at Winnipeg, I H C tractors delivered a greater per cent. of the engine's horse power at the draw-bar than any other tractor. In this same contest they proved their economy by consuming less fuel for work accomplished than any other tractor.

Maximum Power and Minimum Fuel Consumption

These are the two most important points of a tractor and in them I H C gasoline tractors are unexcelled.

But That is Not All

I H C tractors are simple and easy to operate—they do not require a licensed engineer.

It is not necessary to have men and teams hauling coal and water—I H C tractors carry a day's fuel supply.

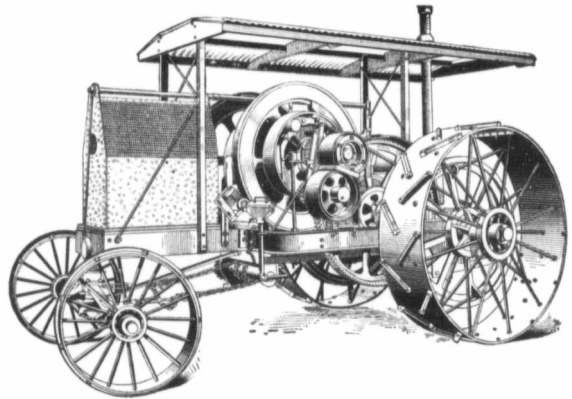
There is no time wasted in waiting to get up steam.

I H C tractors operate without sparks, smoke, or soot.

Write to us or ask the nearest I H C local dealer to show you why these tractors are able to set world's records, and why they will prove the most profitable investment you can make in the power line.

Canadian Branches: International Harvester Company of America at Brandon, Calgary, Edmonton, Hamilton, London, Montreal, Ottawa, Regina, Saskatoon, Winnipeg, Yorkton.

International Harvester Company of America
(INCORPORATED) **USA**
Chicago



twelve barrels of oil, which we keep behind the engine all the time. Oil costs us 24c. a gallon F.O.B. Winnipeg.

We have no cook car, but always come home for dinner, as the house is set in the centre of the farm.

We pay our men the best of wages \$2.75 to \$3.25 per day. We find it pays to give them lunch in the afternoon, as it is a good deal harder work on a small outfit.

As to plowing. We have two sets of 6 discs each of Lacrosse disc plows, which we find the engine pulls with ease. We plow from twenty to twenty-five acres per day and do not try to make any record runs, as I think steady going is the best. We use two men on the plowing outfit, as follows: the engineer, which is myself, and a plow man.

I think the time is coming when the gas tractor is to be the coming power in this section, as water is so hard to get.

Yours truly,
H. S. McKinnon,
Sanford, Man.

Wants a Gas Tractor

In answer to yours re gas engines I beg to say: I have an eight horse-power Sylvester stationary engine on my farm at Kelwood, and find it a very handy power to have on the farm.

Before I got the engine I had a ten-horse power. We used it to run a grain crusher and a circular saw for cutting wood, but there was a good deal of bother with

the horse-power, as there were so many whittle trees, neck yokes, lead chains and halters to gather up every time we wanted to use it. But there is none of that with the gas engine, as one can start it on a few minutes' notice.

I have had my engine for a year and a half now and the only trouble I had was last fall when the battery played out. We did

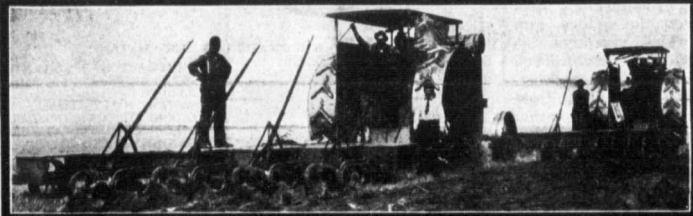
not at first know what was the matter, but after some considerable trouble we found out what was wrong. We got a new battery and there has been no trouble since.

We drive an eight-inch Flueury grinder and have all kinds of power to run it. We have a circular saw for cutting wood and get good satisfaction with it. Any

of the boys that can turn the wheels over a couple of times can run it.

We have the engine mounted on long skids 6 x 6 inches square and fifteen feet long. When we want to saw we bolt the saw fast to the same skids and then there is no trouble in setting. We pile the wood up in the bush, then

Continued on page 27



The "Flour City"

Is The Engine You Want

If modern design and careful construction, coupled with ease and economy of operation, mean anything to you in a Farm Tractor, the "FLOUR CITY" is the engine you want. It has shown its superiority by **Twice Winning the Gold Medal** at the International Motor Contest at Winnipeg.

Built in two sizes—30 and 40 H.P.—has High Drive Wheels—Best Accessories—made on honor throughout, and gives lasting satisfaction to every buyer.

Write for Catalog and record of Its Achievements in all classes of farm work.

KINNARD-HAINES CO. 828 44th Ave. North and Bryant, **Minneapolis, Minn.**
Ontario Wind Engine & Pump Co., Ltd. Dominion Sales Agents **Winnipeg, Calgary, Toronto**

AUTOMOBILES FOR THE FARMER

With this issue we begin a series of articles on the automobile as it pertains to the farmer. The increasing number of farmer automobile buyers leads us to believe that the farmer is rapidly taking hold of this means of transportation and accordingly we feel that a series of articles such as we shall give our readers should prove both interesting and profitable. They will be technical only in so far as is necessary in order to familiarize the farmer with the workings of an automobile, while considerable attention will be paid to the commercial side of the auto viewed from the farmer's standpoint. They are written by a gentleman who is thoroughly conversant with the automobile in all its phases, one who is both practical and thoroughly competent to handle the subject. Each issue we shall illustrate one or more cars that are suitable for the farmer's use.—Editor.

By A. C. Emmett.

The day when the farmer was the enemy of the automobile, has long since passed away, and today one of the factors in the sale of cars is the farmer. With the great strides made in the improvement of the automobile ever before him in the shape of quiet, smooth running cars passing his door, the farmer began to realize that there existed a method of locomotion that was ahead of the horse drawn vehicle in which he had been content to jog into the nearest town. One by one the more thoughtful men, began to realize that they were wasting time which could be put to a more profitable use than on the road between their farm and town. Once this conclusion was reached, they were quick to adopt the motor propelled vehicle and to relegate the horse to duties around the farm. The experiment, as it was considered by most people, was watched with keen interest by dwellers in the country district, and they were soon compelled to admit, that the farmer who possessed a car, was in a position to give more attention to the cultivation of his wealth producing acres, owing to the time saved for him by the swiftly moving gasoline buggy. Not only did the farmer save along this line, but also in the case of breakdowns of any of his farm machinery, having at his instant command, without even hitching up, a means of obtaining repairs and replacements with a minimum loss of time. This feature of the case is brought home most strongly when the golden ears of wheat, which represent his source of income, have ripened out and are ready for harvesting. Then the loss of time from a breakdown, whilst the weather is favorable, may mean a big loss, and the standing idle of men to whom he is paying big wages. Go a step further to the time when the reaping of the harvest is accomplished, and the threshing gang puts in its appearance, making his farm for the time being into the home of anywhere from twelve to twenty men. The least hitch in the operation of the mechanical aids to the work means a serious difference to his expense account, and the car is then at hand as an insurance policy against loss.

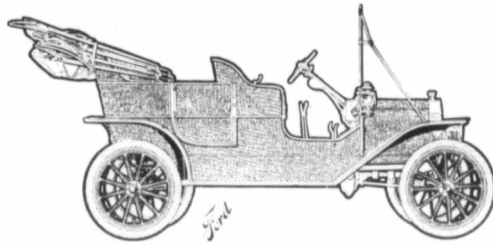
An instance of this came under the writer's notice during a trip through the West. Seeing a threshing outfit at work, a halt

was made to take in the busy scene with its hustle and bustle. Just when everything appeared to be running like a well-regulated clock, the cylinder of the thresher ceased to perform its appointed functions. The automobile was offered to the farmer for a run to town, where it was thought an extra cylinder could be procured, and the distance of twenty miles was covered in forty minutes, and to the satisfaction of the party it was found possible to obtain the required part. Another forty minutes was consumed on the return journey, and in the meanwhile the engineer and his assistants had removed the broken parts and were ready to replace them. The whole operation consumed a little short of three hours, saving at least three hours of valuable time. An object lesson of this nature did more to convince this farmer of the value of a car than hours of talk by a salesman and he now possesses a machine of his own, which provides him, not only with a quick means of making his journeys to town, but also provides a means of recreation for his family when the day's work is ended.

A car on the farm will also prove a great factor in the problem of keeping the boys on the farm when they grow up, as their environment is not limited when the means of quick access to a large town, even when it may be forty miles away is always at hand.

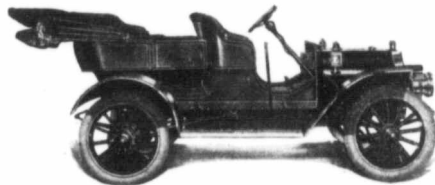
Turning to another side of the question, it is found that once a farmer becomes the possessor of a car, his attention is directed to more up-to-date methods of cultivation on the farm, and it is only a short time before he has a mechanical outfit for the heavy work, such as plowing, etc. The work of the engine is not confined to any one particular use, but may be turned to the cutting of feed and the hundred and one other operations around the farm that have previously been done with manual labor.

The past season has proved most conclusively that the farmer has to be considered as the heaviest consumer of a moderate priced car, and manufacturers are turning their attention to the production of a car specially suited to his requirements.



SPECIFICATIONS OF FORD

- BRAKES**—Two sets: (a) Service hand brake on transmission controlled by pedal; (b) Internal expanding brakes in rear hub drums controlled by hand.
- CARBURETOR**—New design, float feed automatic with dash adjustment.
- CLUTCH**—Multiple steel discs, operating in oil.
- CONTROL**—All speeds forward and reverse by foot pedals. Spark and throttle under steering wheel.
- COOLING**—Thermo-siphon and fan, new style radiator.
- CRANK CASE**—Upper half integral with cylinder casting. Lower half pressed steel and extend out to form lower housing for magneto and transmission.
- FENDERS**—Enclosed full length of car.
- FRONT AXLE**—One piece drop forging in I-beam section, specially treated Vanadium steel.
- FINAL DRIVE**—Point system (patented in all countries) with all moving parts enclosed in dust-proof casing, running in oil. Vanadium steel throughout.
- GASOLINE CAPACITY**—10 gallons. Cylindrical gasoline tank mounted directly on frame.
- IGNITION**—Ford magneto generator, on tension direct connected to engine drive.
- LUBRICATION**—Combination splash and gravity system—simple and sure.
- MOTOR**—4 cylinder, 4 cycle, 20 horse power, 31 inch bore, 4 inch stroke. Cylinders cast in one block with water jackets and upper half of crank case integral. Water-jacketed cylinder head detachable, fine grain gray iron castings.
- NUMBER OF PASSENGERS**—Normal load touring car, five adults.
- SHAFTS**—Crank and cam non-welded drop forged heat treated Ford Vanadium steel, bearing surfaces ground, cams integral and ground.
- STANDARD EQUIPMENT**—Side oil lamps, tail lamp, tube horn and gas lamp brackets.
- SPRINGS**—Front and rear, semi-elliptic.
- STEERING**—By Ford reduction gear system, irreversible.
- TIRES**—Pneumatic; 30 x 34 inches, front and rear.
- TRANSMISSION**—New design Ford spur planetary bathed in oil—all gears from heat-treated Vanadium steel.
- VALVES**—Extra large, all on right side and offset.
- WEIGHT**—Touring car, 1,200 pounds.
- WHEEL BASE**—100 inches. tread 56 inches.



SPECIFICATION OF THE "MAYTAG"

- NUMBER OF PASSENGER**—5.
- WEIGHT OF CAR**—1,850 pounds.
- WHEEL BASE**—96 inches.
- SIZE OF FRONT TIRES**—32 x 34 inches.
- SIZE OF REAR TIRES**—32 x 34 inches.
- BEARINGS**—Roller.
- CHANGE GEAR LOCATION**—Middle.
- CHANGE GEAR BEARINGS**—Ball.
- CHANGE GEAR**—Planetary.
- CHANGE GEAR SPEED FORWARD**—Two.
- CHANGE GEAR SPEED DIRECT DRIVE**—High.
- BRAKES, NUMBER**—Two.
- BRAKES, STYLE**—Expanding.
- BRAKES, LOCATION**—Rear wheel hubs.
- BRAKES, SURFACE MATERIAL**—Camela's hair.
- BRAKES, OPERATED**—Foot and hand, both or either.
- CLUTCH, STYLE**—Cone.
- CLUTCH, SURFACE**—Leather.
- CLUTCH, OPERATED**—Foot and hand, both or either.
- MOTOR**—Double opposed.
- MOTOR, BORE**—5 inches.
- MOTOR, STROKE**—5 inches.
- TWO OR FOUR-CYCLE**—Four.
- CIRCULATION**—Pump.
- PUMPS, STYLE**—Rotary force feed.
- PUMP, DRIVE**—Direct on shaft.
- RADIATOR**—Vertical.
- WATER JACKET**—Integral.
- OILING, FORCE FEED OR SPLASH**—Both.
- OILING, OPERATED**—Gear driven.
- ENGINE VALVE, LOCATED**—In head, side by side.
- EXHAUST VALVE, DIAMETER**—24 inches.
- INLET VALVE, DIAMETER**—24 inches.
- ENGINE POWER**—24-28 h. p.
- ACTUAL BRAKE POWER**—24.
- REVOLUTIONS PER MINUTE**—1,000.
- WEIGHT OF ENGINE**—350 lbs.
- GASOLINE CAPACITY**—17 gallons.
- IGNITION, KIND**—Jump Spark.
- SPARK PLUG SETS**—One.
- DRY CELLS, NUMBER**—Four.
- MAGNETO, MAKE**—Spitdorf.
- SPARK COILS**—One.
- FRAME**—Straight.
- SPRINGS, FRONT**—Half elliptic.
- SPRINGS, REAR**—Full elliptic.
- DISTRIBUTOR**—On Magneto.
- TROTTLE LEVER, LOCATION**—Above steering wheel.
- SPARK LEVER, LOCATION**—Above steering wheel.

AUTOMOBILES FOR THE FARMER

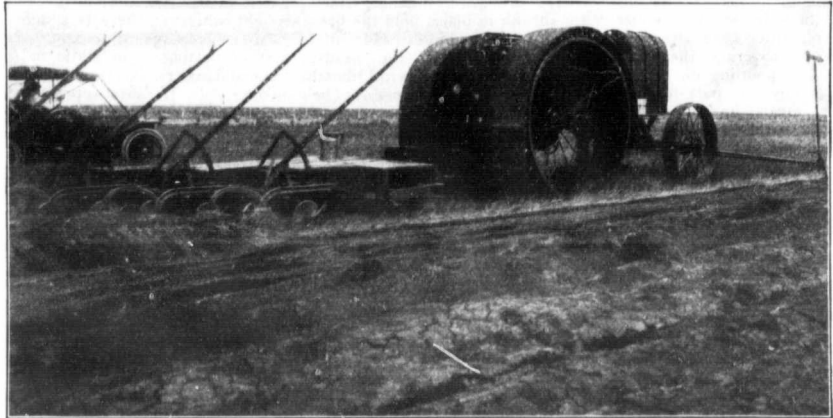
WHY TAKE CHANCES?

The chance taking days are over. No longer need you put your money into a traction engine whose qualities for "delivering the goods," though widely advertised, in actual operation are sadly lacking. The "first-your-money-then-your-trial" days are past. The **Gas Traction Engine** has paved the way for a more liberal, more fair and above-board sales policy, because

The Gas Traction Engine is Sold Only on Approval

When the
Engine Does
as Guaranteed—
Then You
Pay For It

If it Isn't
Exactly
as Guaranteed—
If it Isn't
Satisfactory—
No Pay



Only a Good Engine can be Guaranteed as the Gas Traction Engine is Guaranteed

Not only do we guarantee the horse-power—not only do we guarantee the material and workmanship for **ONE YEAR** from date of purchase—but we specifically state, over our signature, the number of breaking and stubble plows the engine will pull and the size separator it will successfully and continuously drive. As a clincher, we guarantee the amount of fuel the engine will use in plowing an acre of ground.

The Gas Traction Engine Produces Results

Big results for you—to do good farming quickly and cheaply—that's the one aim of **THE GAS TRACTION ENGINE**. Its thorough construction assures unlimited endurance—its perfect and practical design gives it result-producing qualities found in no other farm tractor. It weighs only 14,000 pounds—has less pressure on the ground per square inch than a horse's hoof and makes less of an impression in your stubble field than a single buggy wheel does. That unquestionably makes **THE GAS TRACTION ENGINE** the engine that does not injuriously pack the soil. And as for power—well

We'd like to meet you face to face—show you our plant—methods of construction and materials used. **COME NOW**—if you can—but whether you come or not, send **TO-DAY** for a free copy of our illustrated catalogue "The Passing of the Horse." **DO IT NOW.**

**PAY US
A VISIT**

GAS TRACTION CO., WINNIPEG, MAN.

**WRITE FOR
FREE CATALOGUE**

READ THIS LETTER

GAS TRACTION CO.

Gentlemen: This is to certify that we used one of your Gas Traction Engines the last season and we are perfectly satisfied with it. We plowed 850 acres this fall and the engine worked perfectly, pulling ten plows in hard ground. We had no trouble with the engine and it is apparently in as good condition as when we started. We will say it is **THE POWER** for farm work—plowing, harvesting, drilling, threshing, etc. **O'KEEFE BROS., Lansford**

Gas Engine Experience Dept.

Continued from page 25

draw the engine up to the pile and fire ahead, then go on to another pile.

Our gasoline costs about 24 cents a gallon, but a barrel of it does a lot of work. I believe, however, that these engines cost too much money for the amount of work the average farmer has for them to do, and it hardly pays to do grinding or work for others as there is too much lost time. I am greatly interested in gas traction engines and have some notion of getting one to plow and run a small thrasher.

Yours Truly,

Albert McLeod,
Kellwood, Man.

Gas Tractor the Real Thing

I am in receipt of your letter asking for information concerning a gasoline tractor which I operate. My engine is an International 20 h. p. 1907 low-wheeled type. We got it late in the season last year and plowed about 50 acres of summer fallow, the engine pulling five plows quite easily, although it was very

dry. Then we began discing, pulling four 16 inch 16 disc harrows. It did this work very nicely.

We began threshing after this. Our separator is a Buffalo-Pitts Niagara second 30-50 with wind stacker, weigher and self feeder. For this work we found the engine too light. It did not develop nearly enough power to drive the machine, the straw being very long last year.

This year, however, we got a good start and discing about 550 acres, and plowed about 250 acres of stubble, after which the engine was laid up for about two months waiting for some gearing which was worn out. But after we got these we plowed about 40 acres of breaking, pulling four plows quite easily. Just about the same amount of power was used as in pulling six stubble plows, which we used this spring. Our plow is a Cockshutt six frame plow.

In plowing the engine used about 26 or 28 gallons of gasoline per day which costs us about 26c. per gallon and one gallon of cylinder oil which costs 80c. I use axle grease on the gears and I

GADE GASOLINE ENGINES

3, 6 and 12 H.P. Sizes

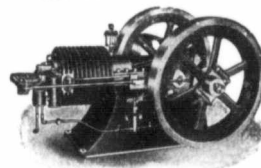
THE IDEAL WINTER POWER

Air cooled by the GADE patented cooling system.

No fan or pump to get out of order.

No water to freeze.

Well Drilling Machinery, Valveless Separators, Traction and Stationary Gasoline Engine Supplies



GET OUR PRICES, WRITE FOR CATALOG TO

BURRIDGE-COOPER CO., LTD., 156 Lombard St., Winnipeg, Man.

think that it with lard oil would cost 50c. per day.

We found, however, that our engine was not big enough for our work and the gearing is therefore not heavy enough to stand the heavy strain of traction work.

I have no photographs of the outfit but expect to get some in a couple of weeks and will send you some of the engine both threshing and plowing.

Yours truly,

Basil Jeneroux, Taylorboro, Sask.

Leave Me the Gas Engine.

I received your letter asking me

what I think of the gas engine. I believe that it is the only power for any kind of work on the farm.

I own a Rockford 8 h. p. gas engine. It takes 3 gallons of gasoline per day of ten hours, costing \$1.05. I am now drilling a well and can drill a 2, 3, 4, 6, or 8 inch hole.

I have not had much experience in this line, but can say this much that they can have all the steam engines in Alberta, as long as they leave me a gas engine.

Yours truly,

Hans Christian,
Bawlf, Alta.

Conducted by
Professor
P. S. Ross

Practical Talks to Threshermen

Talk No.
XXXIX

For purposes of study and investigation it is always necessary to make some sort of classification of the subject under discussion in order to avoid unnecessary repetition, and also to be certain of covering the entire subject and pointing out the relation of any one part to every other. This is the method that is applied, either consciously or unconsciously, whenever a careful study is made of any subject; for without some such method some parts of the subject may be overlooked altogether, some may be given more prominence than they deserve while others of equal or even more value are passed by hastily.

Applying this principle of study to the grain thresher we find that the subject naturally falls into the following divisions, namely: the frame work, the feeding mechanism, threshing mechanism, separating and cleaning mechanism, grain handling devices and straw handling devices.

While it would perhaps be more logical to begin with a description of the frame work of the machine and then take up the other divisions in the order given, I am, however, for reasons of convenience, going to vary the order somewhat and consider the threshing mechanism first.

The cylinder is the principal agent for loosening the grain from the straw, and since it is of prime importance in the operation of a grain thresher it has received very careful attention at the hands of designers. The first cylinders were beaters, consisting of a revolving piece supporting four parallel wooden bars which were placed parallel with the axis of the cylinder. Since that time the cylinder has undergone numerous changes until it has finally evolved into the present form of a toothed cylinder revolving at high speed, the teeth of which pass between similarly formed teeth set in the concaves below.

While there are some modifications in the general design of cylinders, the differences are exceedingly slight. Figure 71 taken from a well known manufacturer's catalog shows the general style of construction. The heads at the end of the cylinder are solid cast iron and two central heads are provided to give support to the bars. These

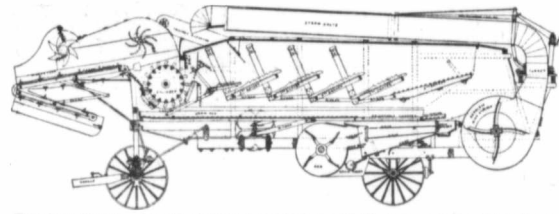
latter are made of steel and are punched with square holes to receive the shanks of the teeth. Heavy wrought iron bands, which are shrunk in place, hold the bars rigidly to the cylinder heads. The shaft is keyed to the heads, which are provided with liberal hubs for that purpose. The whole structure is thus roughly

After the cylinder is completely assembled, and the teeth are in place, the next operation is to put it in balance, that is to add weight wherever there is a deficiency. This operation consists first of putting it in static balance and afterwards in running balance. In the first operation the cylinder is set up in a frame

experience as there are no rules or processes that will enable the workman to tell with certainty where the balancing weights should be placed. It may be stated in passing that a revolving body may be put in static balance and yet be out of balance when running at high speed. If the balance is not correct it causes vibration of a more or less violent nature which causes injury to the boxes and to the entire machine.

It will be noticed on examining the accompanying figure that the teeth are arranged spirally on the cylinder drum, and are placed in such a way that they pass corresponding teeth in the concaves at a distance of about one-eighth of an inch. There is, on all separators, an end adjusting device, whereby the cylinder may be slightly shifted endwise in order that the cylinder teeth may divide the distance between concave teeth exactly right. This correct spacing is very essential in order to obtain the best results. If the space is too small, grain will be cracked, and if too large at other points some of the heads will pass through without being threshed. For the same reason teeth that are bent, broken, or badly worn should be replaced by new ones. It should be noted also that where new teeth are inserted to take the place of old worn ones, care should be exercised to place them opposite each other, on opposite sides of the cylinder. If this is not done the cylinder will be out of balance. A fraction of an ounce of weight placed wrong will make considerable difference in the smoothness with which the cylinder will run if speeded up to its normal working speed.

The teeth should be frequently tested to see if they are tight, especially if the machine is new. This may be done by tapping them with a hammer or drawing an iron rod quickly across a row of teeth. A special wrench is used to tighten the nuts and whenever a loose one is found it should be tightened at once. Right here I want to call attention to an important precaution that should never under any circumstances be neglected. If it becomes necessary to make any repairs or adjustments to the cylinder or concaves while the engine is under steam and the belt is on, make sure that the throttle of the engine is closed, that the reverse lever is in the center notch, and the cylinder cocks are open. If you take this precaution you may turn the cylinder



The above illustrates a sectional view of the Nichols and Shepard separator, better known as "The Red River Special."

One of the principle features claimed for this machine is what is known as "The Man Behind the Gun." Immediately behind the cylinder stands the separating grate. It is made of steel slats and behind this is a check plate. The cylinder and beater drive the straw and grain against the "Man Behind the Gun" at a terrific speed, which forces the grain through the grate and the check plate drops it down upon the grain pan where it is carried to the mill. The straw goes on over the grate upon the shakers which continue to beat any remaining grain out of it.

but substantially made. There is little or no machine work done upon it, but the work is rather carefully done, nevertheless.

It is the practice of some builders to place strips of hard wood underneath the cylinder bars against which the nuts, which hold the teeth in position,

made for that purpose and given a push by hand to set it revolving. If one side is lighter than another, that side will be uppermost when it comes to rest. By placing weights on the light side it is possible to balance the cylinder in such a way that it will stop rotating sometimes

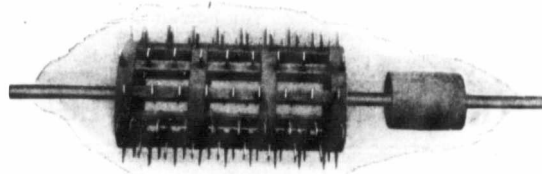
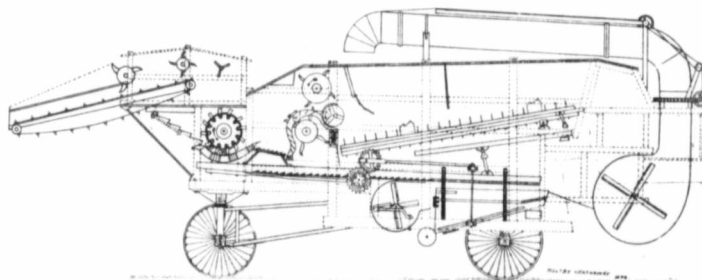


Fig. 71.

may be set up. This provides an elastic cushion for the nuts and helps to keep the teeth tight. Others depend upon split steel spring washers to hold the nuts from working loose. The heavy tension of the spring washer jams the nut against the threads of the tooth shank and prevents turning.

with one side uppermost, sometimes with another. The next operation is to give it a running balance, that is to speed the cylinder up and then dispose of the weights in such a way that it will run steady with the least possible vibration.

This process is one that requires a great deal of skill and



The above is a sectional view of the Waterloo Separator, better known as the "Manitoba Champion." The separating device in this machine consists in the main of a grate placed immediately behind the cylinder. This grate is so arranged that it controls the direction of the straw. This grate is set vertical and as the straw leaves the cylinder it comes in contact with the grate and is brought to an abrupt stop. The threshed grain being heavier than the straw it is diverted downwards to the grain pan while the straw follows the circle of the cylinder. The natural direction of the grain being downward on account of its heavier weight and the tendency of the straw being to follow the circle of the cylinder, it is claimed that a large amount of separation takes place at this point.

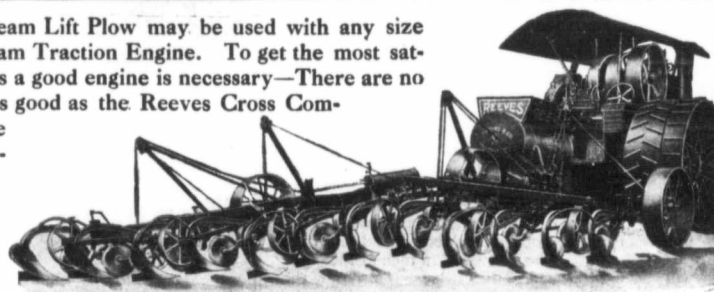
With this issue we begin a discussion of The Grain Separator and in each number we shall illustrate sectional views of the various separators now on the market. We trust that this will be appreciated by our readers.—Editor

REEVES STEAM LIFT ^{AND} HAND LIFT ENGINE PLOWS LEAD THEM ALL.

The Reeves Hand Lift Plow is adapted for attachment to any make or size of either steam engines or gasoline tractors.



The Reeves Steam Lift Plow may be used with any size or make of Steam Traction Engine. To get the most satisfactory results a good engine is necessary—There are no other engines as good as the Reeves Cross Compound—Double Cylinder Plowing Engine.



Reeves Engine Gang Plows, both hand and steam lift, have flexible frames—permitting the plow frame and the plow bottoms to conform to the irregularities of the surface; the plows are attached to frame in pairs, each plow reinforcing its companion and adding strength. Each pair of plow bottoms are carried on wheels producing light draft. The attachment of the plow to engine is pivotal, permitting the engine to control the direction of the plow—A spring releasing device insures against breakage when plows strike a stone, stump or other obstruction. With the Reeves Plow turns to right or left can be made without lifting plows from ground.

The plow follows the engine—it is not a case of the "tail wags the dog", the engine controls.

The Reeves Plow attached to the engine by its pivotal connection makes an ideal plowing outfit—controlled at will by the engineer. Don't make a mistake—get a Reeves Flexible Frame Engine Gang Plow and be in line for a profitable run of work in fall plowing. The Reeves plow is unlike others—many of which are simply dragged on the ground by chains, like a lifeless log, capable of movement only as it is pulled by the chain or rope attaching it to the engine.

The Reeves Flexible Frame Engine Gang Plow—either style, hand or steam lift—will do more and better work than any other Engine Gang Plow made. They cost more than others, but then you know the best is the cheapest—the Reeves is the best.

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CANADIAN BRANCH: REGINA, SASKATCHEWAN

The Thresherman's Question Drawer

Answers to Correspondents

A. R. Q. If a quantity of water is converted into steam, what is the weight of the steam as compared to the weight of the water?

A. Everyone who is accustomed to reading engineering papers or books is constantly meeting the expression "weight of steam," and many of them are puzzled to understand how the gas steam can have weight that would be felt on weighing scales just the same as a gallon of water. Yet there is nothing more certain than the fact that a gallon of water converted into steam will weigh the same as it did before heat was applied to do the evaporating. If you put a gallon of water into a closed vessel and put a spirit-lamp or other source of heat under it, and transmit sufficient heat to convert all the water into steam, it will weigh the same as the water did. But, if the steam was permitted to expand to the pressure of the atmosphere, it would occupy 1,664 times the space that it occupied as water. The fact that it now fills much greater space does not in the least change its weight.

In the process of converting water into steam, the heat applied has no influence on the weight of water or steam. The mass remains the same weight it had in the beginning. This proves the fallacy of an ancient belief that heat was a material substance that passed from a cold to a warm body and added its own weight to the latter.

L. M. Q. When brass boxing have been badly cut by excessive heating of the crank could it not be remedied by boring them out and running them full with a thin layer of babbitt, so as to leave the pin as it was?

A. Lining of brass connecting rod and crank pin boxes with babbitt metal is a very good practice. You will find that babbitt will wear longer and run with less heating than a solid brass box. Babbitt does not work as well as brass in the crosshead end of the rod.

G. E. Q. Will graphite stay mixed with lubricating oil so it can be used in a sight feed lubricator?

2. We have a Zero lubricator and when it gets a little cold the oil stays in the upper part of the sight feed glass. Is there any remedy for it so it will go away?

A. Graphite will not work successfully through the feed nozzle of the lubricator.

2. A cold wind may chill the water in the glass so that the oil will become so stiff as to stop the flow through the feed nozzle. If the lubricator is connected between the throttle and the cylinder the piston will pump the oil

through the feed nozzle when the throttle is shut off and the engine is still running due to the power stored in the fly wheel. The proper place for a lubricator is between the throttle and the dome on the boiler.

M. M. Q. How do you set the valve on a double cylinder simple portable engine running one way all the time: has no reverse; run backwards or the same as a traction engine does on the road; upright used to run a merry-go-round. Valves are run by a single eccentric each.

A. Each valve is set by itself as though it were two separate engines.

Turn the eccentric to its extreme, throw one way and note the port opening, then turn it to the other extreme and note the port opening on the other end of the valve. If the one end has more opening than the other, the valve should be set on the stem so that the port opening is the same on each end, when the eccentric is thrown from one extreme to the other. When this is accomplished set the crank pin in one of the dead centers and turn the eccentric on the shaft in the direction the engine is to run until the valve opens the port about 1-32 of an inch on the end of the cylinder at which the piston is then located. Now fasten the eccentric on the shaft and turn the engine in the direction it is to run, until the crank pin is on the other center, and see if the lead is 1-32 of an inch at the other end of the valve. If it is not the valve can be moved a little on the stem or the lead can be increased or decreased by moving the eccentric on the shaft.

L. G. Q. What is the best flue for repair work, iron or steel? Do copper thimbles add to the durability of a flue? Just how much should a flue extend beyond the flue sheet? How should a person proceed after the old flues are out? Should we put in one, let it project the right distance at each end, then turn it down at both ends? Do you turn them over at end first with a machinist's round headed hammer? Can flues be put in proper with a flue roller, a beader and hammer, or must an expander always be used? Please give full particulars for taking out old and putting in new flues, so that a man of good judgment, although he never put in any, can do so without the aid of a boiler maker.

For leaky flues should the beader be used after the flues have been rolled?

A. The Shelby seamless, or charcoal lap weld tubes are the best. A copper ferrule is a good thing when the hole is too large for the tube. When it is used,

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Do you know that to him it means "THE" thresher belt?

In other words—the thirty-four years success of the



"Gandy Endless Thresher Belt"

has established it so well that now it is the standard belt in the threshing field.

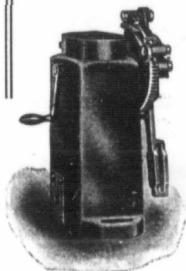
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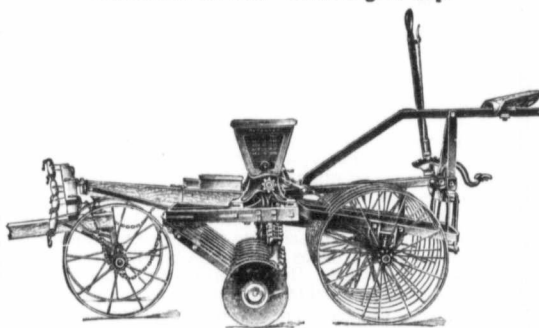
Our shop is devoted exclusively to the manufacture of oil pumps and force feed lubricators. All our energies are expended in this line. The highest grade of mechanics and skilled workmen are employed by us, and our shop equipment consists of the most modern machine tools, jigs, fixtures and limit gauges. This combination, together with our knowledge of knowing how to combine and use the best known materials, enables us to furnish a pump that will meet every requirement, and will work for years without any expense.

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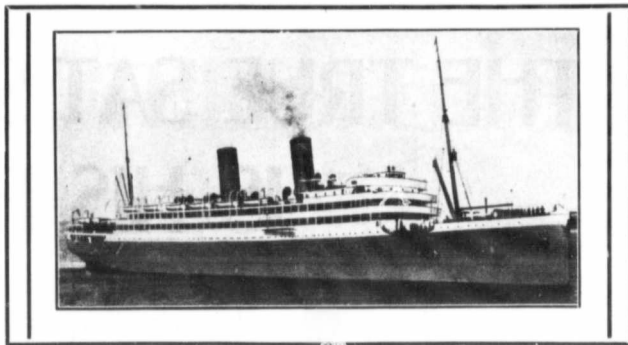
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the ferrule should be expanded in the hole before the tube is put in. In new work some manufacturers advocate the use of ferrules and some advocate making the hole at the fire-box end a trifle smaller than the tube and swedging down the end so as to drive it in place; thus after the tube is expanded it is not made any thinner than it was originally.

A tube should extend three-sixteenths of an inch beyond the tube sheet for a bead. The tube is then expanded at both ends and then hammered over to make the bead. Then expand a little again, then use the beading tool. Be careful not to expand too much. There is more danger in a beginner expanding too much than not enough.

Do not try to stop leaky flues by beading or calking. Always use an expander. If the bead does not seem to lay up to the tube sheet the beading tool can be then used. The object is to get the tube tight in the hole which can only be done by the expander.

R. B. Q. I would like to find out how to jacket a boiler at home, so I ask you the question: Which is the best, the steel or wood jacket? Also how to put on and all the material to use?

A. The steel is only to protect and give finish to the jacket. Blocks of magnesia are used to make up a jacket on a locomotive. On some traction engine boilers asbestos is used. In some

cases asbestos sheets are wrapped around the boiler and others are covered with wood. Hair felt is the best. In most every case Russia iron or sheet steel is used to keep the material in place. However, in some cases the wood is put on without any outside covering and it is likely the latter would be the most convenient for a "home job." The most convenient way to put on a wood jacket is to take strips of tough wood about 3/8 x 2 inches and put them around the boiler, say about every three feet with the ends fastened together so that they hug close to the boiler. The jacket, which is made of strips 7/8 x 2 inches, is then nailed to these strips, which serve two purposes: one, to make an air space between the jacket and the boiler and the other to hold the jacket on while being built up until the outside metal bands can be put on which permanently hold the jacket in place. The dome is treated in the same way by first bending thin bands around for the purpose of nailing the outside strips thereto. If the boiler is of the locomotive type, a strip of wood the thickness of the jacket can be bolted to the fire box as low as the jacket can be run and the outside metal bands can be nailed to the strip. This serves as if the bands went entirely around the boiler.

G. A. Q. We have a Crosby steam gauge on our engine. When we pulled in and cleaned

out the pointed stood at 0, but since then the pointed has travelled completely around the gauge, stopping within one-half inch of the pin. Would it be all right to set the pointer on other side of pin or let it go at that?

A. Your gauge must have been full of water and has been frozen up. It is very likely bursted; which you will find out the next time you steam your boiler. The part which is strained is the spring which is made of a flat tube and even if this spring does not leak the mere setting back of the hand will not do as

there is a pinion on the hand shaft which engages into the sector, and the position of the hand would indicate that the pinion is about to the end of the sector. If the spring is strained by frost it should be put back to its original shape. This will bring the pinion to the right end of the sector. To get the gauge to register accurately again, it should be tested and readjusted and if there is much out of place about it the best plan would be to send it to the gauge factory where they would make it as good as new for a very small sum of money.

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The famous

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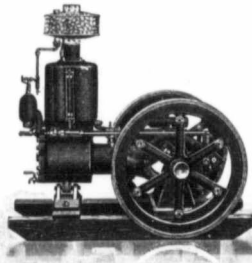
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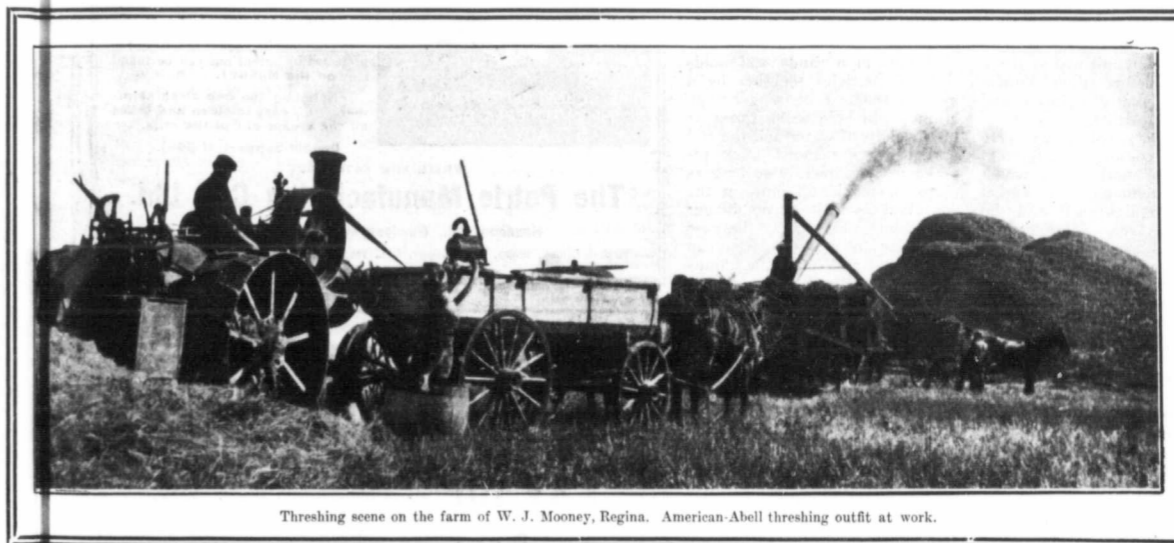
So says the Oracle

“THE TRUE SATISFACTION OF EVERY THRESHERMAN IS HIS PROFITS”

So says the Thresherman

That is why AMERICAN-ABELL THRESHING MACHINERY stands at the head of the list. That is why every AMERICAN-ABELL user is wearing such a happy smile just now. That is why it is a case of AMERICAN-ABELL once, AMERICAN-ABELL always. Wherever the “Cock o’ the North” line has done the work you find satisfied farmers, satisfied threshermen and prosperity, in so far as it is in the power of a threshing outfit to make it. Good goods, right prices, clean work and an outfit that has in it all the elements of durability—are the reasons why AMERICAN-ABELL THRESHING MACHINERY might claim as its trade mark the one word “Satisfaction”.

The threshing season of 1910 is practically over and the men who own threshing outfits in Western Canada can tell pretty well just how much profit they have made. Did you sustain a loss? If so, Why? Didn't you find that it was due largely to the fact that your outfit did not work as it should? You had several bad breakdowns and even when running your outfit did not work up to its full capacity. Be frank now and admit that your season's run would have been more of a success had you had an outfit that would run all of the time and work up to its full capacity every hour in the day. This is where the AMERICAN-ABELL comes out strong on the profit side of the ledger. This is why we want you to investigate the strong points of our threshing and plowing machinery while the subject is fresh in your mind. It will cost you nothing to look into this matter. It will cost you a whole lot if you don't.



Threshing scene on the farm of W. J. Mooney, Regina. American-Abell threshing outfit at work.

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American-Abell Engine and Thresher Company, Limited.

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We Represent THE ADVANCE THRESHER CO., BATTLE CREEK, MICH. AND THE MINNEAPOLIS THRESHING MACHINE CO., HOPKINS, MINN.



To Prevent Soil Drifting.

In Western Canada, as in all lands occupying an elevated position and having a limited rainfall, we are troubled at certain seasons of the year, particularly in the spring and winter months by dust storms. Scattered throughout the length and breadth of the three Prairie Provinces we find large areas where the soil is a sandy loam. With our semi-arid climate and the usual exclusively grain growing system of agriculture followed in the West these light tracts of land are only under cultivation for a few years before their humus content is greatly reduced and they begin to drift.

Almost every spring we have high winds, coming usually from the north or northwest; which cause great damage to the cereal crops on the light soil and the surrounding area. The surface soil is blown away and the roots of the young plants being exposed to the drying influence of the sun and wind lose their moisture and the plants wither and die. The wind also blows the sand particles against the tender shoots and many of them are cut down and perish. The particles blown from a small sandy ridge only three or four acres in area will often seriously injure the crop on all the adjoining fields. Not only is the stand of grain reduced but the fact that the growth of the crop is checked for a time favors the growth of weeds which almost invariably spring up on a badly drifted field. It is estimated that in districts badly affected yield is often reduced one-third by these causes.

Besides reducing the yield these sand storms cause injury in many other ways. In many places, when the grass covered headlands have afforded shelter, large drifts of sand, sometimes three or four feet high have accumulated along fences and rendered them practically useless, and affording at the same time a convenient seed bed for the light wind borne seeds of noxious weeds. Quite frequently during a dust storm it is impossible to see from one end of a field to the other. This interferes with agricultural operations and causes the farmer considerable physical discomfort. In winter, soil is often blown from plowed fields and deposited in the snow on the road. This makes sleighing very heavy and in spring prevents the melting of the snow so that these roads are

not fit for travel until late in the season.

From the foregoing statements it will be seen that this drifting of the soil is a great drawback to the districts in which it occurs. The object of this article is to show how this may be prevented and its injurious results avoided. There are two methods by which this can be affected. The first and perhaps the most practical is to add humus (organic matter) to the soil. The second is to provide shelter belts or some form of wind break.

Humus in a sandy soil holds the soil particles together by a kind of elastic cementing action. Humus will hold seven times its own weight of water and the soil particles being moist stick together. Consequently so long as there is sufficient humus in the soil there is little or no danger of drifting. This being the case the question arises. How can we increase and retain the humus content of our soils?

Humus may be added to the soil in two ways. By growing grass crops which produce a heavy root growth and by plowing down either green manure or barn yard manure. Of the several varieties of grass which have been tried on these light lands Brome Grass (*Bromus Inermis*) is the most satisfactory. This grass does well on sandy soil, does not require a heavy rainfall and produces a thick mat of running perennial roots which are for the most part confined to the surface soil and so bind it together that a thick sod is formed. This grass makes excellent hay and can be sown with any ordinary crop. Ten to fifteen pounds of seed should be sown per acre, and the best results are obtained in this country if it is sown about May 15th.

Western Rye Grass and Bunch Grass have also been found very satisfactory. If a field is seeded down with any of these and left under grass for two or more years a good sod will be produced and it may then be broken up and cropped for several years without danger of drifting.

Farm manure when applied in sufficient quantities will furnish the required humus but in this country the area under cultivation is so large when compared to the amount of stock kept that this method of preventing drifting, while quite applicable to the small sandy ridges before mentioned is obviously out of the question when treating large fields. If, however, it is decided

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If you examine Cream Separators you will find that all makes except one apply the one wheel principle to the running of the bowl, that is the support is placed at one end of the bowl only.

The MAGNET CREAM SEPARATOR is the exception and it is made by us. It has a bowl supported at the top as well as at the bottom. Examine the accompanying cut, and you will see how nicely the bowl of the Magnet is held in its place, giving it steadiness of motion and preventing it getting out of balance. It also makes it very easy to turn, in fact so easy that a child of four years can operate it.

See page 18 in the catalogue.

This double support of the bowl is protected by patent and can be found only on the MAGNET.

Note also the one piece skimmer. It is easy to clean and takes all the cream out of the milk.

Double Support of Bowl.

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The climate is delightful, and ten acres of this land will produce more revenue than a quarter section of the finest wheat land on earth. We make terms to suit the individual pocket-book. A post-card to us will bring you all the information.

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to grow some crop and plow it down as green manure there are several species of plant admirably suited to this purpose. If possible a leguminous crop should be chosen as it will add nitrogenous plant food as well as humus. Clover seed, however, is very expensive and in many districts, but poor returns have been obtained from it. Peas, however, when sown early will usually give a very heavy growth and makes excellent green manure. If it is decided that it is not advisable to grow a leguminous crop there are other kinds of crops which are suitable for this purpose. The writer has used Silver Hull Buckwheat and found it very satisfactory. It was sown on a sandy ridge about June 1st. Two bushels were sown on four acres and produced a heavy stand of Buckwheat about two feet high. About the 10th. of August this was plowed down and the land packed and harrowed. In the following year an excellent crop of wheat was grown on this ridge and the drifting of the soil was noticeably lessened for several years.

To keep up the humus content of a soil a grass crop or a crop of green manure should be grown every three or four years, and summer-fallowing should be avoided. While summer-fallowing may be a very good way to kill weeds or to store up moisture, it is unquestionable that the frequent tillage and the open nature of the surface allows oxygen free access to the soil and so burns up a great deal of its humus content.

The other method of preventing drifting is to provide wind breaks. This may be done in several ways. Rows of trees may be planted across the fields at right angles to the direction of the prevailing winds. Experimenters have found that a thick row of trees forty feet high will provide good shelter for a strip of land six hundred and fifty feet wide. On account of their rapid growth Lombardy Poplars, Cottonwoods and Locusts are the favorite trees for this purpose. In New Mexico good results have been obtained by planting hedges of the Shrub Wormwood (*artemesia absythalolia*) across the fields about forty rods apart. These grow rapidly, soon providing the desired shelter and should occur afterwards demand it, are easily removed.

Another method is to lay the farm out in long narrow fields running at right angles to the direction of the prevailing winds. Then follow a rotation which will keep the alternate fields in grass, or green manure. These grass fields will check the velocity of the wind close to the ground and so protect any adjacent fields which may be bare. Wherever fall grain will grow it should be sown on the light land and the crop will reach such a height that it will protect the soil from effects of the heavy spring winds.

If the stubble be left on the fields the drifting of soil in winter will be prevented and the

roads will not be blockaded in spring. When it is necessary to fall plow, the surface should be left rough so that it will check the velocity of the wind on the surface and so reduce the amount of drifting.

Good Roads Again.

The value of good roads is often not appreciated by the farmers as much as it should be. Of course the burden of making better roads falls directly on them, which is another side to the problem. The average cost of hauling a ton one mile on the ordinary country roads is 25 cents, while the average price of hauling one ton one mile on the railroads is three-fourths of a cent. In other words, the cost of hauling is 33 times as much with team and wagon as with steam. This has been accomplished by a number of factors. Some of these can be and must be considered in making good roads, that is, to have a good hard road bed and to eliminate grades. The railroads do not as a rule have a grade of more than three per cent. Some of them have adopted 2 per cent, as a maximum grade. Two per cent, means a rise of two feet in 100 feet. This would not be considered much of a grade on the ordinary road, but this is the way it works of.

A team can exert a pull on a short distance of one-half its weight, but for ordinary work the load it can pull should not be over one-tenth the weight of the team; for instance, a team weighing 3,000 pounds can exert a pull of 300 pounds, that is, when it is to continue the work for say 10 hours. While for a small stretch it would be able to exert a pull of 1,500 pounds. This, however, is putting forth all the energy of which they are capable. It has also been found that the pull required to take a ton over the ordinary roads is 160 pounds. Supposing then that the load is one ton and the wagon weighs 1,300 pounds, this would make a total of 3,300 pounds, and at the rate of 160 pounds per ton would make a total of 264 pounds, a little less than the team is capable of hauling. In fact it could very nicely handle 500 pounds more which would bring the pull up to 300 pounds, and making the load 2,500 pounds. This, however, is for the level. As a grade is approached this, of course, will be increased. A five per cent. grade would increase the draft of the wagon and load—3,300 pounds—by 315 pounds, bringing it up to 579 pounds which is almost twice what the team can handle as a regular thing. If the grade is increased to 20 per cent, or 20 feet in a hundred feet the draft on this same load would come to a little over 1,500 pounds, or the maximum that this team could pull when exerting its utmost power. Any grade beyond this would mean that the load would have to be reduced, and in fact no team should be required to have to pull to its maximum

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I have the best cows in the country—and here's my Windsor Butter Salt.

You can't beat that combination.

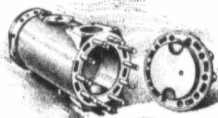
You know, I have won first prize for the best butter ever since I began to use Windsor Butter Salt"

"Hope you win"

"Thank you, so do I"



About cylinders and combustion



The "B" is equipped with two horizontal twin cylinders of 9 1/2 in. diameter and 12 in. stroke.

The cylinders in the "B" are surrounded on all sides by a jacket for cooling. The construction of this jacket is such that it is adapted for either

Water or Oil Cooling

Great care is taken in casting these cylinders to overcome the effects of unequal heating, at the time the metal is poured. This obviates any internal damaging strains that might give trouble later when the engine is in operation.

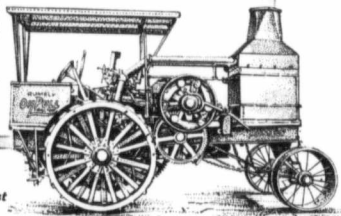
The cylinders are cast singly, finished singly, but rigidly bolted together on the machine in a twin construction. The heads, which are detachable and can be easily removed at any time, are held securely in position by ten large, strong stud bolts and nuts.

Cylinders Always Clean

The Secor system of oil combustion is so perfect that there is no more carbon deposited in the cylinder in burning kerosene than is commonly deposited in a gasoline engine when using the best grade of gasoline, hence, gumming and deposit in the cylinders, which, in kerosene burning engines, has always been the cause of unlimited trouble, is entirely done away with in the "B".

"Telling and Telling the Soil" contains a great deal of valuable information on kerosene burning engines. Send for it.

M. Rumely Co. 19116 Rose St. Regina, Sask. Home Office at Waukegan La Porte, Ind., U.S.A.



The Only Oil Burning Engine in the Great Motor Contest

Patronize those who patronize this Paper.

capacity. From this then it is evident that increasing the grade increases the draft very fast and hence grades should be eliminated as far as it is possible.

On the macadam road a team can pull three times as much on the level as on the good earth road, but the increase in draft up grade remains the same as on the earth road, so that a grade would be more objectionable on a macadam road than on a poor road. On the level a 3,000-pound team could easily handle four tons, while the maximum grade that it could pull up with such a load would be 10 per cent. grade, and even that is more than should be expected from the team.

There is a very marked tendency in the West of running roads on the section lines. This is good where the land is level, but where there are hills it is usually advisable to go around rather than to go over them, at least where this can be done, and thus avoid a steeper grade. There is also this objection to cuts in hills that it brings up a soil that is not good for road making and one that washes easily, and the expense of cutting down hills is usually greater than would be the cost of buying a right-of-way around the hill and thus avoid the grade. Railroad engineers will make considerable curves in the roads in order to avoid grades, and they have the problem very carefully studied out and they will often times make a detour of a good many miles in order to avoid a grade.

Having to haul the produce from the farm to the market over a poor road adds to the cost of production, and again a good road that can be depended on in all seasons brings the farmers several miles nearer town and it also increases the value of the land considerably as the buyer will pay quite a bit more for land that he can reach with a good road than for land that is hard to reach, on account of poor roads, due either to steep grades or to poor quality of the road bed. The main thing in a new country, however, is getting the roads laid out in the right place, as it is not an easy matter to change them after they have once been established and money expended on them.

The Winnipeg Motor Contest for 1910

Continued from page 23

stated this simply shows that No. 10 was not pulling its maximum load for some reason.

The fuel consumption per acre averaged 3.1 Imp. gal. and this value and the consumption per day should be considered in connection with columns "u" and "v" which give the cost per day and per acre respectively. The average cost per acre with gasoline at \$0.20 per Imp. gal. is \$0.65 while with kerosene at \$0.11 en-

gine No. 11 gives the low value \$0.38 per acre.

The thermal efficiencies represent the percentage of heat in the fuel which was actually transformed into work at the brake and the draw-bar. These have been calculated on the assumption that the gasoline had a heating value of 18,500 and the kerosene 19,500 B. t.u. per pound. The highest efficiency per draw-bar horse power is 12.9 per cent or only about 1/8 of the heat units in the fuel are actually realized in work at the draw-bar. The draw-bar horse power divided by the brake horse power, or the transmission efficiency as it is called in the table, cannot be taken at its face value as might appear from a casual study of same. It is necessary to take this in connection always with other results. The No. 18 developed only 49.2 per cent. of its maximum brake horse power at the draw-bar while No. 9 developed 73.8 per cent. yet No. 18 had a thermal efficiency at the draw-bar of 12.4 per cent. as compared to 12.9 for No. 9, or it plowed an acre with a fuel consumption of only 0.1 of a gallon more. This brings out the fact that all the engines were not pulling their maximum load presumably on account of the fuel economy. In fact, several magazines stated that many of the engines could have pulled twice the number of plows which they actually handled. What would this not have done to the value of transmission efficiency of which we have been hearing so much. Some of the values which are now so low might have given some pleasant surprises. There is no reason to suppose that there is any such variation in the efficiency of transmission as that shown by the table when all engines, both steam and gasoline, have practically the same number of gears, shafts, idlers, etc.

The drawbar pull per unit of furrow should take into consideration the depth of furrow as well as the width. This item would be more useful if it showed the pull per cubic inch of furrow turned.

It has been the aim of this article to show that it is impossible to properly judge the performance of an engine from any one set of results. The fuel consumption, price, efficiency, weight, cost of operation must all be taken into consideration. There is no such a thing as a "best" engine for while some are better suited for some purposes, they are not adaptable to others. The entire set of conditions under which an engine is to be operated must be known before an intelligent and economical selection can be made. To this end it is hoped that the conditions at the Winnipeg Motor Contest for 1911 will be made more severe and will not allow so much latitude to the manufacturer of the engine. This will put all on a more equal footing and will give results of more worth both to the purchaser, the student, and manufacturer as well.



Here's A Pointer For you

You can buy a pocket knife made of pewter or you can buy one made of steel and as far as looks go they may look just alike. One will cost you a dime, while the other costs a dollar. One will give you a service for years, while the other wouldn't serve you a minute. The same is true of machinery, everything used on a farm from a pocket knife to a traction engine—there's a "true-as-steel-quality" and a "soft-as-pewter-quality."

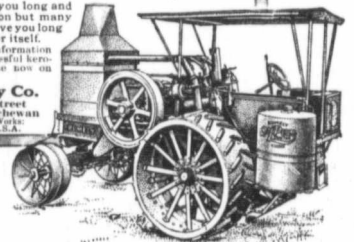
The Only Oil Burning Engine **RUMELY OIL PULL TRACTOR** In the Great Motor Contest

is the leader in the "true-as-steel-quality" class. It is built strong, rigid and substantial with a thought of giving the purchaser the maximum service both in years and quality.

In building we put the right kind of metal in the right place, every pound of it just where it belongs. Look at the frame upon which we mount the engine. It consists of 12 inch x 3 1/2 pound I-beams, solidly riveted, not bolted together, in one solid, rigid, unyielding construction. As we build the foundation, so we build every part that goes to make an engine with the result that it will serve you long and well, not one season but many seasons. It will serve you long after it has paid for itself.

Let us send you information about the only successful kerosene burning engine now on the market.

M. Rumely Co.
1918 Ross Street
Moline, Saskatchewan
Sales Office and Works
La Porte, Ind., U.S.A.



SPORTSMEN

Diplomas of Merit 1909 and 1910 Silver Medals 1909 and 1910

Have your trophies preserved and mounted by a Practical Taxidermist, who has spent a life time at his art and will guarantee perfect work with absolute fidelity to Nature.

Highest prices given for Big Game Heads, Elk Tusks, Raw Furs, Hides, Rare Birds. Write for quotations on rare birds.

First Prize Birds 1909 and 1910 First Prize Animals and Heads 1909 and 1910

The Moose season is close at hand; you will want your trophies mounted. Don't forget Ambrose the Taxidermist when having work of this kind done.

SATISFACTION GUARANTEED Tailor-Made Suits Carried in Stock Send for Price List

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PIONEER HIDES & FUR CO. Successors to LIGHTCAP HIDE & FUR CO.
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Farmers! We handle your Grain on a Strictly Commission basis. Consign your Grain to us and get the very best price.

WILEY & CO., Limited
(Licensed and Bonded) 220 GRAIN EXCHANGE, WINNIPEG
We also handle Option Orders

Watch the Gas Engine

The E. H. Heath Co.—

I am enclosing you an extract from a book I read recently, I thought it likely to interest you, for publication in the Canadian Thresherman of which I am an interested reader, and have taken since it was first published. I follow your articles on traction cultivation with great interest. I made my first acquaintance with gasoline engines nearly 10 years ago and have since been a strong advocate of its uses. It was very amusing to us to listen to our neighbors, with their prophecies of trouble and disappointment, when we first started with gasoline at my father's place near Millwood, Man. The engine we got was a 6 h.p. Sylvester Stationary, this we mounted and used as a portable, of course, it gave trouble for a time—very naturally too—as we understood practically nothing of it, but in one season's use, we managed to master it fairly well; this engine is still running just as good as ever, and, judging from appearances, it should do as well for another ten years' use. We used it for threshing principally, running a 30-inch Moody separator, hand feed and slat stacker; it also was used to operate a Climax B ensilage cutter with pneumatic elevator, elevating ensilage into a silo 24 feet high with good satisfaction; it was also used for chopping grain and cutting wood.

Last fall I operated a separator (Nichols & Shepherd) 32x48 with all attachments, for Knott Bros. of Bredenbury, Sask.; this was run by a Hart-Parr 22 h.p. gasoline tractor and gave good satisfaction all round. The engine had enough power to keep five men busy feeding, and on a pull it seemed almost impossible to stick it. The wave cleats on this engine are a big improvement over the old type of cleats as they give a strong smooth grip and do not cut like the old type of cleats generally used and the whole engine is built for power and work.

I think a lot of the trouble gasoline engines give to people just learning to operate them could be done away with if the manufacturers would give a proper idea of them in their advertisements, almost any of these ads say: "these engines are so simple, they run with little attendance anyone can run them, they are so simple." This is a mistake; in reality, the gasoline engine is a rather delicate rig to operate and there lies the trouble, a person will be careless of their gasoline, and in handling it and filling, the tank gets lots of dirt, chaff, etc., into the tank, presently the feed pump balks, a few strokes of the pump probably fixes this, and it is O.K. for a while when the engine weakens, and maybe stops. Then comes a frantic hunt for the trouble, or maybe a call for the expert. And the trouble when located, proves to be a little dirt or perhaps a flake of chaff, pumped up

with the gasoline into the vaporiser, thus stopping up some or all of the minute holes through which the gasoline is fed in the form of a fine spray to the engine. The remedy is easy, a prevention too; always fill the tank when there is no dirt blowing around, use a good sized funnel and have the tinsmith solder a piece of fine wire gauze in it to strain all the dirt out and use a strainer pail to handle the fuel with and always keep the plug in the tank when not in use.

Or take another example of trouble, perhaps the engineer is careless and throws all manner of things into the battery box, dirty or clean alike, and occasionally a connection works loose and the wire ends and battery screws get dirty, some fine day the engine refuses to work; Mr. Expert finds a dirty connection that prevents the current passing or perhaps he finds a spanner or some other piece of metal on the top of the battery, making a beautiful short circuit. These and other similar small things constitute most of the gas engine troubles.

Don't depend on the battery to run your engine; get an ignition dynamo on your engine and save yourself trouble with it. Make sure your battery is disconnected when not in use. Keep all tools off the top of your

batteries; put them in the proper boxes or places. Use good oil, and plenty of it, but not too much and keep everything clean, especially the ignition parts and devices and all connections and a good cleaning of the whole engine occasionally, is a capital thing. Strain all your fuel. Flush out your cylinder and piston occasionally with coal oil, by taking off the oiler and pouring in coal oil, until you have the cylinder shining like a new quarter; oil with fresh oil and you will notice a wonderful improvement in your engine. Watch particularly all the small things. These constitute the biggest things in gas engine practice and don't be afraid to get a new battery when you need it, it costs less than time when the engine should be working.

Keep your ears and eyes open for all information you can get on gas engines and don't be afraid to study your engine when idle—it pays. In reality, there is as much to learn in gasoline as there is in steam engines, and perhaps more. So don't expect to make an instant success as gasoline engineer, without study and practice, as it is a subject that requires proper knowledge as much as any other.

Wilfred H. Farthing.
Spy Hill, Sask.

Extract from Famous Engineers of the 19th Century.

.... (By J. H. Layson.)
Published by Walter Scott, 24 Warwick Lane, London, Eng. 1836.

A Letter From Richard Trevittick.

April 26th, 1812.

To Sir John Sinclair:—
I have your favor of the 4th instant, informing me that you had sent my letter, respecting propelling ships by steam, to the Navy board, and also requesting a drawing, and statement of the thrashing engine to be sent to the President of the Board of Agriculture, which shall be forwarded immediately.

I beg to trouble you with a few wild ideas of mine, which perhaps may, some future day, benefit the public, but at this time remain buried for want of encouragement to carry it into execution.

The average consumption of coals in large steam engines, is about 84 pounds to lift 10,000 tons of water on earth one foot high.

The average cost of this coal in the Kingdom is sixpence.

The average of a horse's work for one day is about 4,000 tons lifted one foot high, costing about 5 shillings.

A man labor for one day is about 500 tons lifted one foot

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—from every standpoint—where with to build things about the farm. This recently-published book, "What the Farmer Can Do With Concrete," will prove to you the superiority and "in-the-long-run" economy of

"CONCRETE" as a Building Material

You, as a progressive farmer, owe it to yourself to read this book before you attempt any further improvements.

The retail price of the book is 50 cents—but we will send it, absolutely free, to any farmer who will fill out and send to us the coupon below.

CANADA CEMENT COMPANY, Limited
82-92 National Bank Building, Montreal

You may send me a copy of your book, "What the Farmer Can Do With Concrete."

Name

Address

high, costing 3 shillings and sixpence. I have had repeated trials of the water lifted by coals, horses and man, proving, that where a bushel of coal can be purchased for sixpence, that sixpence is equal to 20 shillings of horse labor and to £3.10 shillings of man labor. If you calculate a man to lift 500 tons one foot high, it is equal to 100 tons lifted 5 feet high, a very hard task for a man to perform in a day's work. His calculation proves the great advantage of climental power over animal power, which latter, I believe can in a great part be dispensed with, if properly attended to especially as we have an inexhaustible quantity of coals.

To prove to you that my wild ideas are not mere ideas. In general my wild ideas lead to theory and theory to practice, and then follows the result that sometimes proves of essential service to the public.

About six years ago I turned my thoughts to the subject and made a travelling steam engine, at my own expense. To try the experiment I chained four wagons to the engine, each loaded with 2½ tons of iron, besides seventy men riding on the wagons; making altogether about 25 tons, and drew it on the road from Methyr to the Quakers Yard, in South Wales, a distance of 9¾ miles at the rate of four miles per hour, without the assistance of man or beast, and then without the load, drove the engine on the road, sixteen miles per hour. I thought this experiment would show to the public, quite enough to recommend its general use, but, though promising, to be of so much consequence, has so far remained buried, which discourages me from again trying, at my own expense, for the public especially when my family calls for the whole of my receipts from my mining concerns for their maintenance.

It is my opinion that every part of agriculture might be performed by steam, carrying manure for the fields, ploughing, harrowing, sowing, reaping, thrashing and grinding and all by the same machine, however large the estate.

Even extensive commons might be tilled and effectually managed, by a very few labours without the use of cattle. Two men would be sufficient to manage an engine, capable of performing the work of 100 horses, every twenty-four hours, requiring no extensive buildings, or preparations for laborers or cattle, and having such immense power in one machine, as could perform every part in its proper season, without trusting to laborers.

I think that a machine that would be equal to the power of 100 horses, would cost about £500. My labor in invention I would readily give to the public, if, by a subscription such a machine could be accomplished, and be made useful, it would double

the population of this kingdom, for a great part of man's food now goes to horses which would then be dispensed with, and so prevent importation of corn! And at a trifling expense, make our markets the cheapest in the world, because there are scarcely any coals to be found except in England, where the extreme price duty included, does not exceed 2 shillings per bushel.

I beg your pardon, for having troubled you with such a wild idea, and so distant from being carried into execution, but having already made the experiment above stated, which was carried out in the presence of about 10,000 spectators, who will vouch for the facts.

I venture to write to you on the subject, for the first and only self-moving machine, that was ever made to travel on a road, with twenty-five tons at four miles per hour, and completely manageable by only one man, I think ought not to be dropped without further experiments as the main point is already obtained, which is the power and its management.

Your most obedient servant,
Richard Trevithick.

Mr. Editor:—

I thought the foregoing would probably prove interesting to the readers of the Canadian Thresherman and Farmer. In view of the large growth of traction cultivation at the present time, and for purposes of comparison it is copied word for word from the letter, printed in the book mentioned at the beginning, of course, the values are in English money and are easily compared with Canadian money.

A little calculation shows that Trevithick's experiment with his travelling engine took place 104 years ago according to this letter. His engine must have been in some respects superior to those of the present day. He says he drove his engine empty, 16 miles per hour—a great turn of speed for a traction engine, and which most of the engines of today could not manage. In the light of a prophecy this should interest many people.

Trevithick could see the utility of his engine but could not get people enough interested in it to start their general use.

If this article is of use to you, I will keep myself on the watch for others, as there are many things one sees that may prove of general interest.

With best wishes for the success of your paper. I remain yours truly,

Wilfrid H. Farthing.

Shoe Boils, Capped Hock, Bursitis are hard to cure, yet ABSORBINE

will remove them and leave no blemish. Does not blister or remove the hair. Cures any puff or swelling. Horses can be worked \$2.00 per bottle, delivered, Book 6 D free. **ABSORBINE JR.** (macking, \$1.00 bottle.) For Boils, Bruises, Old Sores, Swellings, Goures, Varicose Veins, Varioles, Always Pain.

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The kind that pleases people

MAGIC BAKING POWDER
PURE AND WHOLESOME

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Amatite ROOFING



It has a rough surface of real mineral matter on the weather side. It is evident to anyone that it is no more necessary to paint such a surface than it is necessary to paint a stone wall. Stone needs no paint; neither does Amatite. It is strong enough in itself to bear the brunt of rain and wind and sun without a coat of paint.

To paint Amatite would be a waste of time and trouble.

Amatite will last for many years without any care whatever. It is made to be trouble proof as well as weather proof.

No paint is good enough to make a durable roof; a thick layer of pitch, faced with a real mineral surface, is far better—and that means Amatite.

A Free Sample will be sent on request to nearest office.

The Paterson Manufacturing Company, Limited
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WINCHESTER



LOADED BLACK POWDER SHELLS

THE RED W BRAND

TRADE MARK REG. IN U. S. PAT. OFF.

Shoot Strong and Evenly,
Are Sure Fire,
Will Stand Reloading.

They Always Get The Game.

For Sale Everywhere.



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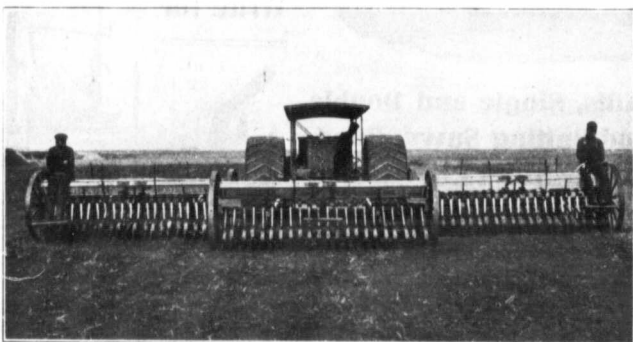
SOLE MANUFACTURERS UNDER STEPHENSON'S PATENTS

The Double Disc is universally pronounced to give the best satisfaction of any.

18 Sylvestor Double Disc Drills used on the Dutschem farm (Canada's largest farm at Girvin, Sask.) during 1910, and more ordered for next season.

Made in sizes 14 to 24 Disc, and are made interchangeable.

Drills can be supplied with single disc or slides, if desired.



Sylvestor 4 cylinder opposed Gasoline Traction Engine 45 Brake H.P.

This cut shows 3 Sylvestor 22 double disc drills operated on the farm of Mr R. Alexander, La Salle, Man., drawn by a Sylvestor Gasoline Traction Engine. This Engine has done record work the past season and like the Sylvestor drills is a leader in its class; it is powerful and economical of fuel.

The Sylvestor is the best and most favorably known drill in the Canadian west, and 1911 machines guaranteed better than ever.

APPLY TO—

TUDHOPE-ANDERSON CO., LTD., WINNIPEG

A FULL SUPPLY OF REPAIRS KEPT IN STOCK

SOLE JOBBERS

WINNIPEG, REGINA, SASKATOON, CALGARY

An Enormous Water Tank.

The Ironmonger's Chronicle says there is now nearing completion in Calcutta an elevated water tank, the foundation of which is 340 by 340 feet, and the top 321 by 321 feet. The tank is 16 feet in depth, with a capacity of nearly 10,000,000 gallons, and rests on columns grouped in fours, each group supporting 800 tons. It will supply 100,000,000 gallons per day, without undue loss of head in meeting any emergency demanded, and the average ordinary supply will be 40,000,000 gallons a day. The steel used in the structure came from Luxemburg and England. The Luxemburg steel is composed of broad flange beams, such as are not made in England, and comprises about 40 per cent. of the total material used. The small structural steel and plates came from England. The beams were all cut to lengths before shipments from England, but the drilling of the rivet holes was done in India. The plates were cut to lengths and the holes drilled in England. The materials were conveyed in German and British vessels. The cost of the structure will be about £95,000.

Limited, that they will begin in the very near future the construction of a large warehouse and office building on their property at the corner of Henry Avenue and Owena Street, Winnipeg.

The building will be of brick, one story and basement, and will cover a space of 120x200 feet. It will be of the most modern and fire proof construction; will be equipped with a large freight elevator and will be so constructed that no posts will be used to support the roof; thus giving a clear open floor space in order to better facilitate the handling of machinery. The building is so arranged that it will butt directly on the spur track in order that machinery may be loaded or unloaded directly from the car to the warehouse, or vice versa; thus keeping all machinery under cover.

They also advise us that they have purchased a large warehouse at Regina on Dudney Street.

The growth of the above firm in Western Canada has been phenomenal. Starting from what was comparatively a small concern, they have developed into one of the largest machinery jobbing firms in the West, and with their new warehouse and office facilities in both provinces, they will be admirably equipped to take care of the trade. They advise us that they expect to be in their new warehouses sometimes in February.

Pella Stacker Company to Enter Canada.

Information is at hand to the effect that the Pella Stacker Company, of Pella, Iowa, manufacturers of Pella Swinging Stackers and Garden City Feeders, are about to open up a ware-

house and office at Regina, for the purpose of handling the Canadian trade.

Their various lines have proven very popular with the threshermen across the border, and no doubt will be well received by the threshermen of Canada.

A Case Of "Wooden Leg"

Would you hire a man with a wooden leg? Hardly! A wooden leg is a poor substitute for real leg power. You would want a man with two good legs—full leg power—no substitutes.

Disks and other contraptions in common cream separators are like wooden legs—they are mere substitutes for lack of skimming force resulting from a wrong principle of construction. A properly built separator produces plenty of skimming force to do the work without disks or other substitutes. Claims that contraptions are needed in modern machines are disproved by the fact that

Sharples Dairy Tubular Cream Separators

contain neither disks nor other contraptions, yet produce twice the skimming force, skim faster and twice as clear as common machines. Wash many times easier and wear several times longer in consequence. The World's Best. The manufacture of Tubulars is one of Canada's leading industries. Sales exceed most, if not all others combined. Probably replace more common separators than any one maker of such machines sells.

Write for Catalogue No. 330

30 Yrs

THE SHARPLES SEPARATOR CO.
TORONTO, ONT. WINNIPEG, MAN.

THIS COUPON IS WORTH 50c

We positively have the Best Flue Expander and Cutter on the market.

All wearing parts tool steel and tempered, equal to any. Our ratchet is the simplest and best ever shown. Any parts that show defect in material or workmanship will be replaced Free Gratis.

Price of 2 lynch expander and Ratchet, \$5.00

Write us for particulars and special prices.

Fernyak & Slavenik Machine Co.
MANSFIELD, O.

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Thoroughly Protected in all Countries

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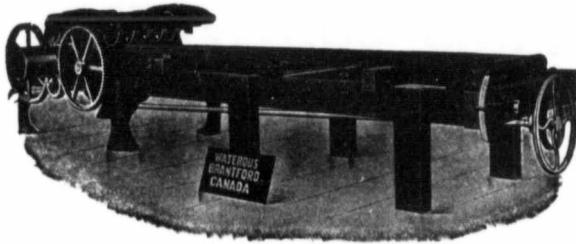
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Burridge-Cooper Company, Ltd.
To The Front.

We have just been advised by the Burridge-Cooper Company,

The Waterous Engine Works Co. Ltd.

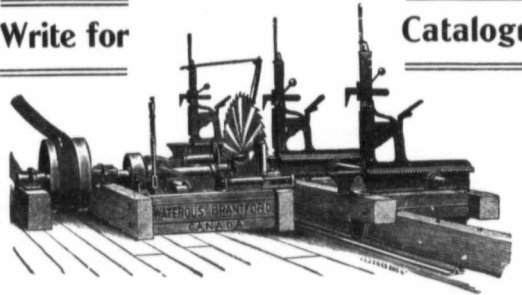
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Portable Saw Mills, Single and Double Edgers, Trimmers and Butting Saws, Band Mills and Stationary Saw Mills, Planers and Wood Working Machinery, Shafting, Pulleys and Belting, Hoe & Co. Chisel Tooth Saws.

Change in the Ranks of the J. I. Case Threshing Machine Co.

Our readers will doubtless remember the announcement that was made last spring in the columns of our magazine of the death of C. L. McIntosh, who for



F. Lee Norton

some time had been treasurer of the J. I. Case Threshing Machine Company, of Racine, Wis. The position, which has remained vacant since that time, has been recently filled; Mr. F. Lee Norton, who has been general manager of the Case Company for seven years and a director most of that time, being appointed to the position.

The position of general manager has been abolished and two new offices have been created. Mr. C. J. Farney, who for several years has been collection manager for the West was elected director of the Company to complete the directorate, and he was also made general sales manager. Mr. R. B. Coleman, eastern collection manager was appointed general collection manager.

To fill the vacancies caused by the promotions of Mr. C. J. Farney and Mr. R. B. Coleman, Messrs. J. G. Maulick and H. M. Thomas have been appointed suc-

cessors. Mr. Maulick has spent a number of years in Nebraska, Ontario, Missouri and Illinois as general collector and for the past few years has been at Peoria, Ill. He will succeed Mr. Farney as Western collection manager.

Mr. Thomas has been for some years in the east in charge of collections at Harrisburg, Pa. Mr. Thomas will have charge of the collections in the east.

The J. I. Case Threshing Machine Company have recently added two new lines to their already extensive list, these being Case automobiles and Case flying machines. We are advised by them that they have placed Mr. Lewis P. Strang, who was formerly with the Buick Company, in charge of the Case racing crew and that hereafter the Case car will run in the largest racing meets and in the endurance runs throughout the country.

We have not been advised as to just what will be done with the flying machines, but let it not come as a surprise to the farmers of Western Canada if Case travelers use this means of transportation in looking up prospects and selling Case goods. This opinion is not based on any statement from headquarters.



The above illustration is that of Mr. G. B. Vorheis, who for some

time has been branch house manager of the J. I. Case Threshing Machine Company at Winnipeg.

Mr. Vorheis has just recently been promoted to the position of advertising manager of the J. I. Case Threshing Machine Company with headquarters at Racine.

Mr. Vorheis entered the employ of the Case Company in February, 1903. Before that time he was on the editorial force of the Ohio State Journal, Columbus, Ohio, serving the various capacities of hotel reporter, railroad and market editor.

He was graduated from Gandier College, Gandier, Ohio, in 1902, but for three years previous to that time had been representing the Ohio State Journal as well as the Cincinnati Enquirer, the Cincinnati Times-Star, Cleveland Leader, Cleveland News, Columbus Dispatch, Toledo Blade and Toledo Times. Later he conducted a column of Paragraphs and Fancies for the Jackson, Michigan, Patriot. His experience with the Case Company is as follows:

He was with the Jackson, Michigan, branch from February to December, 1903, at which time he went to Nashville, Tenn., remaining there during the years 1904, 1905, 1906 and up to February, 1907. He was then appointed branch house manager and general collection agent at Toronto, Ont., remaining there during the years 1907 and 1908. He was transferred to Winnipeg as branch house manager in the fall of 1908 which position he has held until the present time.

The following illustration is that of Mr. H. F. Mustard who has recently been appointed branch house manager at Winnipeg for the J. I. Case Threshing Machine Co. to succeed Mr. George Voor-

heis, who has gone to Racine to take the position of advertising manager of the above company.

Mr. Mustard is a native of Manitoba, having been born at Gladstone. While a comparatively young man, he is nevertheless old in the machine business. In 1903 he started in with the Champion Harvester Co., this being before the amalgamation of the other harvester companies into the International Harvester Co. In the fall of 1904 he accepted a position with the J. I. Case Threshing Machine Co. as



Mr. H. F. Mustard

collector, and at the end of the collection season was placed on the sales force, which position he held until 1907, when he was promoted to the position of general collector at Dauphin, Man. This position he has held until the present time.

Mr. Mustard is very well known to the farmers and threshermen of Manitoba, and it will doubtless be a source of satisfaction to them to know of his recent promotion. The Canadian Thresherman and Farmer joins in wishing him every success in his new position.



"BANNER"
Silt-Feed
Lubricators for
Air Compressors

**LUNKENHEIMER
CYLINDER LUBRICATORS**

are very neat in design, consist of few parts, and are exceptionally strong and durable. A steady and economical feed is insured and perfect satisfaction guaranteed.

**THE LUNKENHEIMER
LINE OF CYLINDER
LUBRICATORS**

is a very large and complete one, and consists of Lubricators of steam, gas or gasoline, engine and air compressor cylinders.

WRITE FOR CATALOGUE J.

**THE
LUNKENHEIMER
COMPANY**

Largest Manufacturers of High-Grade Engineering Specialties in the world.

General Offices and Works:
CINCINNATI, OHIO, U.S.A.

BRANCHES:

NEW YORK—64-68 Fulton Street
CHICAGO—32 Dearborn St. cor. Lake
LONDON—35 Great Dover Street.

CANADIAN NORTHERN RY.

**DECEMBER
EXCURSIONS**

TO

**EASTERN
CANADA**

ONTARIO, QUEBEC AND
EASTERN PROVINCES AT

VERY LOW FARES

First-Class Tickets.—Stop Overs
Limit Three Months
Tickets on Sale at All Stations

CHOICE OF ROUTES

Tickets on Sale November 11th
to December 31st, 1910, to

Old Country and Europe

For full particulars apply to

Canadian Northern Railway
City Ticket Office

Corner of Portage Avenue and Main Street

MUSIC LESSONS FREE AT YOUR HOME
for only 10c. Write Today
for our Booklet. It tells how to learn to play Piano, Or-
gan, Violin, Mandolin, etc. Singers or advanced pupils.
American School of Music, 61 Lakeside Bldg. Chicago, Ill.

EDITORIAL.

Continued from page 14

one. It shows that the farmers are thinking. It shows that they are not content to let the matter rest entirely with the politician, but are going to have a hand in the game themselves.

One serious mistake, however, can be easily made along this line. Have you, as farmers intending to take this matter up with the Dominion Government at Ottawa, carefully outlined your programme or are you simply going down there for the fun of making a trip? Do you know to a man just what you want and why you want it, or has someone told you that there are millions of dollars being taken out of your pocket that rightly belongs to you, and do you know it to be a fact? You have now, and you always have had, the power in your hands to do just what you please, provided your action was concerted and carefully planned. In numbers you are in a majority; likewise in wealth, and no stronger combination can be effected. Don't however, be misled by what someone tells you. Don't think for a minute that because you are going to Ottawa that you can get just what you want, unless you know why you want it and can prove your case. If your case be strong enough that Government does not exist that can or dare turn you down, but by all means get at the facts and don't deal in generalities.

As a footnote to this farm implement duty proposition, we wonder how many of the farmers of Western Canada have ever stopped to realize that they are in a great many cases paying duty many times over through the fact that they neglect to properly care for their implements.

We will assume for the sake of argument that the duty on a self binder was \$25.00 (which it isn't). Do you as a farmer realize that by leaving your machine out in the open, unprotected, for one year will take more than \$25.00 off from that machine? The editor of this publication spent several seasons in the Trouble Department of a large harvester company and during that time was on the road constantly repairing machinery. Seventy-five per cent. of the troubles found with these same machines were due, not to wear, but to neglect. In a great many cases thirty-five or forty dollars worth of repairs in the way of broken reel bats, aprons, etc., etc., were placed on machines where if the same implements had been placed in the proper shed, it could have been avoided.

It is not for any Government to tell the farmers what they shall do with their own property in the way of caring for it, but if the facts were to be gotten at carefully, we firmly believe that they would show that it would almost pay the Government to provide every farmer who does not now own a proper tool shed with one, and at the same time impose a fine on every man who

left his machinery outside during the winter. The farm machinery equipment of Western Canada is a very serious problem. We farm almost exclusively by machine and the equipment is large and expensive. Farm machines today are built as carefully as a watch, and they require a proportionate amount of care. As a business proposition you cannot afford to waste your money like this, and in making your claims for a reduction of the tariff, just think some of these things over and see if you yourselves are not in a measure responsible for the high prices that maintain in farm machinery.

Bad Roads and the High cost of Living.

At first sight it seems rather a stretch of the imagination to find any close connection between the cost of living and the condition of country roads, but recent investigations have led the trail in this direction with unmistakable clearness. The two chief difficulties the farmer has to face today are the scarcity of farm labor and the cost of hauling, and these have combined to raise the prices for all the staple food stuffs without any of the increase adding to the profits of the farmer.

A recent report of an Agricultural Committee of the United States Senate is authority for the statement that during the worst of the hauling season in America a team is able to transport on an average only 800 or 900 pounds a day, while in France a team draws 3,036 pounds a day a distance of 18½ miles any day in the year. There is all too little reason to believe that the Canadian farmer is any better off in this respect than the American, and thus it appears that the farmer here has to spend three or four times as long as the Frenchman in hauling his crops and supplies; and as he obviously has to choose those days when the roads are in good condition the chances are he has to take the extra time and labour from work in the fields.

For much of the relief desired in the direction of better roads the farmer must wait on others; but there is one point making for easier haulage, larger loads, fewer trips and far less expense that rests with the farmer himself. This is the proper lubrication of the axles of his wagons, drays and carriages. Greases that gum and stick, or run off and leave the axles to grind, are a waste of money. The Imperial Oil Company, Limited, of Montreal, is offering in Mica Axle Grease a lubricant of high efficiency that is giving a great deal of satisfaction. It forms a cushion between axle and box that does away with friction almost entirely and lessens both labor and wear. Its durability is a strong factor in favor of economy. Handicapped as he is by bad roads, the wide-awake farmer must insist on getting everything he can out of his teams and wagons. If he is not already using a lubricant of the Axle Grease he will hardly delay to at least give it a trial.

DOMINION EXPRESS CO.

MONEY ORDERS, FOREIGN
DRAFTS AND TRAVELLERS'
CHEQUES

Issued in
Dollars, Pounds Sterling, Francs,
Gulden, Kronen, Krokor, Lire, Marks,
Roubles, Etc., Etc.

PAYABLE ALL OVER THE WORLD
Money Transferred by Telegraph and Cable

Hundreds of
Offices
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Canada

FOREIGN
MONEY
BOUGHT
AND SOLD

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**The Best
Overall
I ever
wore**

You'll say that when you have tried King of the Road Overalls They have a reputation backed with the service of a score of years. No mean record that for a country where a dozen overall factories have come and gone in so many days. But it merely goes to prove that

King of the Road

Overalls "The Better Kind"

have faithfully met the popular demand for a first class overall—one that will stand all kinds of wear and tear.

Another thing you'll like about K of R Overalls is the large plan on which they are made—no skimping of cloth to make a little extra profit, but large comfortable roomy garments that never fail to give satisfaction.

Don't accept substitutes; if your dealer doesn't keep K of R Overalls write us direct and we'll see you are supplied.

**R. J. Whittle & Co. Limited
Winnipeg**

FUR SHIPPER

Drop the Middleman. Deal with the House that's
BEST. (See circular in ad.) that charges no commis-
sion, pays express, exports direct to London,
England, and Leipzig, Germany, the greatest
markets for furs.
FUR also our in-
terest prior list.
B.U. contain-
ing in 10 to 15
and a skin till you learn from us. Free and valu-
able information as to FURS offered, free. Write.
WEIL BROS. & CO., 1st. 1911, Box 121, FORT WYNE, IND.
Capital \$500,000 Paid.



**Dealers Increase
Your Sales!**

Take a Look at the
Strite Governor Pulley

It's the original and the
only thing for driving cream
separators with gasoline en-
gines. Use them first, always
use them. THEY USE. More in use
than all others combined.
Costs no more than imita-
tions. Also, ask about our
friction clutch pulleys.

STRITE GOVERNOR PULLEY CO., 310 S. 3RD ST., MINNEAPOLIS.

The day was very warm for early May, and Shag, the big gray timber wolf at the street railway company's park, lolled lazily on the ground in the corner of his pen. Two feet behind him a coarse wire netting separated him from the adjoining coyote inclosure. Close to the netting were two coyotes, apparently lying, but in reality crouching, with their cunning yellow eyes fixed eagerly upon the hindmost parts of the big wolf. At length Shag gave a half roll and swung his tail backward against the netting. Instantly there was a double snap as two coyotes snouts shot through the meshes and attached themselves to the timber wolf's tail.

Then the air was convulsed with terrible din. Shag freed his imprisoned member—or most of it; for coyotes have sharp teeth. His mate left her four little puppies, to join in the cause of her lord; and every coyote on the other side of the netting lined up and snapped and snarled and made faces in reply to the horrible growling and deep chested, hateful roars of the larger canines. Shag was furious, for before him was that one eared sniveler with the piece of tail still in his mouth. He especially hated that coyote, for he was the villain that only the day before had slaughtered one of Madam Shag's puppies, when the little fellow had inadvertently wobbled through the nettings.

Enraged beyond endurance, the big wolf sprang high, and then threw himself against the fence. To the surprise of the bystanders, of the coyotes, and perhaps more of himself, his legs stuck through the meshes, that were more open, higher up, and he hung there. His hind legs immediately became the center of attraction for the coyotes, and they snapped and bit him cruelly. He drew them up and looked about him. He tried to free his front legs, and by working them one at a time he found himself climbing. He looked around him wonderingly, and then upward. He had solved the problem that had defied his wolfish brain for the three years of his imprisonment within those hateful wire walls, the problem that had kept that dreamy, vacant look in his pale eyes, as he used to lie motionless for hours apparently seeing nothing.

One more effort, and he was teetering with his belly across the top of the fence, looking down upon the coyotes. They were not scrambling over each other now to reach him. Instead, they sneaked quickly about on low, crouching legs, with their tails out of sight, darting for this corner and that, and holding their cowardly eyes fixed upon the big gray figure above them.

Then the big wolf freed his hind legs, wobbled a moment, and fell into the coyote pen. One long growl of triumphant hate broke from him, as he arched his bristling neck and looked for that one eared coyote. A rush, a ter-

ALONG THE PERILOUS WAY

HOW SHAG THE TIMBER WOLF RETURNED TO THE HOME OF HIS YOUTH

By H. M. LAING

rible chop, a few shakes, and it was over. He killed them all, six of them, and then he ran over and in his delight rubbed noses through the wire with his frantic mate.

But the cares of a father rest lightly upon a wolf at any time, and now Shag had other things to occupy his attention. Turning and taking a flying leap, he again lighted on the fence, and began the repetition of his former exploit. Most of the bystanders scattered; but one man with more courage than discretion waited till the wolf reached the top, when he belabored him over the head with his umbrella. The brute growled wrathfully; but in spite of his punishment he did not retreat an inch. He rolled over the top, and fell with a heavy thump upon the outside railing. He contented himself with biting his tor-

rible chop, a few shakes, and it was over. He killed them all, six of them, and then he ran over and in his delight rubbed noses through the wire with his frantic mate.

All the remainder of the night he loped back and forth along the southern side of the city. Everywhere in his way were the habitations of men that he feared, and yapping dogs that he hated. Nowhere could he find a place to break through. South of him ran the loop of the river; but he had no inclination to cross it. Northward was the call, that spoke so strongly to his fierce, yearning heart, and he would obey.

When the light of early morning returned he stole back again and hid in the stretch of shrubbery between the park and the city. He was hungry, tired from

driven back toward the park that he hated and feared. Suddenly one of the beaters was startled by a big gray shape, with an ominous growl emanating from it, that dashed past him through the willows. He fired immediately, for the orders were "dead or alive"; but his aim was poor.

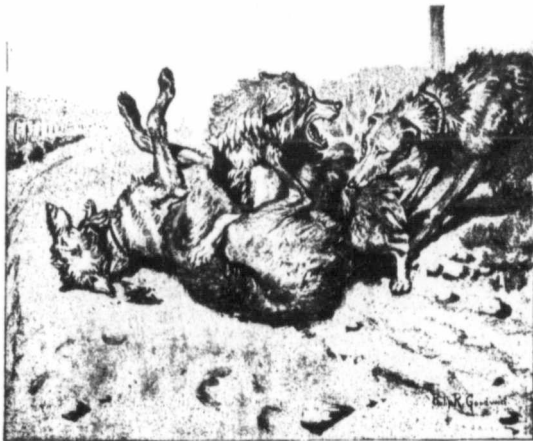
Away through the friendly shelter dashed the fleeing wolf. In him was a great fear; for now he was hunted. Men and that detestable park pen were behind him; the city was before him. Beyond it he knew lay the land of his birth, of the jack pines and spruces and cool muskogs; and they called to him. From the last clump of bushes he peered fearfully out at the city; then he dashed out and fled down Lorne-st., straight for the heart of it.

From behind him he heard a threatening rumble. The electric car was coming under all the speed that the excited motorman could muster. But Shag ran for his life, or, what was dearer, his freedom, and he left the car behind. He fled past two dogs on the street, and instantly they were in yelping pursuit. More canines appeared every moment, and when the fugitive crossed the bridge spanning Clear Creek, after a half-mile run, there were nearly a score of dogs in his wake.

Along the bank of the creek was a heavy fringe of willows. Shag dodged two astonished cyclists, several pedestrians, and a delivery rig and rushed into the sheltering willows. Some of the foremost of the dogs also went into the willows. Sounds of fierce fighting ensued, and when they came out again they were two less in number.

But a little crowd was quickly gathering, and when the wolf had recovered his wind he rushed out of the willows, crossed the asphalt pavement, jumped the opposite palings, and slunk up along a row of evergreens adorning the grounds of a residence. There was a garden fete in session on the beautiful lawn, and the big gray fugitive went almost through the midst of the company. Without pausing to meditate on the consternation that he produced, he again took to the street. Soon there were dogs and more dogs after him, and he had to lope harder to keep ahead of even short legged terriers and squatty spaniels. He was not so terribly frightened now. His heart was becoming numb to such sensations. Anyway, none of the men or horses and drays or snorting automobiles had really hurt him. But that yelping rabble of dogs constantly following him was maddening.

Just ahead was Kennedy-st., one of the main thoroughfares of the heart of the city. Across it, dodging an electric car, several rigs, and an auto car, came the stream of canines with the gray wolf in the lead. He was laboring hard; the stern race was telling on him. The chauffeur gave a shout and, turning his machine, gave case. In a few moments



Bobs gave his last howl of anguish and quit

mentor twice on the part of him that was last in getting away, then the strangeness of his freedom impressed him, and he paused.

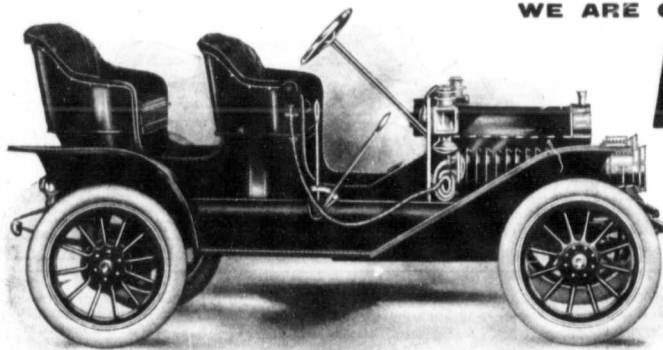
The thickets close by invited him; so he turned and slunk into the shadow of the hazel and poplar. He was no longer a captive, but a skulking, wary wolf, joying fiercely in his liberty. He slipped through the willows again, as he had done years before, during that first happy year of his life.

That night he stole out to the inclosure where the deer were kept. Hunger was urging him. But he found a dozen men patrolling the grounds, so he shrank sullenly back again. Within him was an urgent longing to flee from the vicinity. A voice drifted out of the northward and called to him. He knew the direction. His animal senses and a hundred other signs all told him the way to the land of the mus-

his unusual exertions, and lame on the leg that had struck the railing in his fall. All day he lay, crouching at the sound of anyone approaching. No one molested him, however, and when kind darkness dropped down, he came forth, a ravenous wolf bent on finding food. Urged by the gnawing pains of hunger, he skulked close to the buildings; but his attempts to kidnap dogs and cats were failures; and with the return of morning he was forced to skulk back to his old retreat. Now he was a more desperately ravenous wolf than before.

Early in the afternoon he heard sounds of men approaching. They seemed to be spread out to right and left, and were making a great noise. Every man now was a foe to Shag; so he slunk back farther for a new hiding place. His owners had sent men to beat the shrubbery; and the wolf now found that he was being

WE ARE GIVING THIS \$1,200.00



AUTOMOBILE FREE

To the first person guessing nearest to the number of kernels in 12 pounds of No. 2 Northern Wheat

Commencing November 1st, 1910, and ending June 30th, 1911, The Canadian Thresherman and Farmer will carry on a Wheat Guessing Contest open to everyone in Canada except residents of Winnipeg, and are giving away to the one who guesses nearest to the number of kernels in 12 pounds of No. 2 Northern Wheat, this \$1,200.00 McLaughlin-Buick Automobile, all complete with oil fall lamp, oil side lamps, two gas head lights, generator, horns, repair outfit, jack and pump. This is the Model "9" Four-Passenger "Tourabout" McLaughlin-Buick Automobile with detachable rear seat. Automobile will be delivered to winner F.O.B. Winnipeg, and whoever is the lucky winner of this automobile will be the possessor of an exceptionally powerful, speedy and comfortable machine. All that you have to do to secure estimates is to send in either new or renewal subscriptions for THE CANADIAN THRESHERMAN AND FARMER.

READ THIS CAREFULLY

This is the third year that we have put on a Wheat Guessing Contest, and the same general rules that have governed our former contests apply to the contest this year.

The wheat is a fine clean sample of No. 2 Northern procured from the Dominion Government Grain Inspector's office, Winnipeg. The wheat and bottle were taken to the Dominion Weights and Measures' Office, and exactly 12 pounds of the wheat weighed out and poured into the bottle, which was immediately sealed up in the presence of two witnesses. The bottle was then photographed and deposited with the National Trust Co., and will remain in their vaults until the contest closes June 30th, 1911, when it will be taken out and counted by a board of three judges, none of whom are in any way connected with The Canadian Thresherman & Farmer. The sealed bottle of wheat is shown on the cover of this issue.

Everyone who sends in a year's subscription for The Canadian Thresherman & Farmer, either new or renewal, is entitled to estimates as explained below. These estimates may be credited in whatever way desired, and you may send in as many estimates as you wish. Remember every additional estimate increases your chance to win the Automobile. Guess early and increase your chance of winning, for it is the first one that guesses nearest to the number of kernels, that wins the Auto.

The subscription price of The Canadian Thresherman & Farmer in Canada and Great Britain is \$1.00 a year. In United States and foreign countries \$1.50 a year. All subscriptions are positively discontinued when they expire, unless renewed.

OUR 1908 CONTEST

In the winter of 1908 we put on a Wheat Guessing Contest as to the number of kernels in 15 pounds No. 1 Northern Wheat. When the contest closed it was found that there were 237,885 kernels and the man who won the first prize was Mr. Giesler of Brant, Alberta.

OUR 1909 CONTEST

Last year we put on a Wheat Guessing Contest as to the number of kernels in 8 lbs. 8 and 7-16 ozs. No. 2 Northern Wheat, and it was found there were 143,272 kernels. The first prize went to Mr. John Edwards, Hand Hills via Gleichen, Alberta. A full account of this contest appeared in the July issue of The Canadian Thresherman and Farmer.

With the above facts to work from you should be able to form an estimate as to the number of kernels in the bottle this year. Or better still get some No. 2 Northern wheat and count it out and form your estimate from that.

YOU MAY GET ESTIMATES THUS:

- 1 year's subscription and \$ 1 gives you 7 estimates.
- 2 year's subscription and \$ 2 gives you 14 estimates.
- 3 year's subscription and \$ 3 gives you 21 estimates.
- 4 year's subscription and \$ 4 gives you 28 estimates.
- 5 year's subscription and \$ 5 gives you 35 estimates.
- 6 year's subscription and \$ 6 gives you 42 estimates.
- 7 year's subscription and \$ 7 gives you 49 estimates.
- 8 year's subscription and \$ 8 gives you 56 estimates.
- 9 year's subscription and \$ 9 gives you 63 estimates.
- 10 year's subscription and \$10 gives you 70 estimates.

OR BETTER STILL, GET YOUR NEIGHBORS

to club with you, the subscriptions to cover one year. These subscriptions and estimates must be received in one envelope, so that we may credit them properly.

- 5 persons sending \$5.00 get 25 estimates and each have 1 year's subscription.
- 6 persons sending \$6.00 get 30 estimates and each have 1 year's subscription.
- 7 persons sending \$7.00 get 35 estimates and each have 1 year's subscription.
- 8 persons sending \$8.00 get 40 estimates and each have 1 year's subscription.
- 9 persons sending \$9.00 get 45 estimates and each have 1 year's subscription.
- 10 persons sending \$10.00 get 50 estimates and each have 1 year's subscription.
- 15 persons sending \$15.00 get 75 estimates and each have 1 year's subscription.
- 20 persons sending \$20.00 get 100 estimates and each have 1 year's subscription.

Extra subscription blanks, sample copies, etc., sent free on request.

SPECIAL REWARD BOOKLET. In addition to the estimates everybody who sends in a subscription also has the choice of a premium. We are issuing a Special Reward Booklet which will be ready for distribution about November fifteenth. Send us your name and address and a copy will be sent you free. Below we illustrate a few of these premiums. Remember each year subscribed for includes estimates on the Wheat Guessing Contest in addition to these free rewards.

We Give You These Premiums

In addition to the estimates on our Wheat Guessing Contest explained above. These premiums are sent immediately on receipt of subscriptions.

STEEL DEED BOX



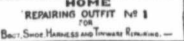
For keeping Mortgages, Deeds, Letters, Valuable Papers, etc. Made of thin steel—not tin. Fitted with tray inside and English lock. Size 8 1/2 inches wide, 3 1/2 inches high and 4 1/2 inches deep. Sent postpaid for four-one year subscriptions.

- Sent postpaid for two-two year subscriptions.
- " " " three-one " " " and 25c.
- " " " two-one " " " and 50c.
- " " " one-one " " " and 75c.

HOME REPAIRING OUTFIT



Complete, Compact and Convenient. For repairing boots, shoes, pots, pans, kettles, harnesses, etc. One of the most useful, mending and repairing outfits ever put out. It consists of four lasts; one stand, one hammer, three awls, one knife, cement, bristles, thread, wax, four packages nails, lead plates, needles, harness and saw clamp, rivets, punch, soldering iron, resin and directions. Everything complete, packed in box.

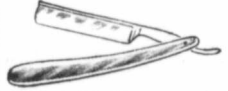


DO NOT SEND MESSAGES AND ENQUIRY RETURNING TO THE

Given for six-one year subscriptions.

- " " " four-two " " " and 75c.
- " " " two-four " " " and \$1.00.
- " " " three-one " " " and \$1.15.
- " " " one-two " " " and \$1.25.

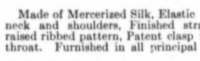
"I X L" SHEFFIELD RAZOR



Wostenholm's I X L Sheffield Steel Razor 1 inch blade, hollow ground, rounded point, a fine shaver and holds its edge well.

- Sent postpaid for three-one year subscriptions
- " " " two-one " " " and 25c.
- " " " one-one " " " and 35c.
- " " " one-one " " " and 50c.

PHOENIX MUFFLER



Made of Mercerized Silk, Elastic Knit to fit neck and shoulders. Finished straight edge, raised ribbed pattern, Patent clasp fastener at throat. Furnished in all principal colors.

- Sent postpaid for two-one year subscriptions.
- Sent postpaid for one-two year subscription.
- Sent postpaid for one-one year subscription and 15c.

SHAVING BRUSH



Black handle, bristles set in rubber. A splendid shaving brush. Sent postpaid for one-one year subscription.

ODD JOBS

A useful practical tool, combining marking, mortice and depth gauge, Try T and mitre square, inner square, scratch awl, beam compass, spirit level and plumb.

- Sent postpaid for three-one year subscriptions.
- Sent postpaid for two-two year subscriptions and 25c.
- Sent postpaid for one-two year subscriptions and 35c.
- Sent postpaid for one-one year subscription and 50c.



METAL SPRING TAPE

A 36 inch metal tape in a neat nickel case. Vest pocket size. Fitted on good strong spring. Tape rolls itself up by simply pressing button in center of case.



- Sent postpaid for two-one year subscriptions.
- Sent postpaid for one-two year subscriptions.
- Sent postpaid for one-one year subscription and 25c.

POCKET TOOL KIT



A whole tool chest in one. When closed looks like an ordinary awl with plain handle and nickelled shank, but inside the handle are ten tools including gimlet, screw driver, chisels, gouges, tack puller, etc.

- Sent postpaid for two-one year subscriptions, or sent postpaid for one-two year subscription, or sent postpaid for one-one year subscription and 15c.

AWL YOU WANT

A handy sewing awl for mending harness, boots, shoes, etc., and doing all kinds of leather work. A most convenient and useful tool.



- Sent postpaid for one-one year's subscription.

SELF-PULLING CORK SCREW

Every household has use for a good cork screw and here is a dandy. Will start the toughest cork and draw it out clean without crumpling the cork.



- Sent postpaid for one-one year's subscription.

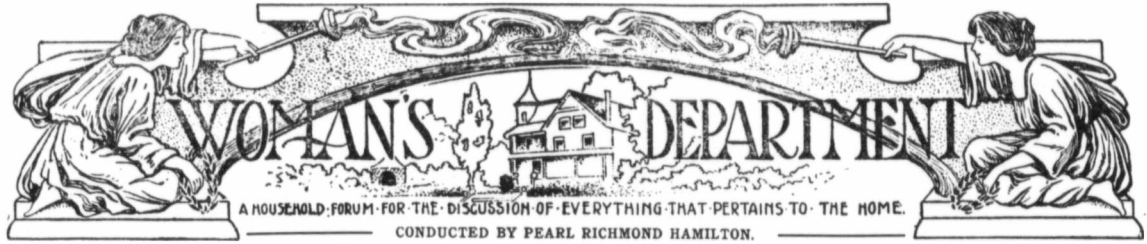
Address: E. H. HEATH CO. Ltd., WINNIPEG, CANADA

E. H. HEATH CO. Limited, Winnipeg

Please find enclosed \$_____ for _____ years' subscription for The Canadian Thresherman and Farmer and _____ Premium to be sent to _____ Name _____ Address _____ My estimates as to the number of kernels in 12 lbs. No. 2 Northern Wheat are:

E. H. HEATH CO. Limited, Winnipeg

Please find enclosed \$_____ for _____ year's subscription for The Canadian Thresherman and Farmer and _____ Premium to be sent to _____ Name _____ Address _____ My estimates as to the number of kernels in 12 lbs. No. 2 Northern Wheat are:



A MOTHER'S YESTERDAYS

By Cora A. Matson Dolson

Had I my yesterdays again,
What different things my eyes might see;

For though today those sights are plain,
I saw them not beside my knee.

Had I, when, nightly, each fair head
A moment to my shoulder pressed,
After the kiss some fond word said,
I might each boyish hope have guessed.

But then my hands were fashioning
The ruffled blouse, the silken tie,
Nor could one thought find space to wing,
With four small youngsters romping by.

Their budding plannings and their dreams
Within each little breast they locked,
The hand was busy sewing seams,
That should at each heart's door have knocked.

Four brave true men my boys have grown,
And the world knows them; but my heart
That should the first of all have known,
Dwells in this home alone, apart.

Though to me kind in word and deed,
Could I those yesterdays recall,
Each aspiration and each need
Of theirs were mine the first of all.

MY CREED.

"I would be true for there are those
who trust me;

I would be pure for there are those
who care;
I would be strong for there is much to
suffer;

I would be brave for there is much to
dare.

I would be friend of all—the foe, the
friendless;

I would be giving and forget the
gift;

I would be humble, for I know my
weakness;

I would look up and laugh—and love
—and lift."

BEHIND THE WORDS.

By Jennie E. Cox.

It was in soothing tones I spoke
To sunny Ned, when he
In turn replied, "Oh, I'll be good—
If you'll be nice to me."

I felt reproved, and sought the help
That comes from One above,
Then said the selfsame words again
But said them full of love.

The tear-brimmed eyes looked into mine
All lighted up with joy;
My heart was glad, for I
Had won my little boy.

The lesson learned by me that day
I hope to never lose;
That 'tis our spirit hurts and wounds
More than the words we use.

BRITISH PRESS IS UNFAIR TO WOMEN.

Several clever women from England have visited Western Canada during the past year and they say that the British press gives the world a wrong idea of the suffragists.

Miss Agnes Murphy a member of the Society of Authors of London and also

of the London Council of the Society of Women Journalists, who is now visiting Canada, declares that women cannot get a hearing in the British press.

"Meetings held in the most orthodox and constitutional manner by the British suffragists," she says, "are entirely ignored by the newspapers, while flaring headlines paint the most trifling incident of the militant campaign with the red of riot and violence." Miss Murphy says that it was through injustice which she saw administered in Mrs. Pankhurst's case that she became a suffragist.

"The magistrate who tried Mrs. Pankhurst refused," she declares, "to hear witnesses who were ready to testify in her favor, and treated her personally with the greatest contempt. She is a woman whom any one would love to call mother, sister or friend, yet she was herded with common prisoners and accused of inciting to riot when 6,000 policemen guarded the streets of London. That night invalids in chairs were wheeled in perfect safety through the 'violent mob' and Lloyd George himself (our enemy though professing to be our friend) walked with his little three-year-old daughter through the throng without being inconvenienced in the least. I was so impressed with what I had seen that my Irish sense of justice made me volunteer as a witness to the orderliness of the assembly. And ever since then I have been heart and soul in the movement."

ABOUT WOMEN

Two tombs of women warriors with war chariots over the remains have recently been discovered in Italy showing that women in those days were remarkable for their strength.

The woman cabman and the woman taxicab driver of Paris are well known features in the French city but the first woman chauffeur to take charge of a car that is let on hire in London is Miss Sheila O'Neil. She was a nurse and served through the South African war.

The wife of "Anthony Hope" is an American woman.

Their love story is quite a romance. Mr. Anthony Hope Hawkins had been to America and on his return to England he went on the same boat as Miss Sheldon, who was going there on a visit. A friend cabled to him, and asked him to look out for her—and after her—on the voyage. This he did, and to such good purpose that before they reached England they were engaged. They now have two children and live in a charming old house in Bedford Square.

A woman in a town has established a business of mending gentlemen's stockings and underclothing. She leaves her business cards at boarding houses and gets more work than she can do.

Mrs. Ella Flagg Young, superintendent of the Chicago Public Schools, has added to the school studies for girls a course in plumbing. It is planned to teach in detail the intricacies of drainage and water and gas distribution.

A thorough understanding of such matters would not only mean great curtailment in the plumber's bill, but, as Mrs. Young insists, the gain from a sanitary point of view would be inestimable.

Countess Cadogan, who is almost ninety, is to bring out another book at the holiday season.

A woman who worked in the Pennsylvania silk mills, travelling through the coal fields, taking a job wherever one was obtainable, in order to see industrial conditions as they are and to meet the girls on a natural and easy basis, is Florence Lucas Sanville, executive secretary of the Consumers' League in Philadelphia. She has written in a recent magazine article an account of her experience—what the effects of mill work are on women and girls—their hours and labors, their companions, their mental interests, their social desires, their standards of morals and of fellowship. The result of her judicious efforts show that if work is to be harmless to women, it must be free from abnormal expressions and drudgery.

Queen Victoria has commended herself to the Spanish public by her devotion to her children. Her discharge of her motherly duties is a matter of comment among all those who have seen her at the sea shore where she has spent the summer. She spends a large part of each day with them and she is seldom seen out-of-doors when she is not either carrying or wheeling her infant daughter. When her two sons are in the water she is always to be found on the beach in the vicinity, keeping a watchful eye on the little fellows. Only rarely are the children entrusted to the care of nurses.

At a recent bicentenary celebration of the establishment of the Anglican Church in Canada the distinct honor of D. C. L. was conferred on Mrs. Wiloughby Cummings, of Toronto,—in appreciation of her activity in educational and religious fields in Canada—by Bishop College, Halifax, N.S.

A memorial has been erected to the heroine of the war of 1812-14 on the Niagara frontier. Laura Secord, the heroine walked twenty miles by a difficult route to save a British outpost, and enabled it to capture an American regiment.

MOTHER'S CORNER

Weighing the Baby.

How many pounds does the baby weigh—

Baby who came but a month ago?
How many pounds from the crowning curl

To the rosy point of the restless toe?

Grandfather ties the kerchief knot
Tenderly guides the swinging weight,
And carefully over his glasses peers
To read the record, "Only eight."

Softly the echo goes around:
The father laughs at the tiny girl,
The fair young mother sings the words,
While grandmother smooths the golden curl.

And stooping above the precious thing
Nestles a kiss within a prayer,
Murmuring softly, "Little one,
Grandfather did not weigh you fair."

Nobody weighed the baby's smile,
Or the love that came with the help-
less one;

Nobody weighed the threads of care
From which a woman's life is spun.

No index tells the mighty worth
Of little baby's quiet breath,
A soft, unceasing metronome,
Patient and faithful unto death.

Nobody weighed the baby's soul,
For here on earth no weight may be
That could avail; God only knows
Its value in eternity.

Only eight pounds to hold a soul
That seeks no angel's silver wing,
But shines beneath this human guise,
Within so small and frail a thing!

O, mother, laugh your merry note!
Be gay and glad, but don't forget
From baby eyes looks out a soul
That claims a home in Eden yet.
—Ethel Lynn Beers.

In Germany an adult is not allowed to sleep with a child. I knew a mother who had a beautiful little girl and she allowed her to sleep with a consumptive grandmother; the child now has bronchitis that is chronic. It is a very injurious practice for a child to sleep with an adult, but it is equally bad for a strong, vigorous child to sleep with a delicate, nervous one. The stronger person may sometimes draw strength from the weaker, but usually this is reversed, and the more vigorous person is the sufferer.

Mothers cannot be too cautious in the selection of a nurse for their children.

I know one mother who employed a tubercular woman to care for her children. I saw that woman put candy into her mouth and then into the baby's mouth, and then we wonder why so many children are sickly.

Train Your Child.

Correction does much, but encouragement after censure is as sun after a shower.

Blessed be the hand that prepares a pleasure for a child, for there is no saying when and where it may bloom forth.

In the man whose childhood has known crosses there is always a fibre of memory that can be touched in gentle issues.

When a child returns from a neighbor's house don't question him as to what was said or done there, unless you wish to sow seeds of gossip and mischief.

Hints for Baby.

Thirst sometimes causes wakefulness. A sip of water will relieve this.

Cold feet or arms may keep the child awake; warm it in front of the fire and cover up with blankets.

Weight of clothing more than the tiny body can support with ease will keep a babe awake. This can easily be remedied.

Too tight a flannel band around the body will prevent a child from sleeping, so also will any uncomfortable knot or fold in the clothing.

The First Baby—Artificial Feeding.

Whether a child is to be fed entirely on the bottle or has the one bottle a day the greatest care must be taken in mixing the food, as error in this respect may cause the death of an infant—it is, in fact, improper feeding which is the cause of the high rate of mortality amongst infants. In connection with this point mothers must remember that this object is to imitate as far as possible human milk which varies in strength and quality with the requirements of the babe; and that a child must have nothing but milk for seven months unless the medical attendant orders otherwise.

How to Imitate Mother's Milk.

In a recent issue of the American *Woman's Review* the editor correctly advises that cow's milk is undoubtedly the best substitute from a practical point of view for mother's milk, but it has not all the properties of the food Nature provides; it must be mixed in the following way:

One and one-half ounces of milk.
Two and one-half ounces of warm water.

This is the usual proportion for a baby one month old, taking nine meals in the course of the day or night. The amount of the milk should be increased as the baby grows older, and the water lessened till at nine months the babe is taking milk alone, and the meals have been reduced to six in the day.

I have given this proportion as suitable for an average child; but would warn the young mother against feeding her babe too strictly by rule. The child's individual needs must be studied, and the proportion of milk and water varied accordingly until he can take his bottle well, without pain following a meal, or undue sickness or any disturbance of the bowels.

Sometimes barley-water is recommended to be used instead of plain water in mixing a bottle. A dessert-spoonful should be washed in several waters to insure the removal of all starchy powder adhering to it, then pour half a pint of boiling water on, let it stand till cold, and pour off for use. This should be made every day.

When the child is brought up entirely on the bottle, two bottles should be employed to insure one always being absolutely clean and ready for use. As soon as the bottle is finished, empty out any remains of milk, and place it in water, removing the nipple and cork, which should soak with it until thoroughly clean. We need hardly repeat that absolute cleanliness is essential.

If a bottle-brush is used to clean the glass, great care must be taken to prevent the bristles from clinging to the side; and an old one should never be used. No tea-leaves, shot, or soda, or any of the substances used in cleaning bedroom wash-bottles should be employed.

The temperature of the milk in a baby's bottle should be 99 degrees Fahr.; that is pleasantly warm to the touch. The simple way of heating it is to add warm rather than cold water in mixing; but if it requires reheating the bottle should be stood in a basin or kettle of hot water until the correct temperature is obtained. It is a good plan to keep a bowl of cold water at hand to cool the bottle if necessary.

When administering the bottle the child should be on the mother's knee, with the head slightly raised. At the slightest sign of choking remove the nipple from his mouth, and let him sit up and gently rub his back. Smart patting is to be avoided, unless the choking is severe.

Happifying Mothers
By Rose Seelye-Miller.

Louise Nash tells in a recent number of "The American Mother," about a happy baby, and recommends the "happifying" process to other mothers. I think many will rise to say "Amen!" to Mrs. Nash's article, and I wish to say a few words about some of the happy babies whom I have met.

It seems sometimes in looking over the memory book, that the first babies born into a home are the happiest ones. Possibly the cause for this is not far to seek. The first baby born to young people who have married for love, takes on some of the love-life of its mother and father, and hence perhaps has a better inheritance in that respect than some of the later babies, which come after the stress and burden of life have dimmed somewhat the shining luster of "Love's young dream." Not that it should be so, but then it often is, and yet young love often matures into a steady affection richer and better than anything the glamour of youth could offer. But taking it all around it does seem in my recollection that the first babies are more amenable to the "happy habit" than are some later ones.

I recall now a little girl born to a young couple who were not rich by any

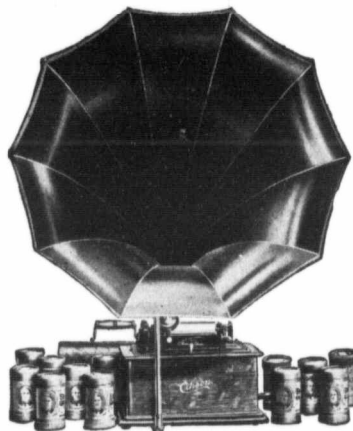
means and whose home lacked almost everything to make it comfortable, save that one thing which is better than upholstered furniture and grand array—love. This baby was cared for with gentleness but was left so much to herself that inquiring and anxious friends thought her almost neglected. She had no cradle and no crib but her mother fixed a little place on the top of a trunk, and here the little lady lay her hours away. She was rarely taken up except for her meals, which her mother served personally, for this was no bottle-fed baby. The child was occasionally moved if she became restless, but she would lie asleep, or lie awake, happy and satisfied that she was alive; and not being used to being rocked she did not cry for it; and not being used to being held she

was satisfied to lie quietly and amuse herself. This was the way it looked to the casual observer, but the mother told me that she sometimes spent half an hour or more trying to make the baby contented without being taken up and carried around. She was a wise young mother, and she knew that if the habit of constant attention were given to the child it would be no time until the child would demand that constant attention.

The young mother loves to fondle her baby, she loves to hold it and to love it, the admiring grandmother loves to do the same, and every admiring friend also wants to take it "just a minute," and if this goes on with a large circle of acquaintances it will not be long until the baby, shorn of its birthright of

quietness, will make it manifest by the usual sign of the order, and that baby can never be induced to the old quiet habit of happy contentment and satisfaction. It must needs be handled and dandled, and talked to and adored, and all this is well enough, but the baby should have its rights respected, it should have a chance to sleep unbrokenly, and to learn to lie quietly and inspect its world after it awakens.

If the mother must care for her own baby it is wise to teach the child quietness. The child who is constantly disturbed and diverted by amusement will grow up restless and discontented. A very few playthings are better than many. But the little baby should be quiet and not forced to notice too many things when little.



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FREE

Yes, 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. 9 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, music, dances, the old fashioned hymns, grand opera, comic opera—all this I want you to hear free of charge—all in your own home—on this free loan offer.

MY REASON—My reason for this free loan offer, this extra liberal offer on the finest talking machine ever made—see below.

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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. 9, 1911 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. 9. 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 grand phonograph and convince you of its merits, of its absolute 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 grand outfits No. 9. 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 wonderfully liberal offer. If either you or 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 the free loan offer anyway. I will take it as a favor if you will send me your name and address so I can send you the catalog—then you can decide whether you want the free loan. There are no strings on this offer, absolutely none. It is a free loan, that is all. I ask now 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 a month, if they want it.

Now, remember, nobody asks for a cent of your money. 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.



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In this catalog you will find a complete list of music and amusements. You can pick out just the kind of records you want for the entertainments 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 the 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 so I can send you the catalog. I can fully and clearly explain our method of shipping the Edison Phonograph on a free loan. **GET THE COUPON TODAY.** Do it right now.

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\$35 Only freight paid, including 16 large selections (8 double discs) of your own choice.
PAY \$6.50 DOWN AND \$4.00 Monthly

Our prices are lower than other houses. When buying from us you do not pay for extravagant advertising, nor do we send you second hand "tried over" records. Easy payments, from \$2.50 monthly. No C.O.D. Return if not as represented and money refunded. Satisfaction guaranteed. A straight business offer, no mysterious philanthropic ad. Here are some of our specials:

Columbia 10 inch Double Discs (2 different selections) 85c, new velvet finish, fit any machine, last for ever. All languages. Hear George Lashwood—funnier than Lauder. Imported British records now ready.

Gold Moulded Cylinder Records. Edison, Bell and Columbia, new, 25c, were 40c.

Columbia Indestructible Cylinder Records, 45c. beautiful tone, cannot break, fit any machine. Mailing charge 4c. each only. Columbia Indestructible Four Minute Records, 65c.

Four Minute Cylinder Records, 50c. Edison Gem Phonograph and 12 selections, \$19.50. Brand new.

Edison Fireside with 6 genuine Gold moulded two minute and 6 four minute records \$33.10.

Victor Disc Gramophone with 16 large selections \$26.40 and upwards. Second hand machines at bargain prices. Old machines taken in trade; 40 styles of talking machines; 30,000 records; 40 styles of pianos.

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Write for interesting Graphophone history and Free Booklet, No. 44.

SEND US 75c.



Receive post-paid this very attractive child's dress made from red plaid flannelette. It's a very attractive little dress and worth double what we ask. We offer it as a mail order bargain, only 75c. The waist is joined to the full pleated skirt with a belt at waist line, trimmed with pointed straps and brass buttons. Made just as pictured, add 10c for postage. Order this dress today. Comes in ages from 4 to 12, order age wanted.

Standard Garment Co., 11 Cootie Block, London, Ont.

Send \$1.98



Receive postpaid this \$4.00 Cream Net Waist, elaborately made and trimmed with beautiful lace insertion just as pictured, lined in silk. Add 15c for postage. Ask for waist No. 14.
STANDARD GARMENT CO.
11 Cootie Block, London, Canada

I knew another happy baby who, however, was not trained as the above. This baby was born very small and apparently frail, but she grew although slowly, and her size or lack thereof was always a matter of remark, together with the fact of her being a happy baby. So many people called her a happy baby that when she began to talk, about the first thing she said, after the usual "papa" and "mamma," were the words, "happy, happy, happy." It was a great astonishment to the mother but she could account for it in no way, save that when her little tongue could manage to speak at all that "happy" word was what it said. That child was born of love, and was radiantly looked for; her mother, although very ill for a long time, still refused to look on the unhappy side of life, and so impressed upon her child her own brave spirit.

If mothers were all wise and could hold themselves in trust for their unborn children, the world would be better for it, but there are so many unhappy, discontented mothers, and they have reason to be too—but then—oh, the pity of it! They transmit their disposition to the child and maybe forever darken the little life they would most abundantly bless. Dear mothers-to-be look well to the ways of your spiritual life, keep it pure and sweet and clean, and let the draught of life you give your child have naught of bitterness in it. The child is not to blame for any of the irritations and you, and you cannot make your lot any better by repining, but you can make the world better and happier by bearing happy children, who grow up into optimistic men and women.

TO COUNTRY COUSINS.

My Country Girls:—

Several requests have come to this department from young women in the country asking for safe directions for a stranger coming to the city. I am very anxious about our dear country girls who come to the city for work, because there are so many snares set for you. There are more dangers for you than for any other class because girls from the country are healthy and attractive, and beastly men and avaricious women are eager to grab you.

Beware of the smooth, nicely dressed woman who offers to help you! These women are the meanest and most contemptible creatures on earth. They are in Winnipeg as well as in all other cities and they are more treacherous than the ugliest men in the white slave traffic, because girls naturally trust women more than men.

How I wish I had all of my girl readers who contemplate coming to the city, with me for a heart-to-heart talk so that I might tell you of the cases I know of country girls who have fallen victims to the white slaves in the city.

I have written stories in this department with this subject for my theme and there was more truth in these stories than you probably realized.

There are good women at the stations who are in the services of the Y.W.C.A. They are the Travellers Aid women and they are doing a noble work. They wear badges on which are the words "The Traveller's Aid." These women are there to guide you to safe places in the city. Every strange girl who comes to this city should look for one of these women as soon as she steps into the station. These splendid women meet every train.

I will gladly write a letter to any country girl and give her complete directions that will be safe for her. I am anxious to help my girl readers and if any are planning to come to the city and will write me for information, I shall be pleased to inform them how to reach safe places.

There are several splendid girls' clubs in the city that are of real help socially to young girls who are strangers, and they do not require your earnings. Several are connected with churches. There is also a splendid Sunshine Club promoted by Lillian Laurie, of the Free Press, she is a noble woman who has the interests of young girls at heart. Young girls need social life and it is necessary for them to get started in a good class of girls.

I write this letter in answer to several requests because there may be some who require the information, who have not written to me personally.

I trust that my young women readers will write me and I will gladly do all I can for you in this line.

Sincerely,
Pearl Richmond Hamilton.

EXPERIENCE EXTRACTS

Liver spots can be removed by rubbing daily with lemon juice.

If the feet are tired and painful with long standing they will feel much rested if bathed in salt water; and if after washing, salt is rubbed over the hands it will keep the skin soft.

A good laxative that strengthens the bowels instead of weakening is this: Take a tumblerful of oatmeal water half an hour before breakfast every morning. You will soon find that it keeps your bowels in splendid condition. A heaping teaspoonful of oatmeal is the amount best to use.

The next time you spill ink on a linen table cover, dip the spots at once in hot tallow, then wash out the grease and the ink will be gone.

To Wash Lace Curtains.

Shake the dust well out of the lace. Put in tepid water in which a little soda has been dissolved. Then wash carefully with the hands in several waters; rinse in water well blued, also blue the boiled starch and squeeze but do not wring. Pin some sheets down to the carpet in an airy room, then pin on the curtains stretched to exactly the size they were before being wet. They will not need to be ironed if they are dried on the sheets in this way.

Renewed Stockings.

Cut off the worn foot just above heel leaving a long slender point on the stocking leg over the instep. Take the cut-off foot and fold across the bottom and use for a pattern for the new foot. Place the fold on the fold of an old stocking leg and cut by the pattern, allowing for seams. Round off the heel and sew this up first, place the seam of the heel with the seam of the stocking leg and sew around to the end of the point. Then begin at the heel again and sew around on the other side. From the point sew up the foot, which seam rounds over the toe a little and ends. Thus it will be seen that the seams do not come where the shoe presses the foot closely. Another advantage of this way of repairing is that the stocking is not shortened and the elastic do not need to be changed. Care should be taken not to cut the foot too deep, as they can then be worn with low shoes without the seams showing.

RECIPES

Cornflour Gema.

Mix half a cupful of castor sugar, an egg, and a tablespoonful of butter together; add two cupfuls of sour milk in which a teaspoonful of soda has been dissolved; sift two cupfuls of flour and a cupful of cornflour, and stir into this the other ingredients. Put in bun tins which have been well greased, and bake in a quick oven.

Pickled Cauliflower.

Take some nice white cauliflowers; cut them in small pieces; sprinkle well over with salt; cover with cold water, and let stand six to eight hours. Take out, rinse well, and let them drain; have ready some vinegar, which has just come to boiling point. Put the cauliflowers in jars and a little pickling spice with them, and pour vinegar over till covered. Tie down and put in a cool, dry place. This pickle will be ready for use in two weeks.

Stewed Brisket of Beef.

Five pounds of brisket of beef well cleansed, and then rubbed with a half cupful of vinegar and a tablespoonful of salt. Rub this over the meat

You Can Do the Weekly Washing in Six Minutes

The 1900 GRAVITY WASHER cuts out labor and saves money. Does a big family washing—and wringing too—in short order. The Gravity washes a tubful spotlessly clean in six minutes. Prove it at our expense.



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C. T. C. Bach, Manager The 1900 Washer Co., 537 Yonge Street, Toronto, Ont. This offer is not good in Toronto, Montreal, Winnipeg or Vancouver and suburbs, as we have branch offices in these places. Special trial arrangements are made in these districts.

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Receive by mail Post paid this beautiful two piece dress. The material is fine French lustre in all shades, ecru, black, dark red, brown, green and navy. It is the very latest style one piece dress. Belted at waist. Skirt is made with an overskirt effect and full pleated flounce. Fancy lace yoke and lower part of sleeves. Fine of material to match.

The whole suit is trimmed with fancy buttons and made just as pictured. Order this dress by all means, you will find a dress in the latest style. It is a strikingly handsome and stylish dress finely made and nicely finished, and you will be proud to wear one of them. Give length down back, under arm and down front from bottom of collar to bottom of belt, length of skirt, around bust, waist and hips. We guarantee to make it fit as perfectly as a dress can fit. Send \$5.50 for the dress in all wool panama, same shades as illustrated above. We will include FREE OF CHARGE one year's subscription to "At Need work" Magazine. The tray cloth regularly sells for 25 cents, thus making a total cash value of 45 cents. The above Bargain Offer will be sent to any address upon receipt of ten cents and the names and addresses of five lady friends. Send us your order to-day.

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thoroughly on all sides and let stand about fifteen minutes, rubbing over several times. Then place the brisket in a kettle, with boiling water to cover. Place a cover on the kettle and let simmer gently for an hour, skimming several times until the scum ceases to rise. At the end of the hour place in the kettle with the meat four medium-sized turnips prepared in the same way, four carrots that have been well scraped, four turnips prepared in the same way, four small onions, one small blade of mace, pounded fine, and two allspice, reduced to a powder. Begin the simmering process and continue until the meat is perfectly tender. Then remove from the kettle, draw out the bones from the meat, and place the vegetables about the meat. Have two tablespoonfuls of flour rubbed together with two tablespoonfuls of butter, and thicken the gravy with it. When this has cooked sufficiently add two tablespoonfuls of catsup and pour over the vegetables. This dish looks well and is tasty, when garnished with tiny flowerets of cauliflower which have been cooked in salted water or garnished with braized cabbage.

Sauces For Meats.

With the English there are many accompaniments for their various meat dishes. Capser sauce is a favorite accompaniment for mutton. It is made by using one-half pound of melted butter. To this is added three tablespoonfuls of pickled capers and nasturtiums, which have been chopped fine and added to the melted butter, together with one tablespoonful of the liquor. To this is added about two tablespoonfuls of thick cream. Put the sauce in a double boiler and stir for three or four minutes on the stove, and then serve with mutton. Some add one-half spoonful of chopped parsley to this. It is very delicious either with or without.

Horseradish sauce is generally served with roast beef. To make, use four tablespoonfuls of grated horseradish and place with it one-half teaspoonful of granulated sugar, two-thirds of a teaspoonful of salt, one-fourth teaspoonful of white pepper, two teaspoonfuls of made mustard, moistened with sufficient vinegar to give the consistency of cream. When ready to serve, stir into the above four tablespoonfuls of rich cream. Place this in a double boiler and let it become hot but do not allow it to boil. This makes a very piquant addition to a roast beef dinner.

A white mushroom sauce served with fowls or cutlets is very common among the English. Use one-half pint of melted butter and a little cream. Add to it one-half pint of mushroom buttons that have been cleaned thoroughly. Let them simmer gently about ten minutes until they are tender. Season with a little cayenne and salt, and one tablespoonful of mushroom catsup. This should just come to a boil and then serve.

Tomato Butter.

The following recipe is very much prized by me, as it is fine, and when fruit is scarce it will take its place, to be eaten on bread or as a dessert. For it take ripe tomatoes, skin them by scalding and cut out the hard core. For nine pounds of tomatoes use three pounds of granulated or light brown sugar, a pint of cider vinegar, three tablespoonfuls of cinnamon, one and a half tablespoonfuls of allspice, one tablespoonful of cloves, and a tablespoonful of ginger. The spices can be put in a muslin bag if whole or if ground may be left in if high flavor is liked. Stir all together and cook until thick, stirring often to keep from burning. This is better after two or three months than at first, and will keep for two years without sealing. Either red or yellow tomatoes may be put up in this fashion, the flavors being quite different, but both are delicious.

Stuffed Rump Steak.

Two thin slices of rump steak, one cup stale bread crumbs, two tablespoons butter, one tablespoon onion chopped fine, one teaspoon chopped parsley, one-eighth teaspoon pepper, one-eighth teaspoon sage, one teaspoon salt, one egg. The meat should be about one inch thick. Moisten the bread crumbs slightly with hot water, then add the beaten egg, the salt, pepper, sage, onion, parsley, and the butter which has been melted.

Stir well together, spread between the slices of rump steak and tie together with a stout cord. Put into the baking pan and bake in a hot oven until tender. Baste often with hot water, to which a little strained tomatoe has been added.

Water Lily Salad.

Two small heads of lettuce and from three to six hard boiled eggs will be required for this salad. Boil the eggs until they are hard—at least half an hour. Remove the shell and cut the egg in halves, lengthwise. Remove the yolk and cut the white in lengthwise strips, which are arranged on the lettuce leaf in the shape of the petals of the lily. Put a small piece of the yolk in the center, grate the remainder of the yolk and lay it on the edge of the lettuce as a garnish. Put a dash of mayonnaise dressing on one side of the plate.

Cheese Pudding.

A tasty dish of cheese may be made by the following recipe: Line the bottom of a shallow baking dish with slices of toasted bread, sprinkle liberally with grated cheese, add salt and pepper to taste, mix three beaten eggs with two and a half cups rich milk. Pour this over the toast and cheese, and bake in a hot oven.

Baked Rhubarb with Custard.

To one pint of milk allow one pint of stewed rhubarb, two well-beaten eggs, three-quarters of a pound of fine bread crumbs, three tablespoonfuls of sugar and grated nutmeg to taste. Mix the bread crumbs with the stewed rhubarb in a basin then stir in the eggs, the milk and the sugar, and mix all the ingredients thoroughly together. Butter a pudding dish, put in the mixture, smooth the top and bake in a moderate oven until slightly browned. Then take out the dish, grate a little nutmeg over the pudding and return to the oven till quite set.

Rhubarb Sherbet.

As well as being a very refreshing beverage, this is a most wholesome drink for the children. Boil six or seven sticks of rhubarb in a quart of water for ten minutes. Strain the liquor into a pitcher into which you have put the thin rind of a lemon and two tablespoonfuls of fine sugar. Let it stand for a few hours and it will be fit for use.

Rhubarb Jelly.

Wash, dry and cut up one pound of rhubarb, then stew till tender with six tablespoonfuls of sugar and one tablespoonful of lemon juice. Rub through a sieve, add a few drops of red coloring and three heaping tablespoonfuls of powdered gelatine dissolved with one cupful of boiling water. Pour into a wet mold and turn out when firm. Serve with whipped and sweetened cream.

Trusting these few hints will be helpful, I am sincerely, L. J. M.

Yes, rhubarb is a very wholesome food. Thank you for the recipes. (P.R.)

Cream Pie.—This requires the yolks of three eggs, three tablespoonfuls of sugar, one tablespoonful of cornstarch. Beat all together and stir in one cupful of boiling milk. Cook until thick in a double boiler, flavoring with lemon, vanilla, nutmeg or almond just before removing from the fire. Have the pie crust ready baked before pouring in the filling which cover with a meringue made of the two eggs whipped stiff and put in the oven until tinged with brown.

Cocoanut Drops.

Mix the beaten white of an egg with one cup sugar and add one tablespoon flour and one cup cocoanut. Line the pan with a buttered paper, drop the mixture from a spoon in balls about as large as a hickory nut and bake twenty minutes in a moderate oven.

Pepper Mangoes.

Cut off the stem ends of large green peppers and remove the seeds. Soak them in strong brine for three days. Then take eight tablespoonfuls of chopped cabbage, four teaspoonfuls of English mustard seed, one teaspoonful of celery seed, two teaspoonfuls of chopped onion, one teaspoonful each of grated horseradish, whole peppercorns, and ground mace, and a heaping tablespoonful of brown sugar. Moisten to a paste with salad oil and stuff the peppers, tying the tops on with cord after the peppers have been filled. Pack in a stone

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32

The Famous Rayo

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should always be used where several people sit, because it does not strain the eyes of those sitting far from it.

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jar and cover with scalding vinegar to which has been added one-half cupful of brown sugar. Let stand several months before using.

Marshmallow Cream.

It is said that an excellent cream filling may be made for a cake by melting 10 cents worth of good marshmallows and a teacup of sweet milk over the fire. As the milk heats the marshmallows melt and form a thick cream.

Tomato Catchup.

(The Editor has tried this and found it good). Twelve pounds or one basket of ripe tomatoes, four large onions chopped very fine. Add four cups of vinegar, three cups of sugar, two teaspoonfuls of cinnamon, two teaspoonfuls of cloves, one teaspoonful of ginger, one-half cup of red pepper, salt to taste. Boil two and one-half hours.

Spiced Pickled Cranberries.

Boil three pounds of brown sugar with two cupfuls of vinegar, two tablespoonfuls each of whole allspice and cinnamon, and one of cloves. Simmer gently for thirty minutes, strain and return to the fire, adding five pounds of well washed cranberries from which the stems have been picked. Simmer gently for two hours. Seal while hot and keep in a cool place.

WEIGHTS.

Paste these in your Cook-book.

A scant quart of bread flour, after sifting, a pound; or three and two-thirds cupfuls (unsifted), a pound.

A pint of graham, seven and three-fourths ounces.

A pint of cornmeal, ten and one-fourth ounces.

A pint of rice, fifteen ounces.

A pint of samp or coarse hominy, thirteen ounces.

A pint of tapioca, twelve ounces.

A pint of butter, a pound.

A pint of bread crumbs, eight and three-quarter ounces.

A pint of raisins, nine ounces (lightly measured).

A pint of currants, ten ounces.

A pint of granulated sugar, a pound (sometimes scant and sometimes liberal).

A pint of brown sugar, thirteen ounces.

A pint of maple sugar broken into crumbly pieces, equals one pound and four ounces.

An ounce of butter, two level tablespoonfuls.

An ounce of flour, four level tablespoonfuls.

An ounce of cornstarch, three tablespoonfuls (level).

An ounce of granulated sugar, two level tablespoonfuls.

An ounce of ground coffee, five level tablespoonfuls.

An ounce of cinnamon, four and a half level tablespoonfuls.

An ounce of cloves, four level tablespoonfuls.

An ounce of mace, four level tablespoonfuls.

An ounce of curry, four level tablespoonfuls.

An ounce of mustard, four level tablespoonfuls.

An ounce of thyme, eight level tablespoonfuls. (Thyme is very light).

An ounce of olive oil, two tablespoonfuls.

An ounce of chopped suet, a fourth of a cupful.

An ounce of salt, two level tablespoonfuls.

An ounce of grated chocolate, three level tablespoonfuls.

An ounce of pepper, four level tablespoonfuls.

HOUSEKEEPING WORRIES.

In a chapel talk at the University of Chicago, Dean Miller said he would like to introduce a new set of examination questions for candidates for positions as teachers. One of the questions suggested was: "Are you a teacher all the time?" The dean continued: "If you say 'Yes,' I don't want you. You have no business to be so all the time. No one can take his profession to bed with him. You must have other interests. You ought to travel, not for the education, but for the love of human interests. All of the world must be in your heart of sympathy. Concerts, theatres, social functions are essential. You will have no nervous breakdowns if you do

this." The housekeeper and mother may not be able to travel to enlarge her horizon, but she may hear lectures, know people and keep in touch with the great minds of the world through books and magazines. She need not be a housekeeper all the time; that is, she need not take her household worries to bed with her, take them calling with her, think about them all the time and talk about them constantly. She will be just as efficient a housekeeper and a better companion if she sometimes puts the housework in the background and thinks and talks about things of general interest.

FASHION FANCIES

A very pretty neck dressing is the Jane Eyre collar, a narrow, turned-down affair of embroidered lawn, which is worn rather low around the throat, and slightly V'd in front, where it is fastened with a huge cameo or other quaint brooch. These are very pretty over a dark blouse.

Paisley effects will dominate winter dress, it seems, from the number of Paisley printed dress accoutrements that have come over from Paris. Even bags and belts are made of Paisley patterns.

Some of the newest skirts are made with a habit back, or they have a panel or a stitched double box pleat down the back, giving the same effect. A few are slightly shirred in the back, but are cut narrower as they reach the bottom.

Footbands are seen very frequently; other models are made with long overskirts coming below the knees, which are caught in with a band. The underskirt is made with a pleated flounce, which has very little fulness.

Other skirts have panel fronts and backs, with the fulness at the sides gathered into a band at the bottom. A few cluster pleated skirts, caught in with straps or stitched down to preserve the narrow cut are also seen.

Nearly all skirts are short. Even in the most elaborate suits the skirt is generally made to escape the ground from three to five inches.

According to the present outlook, this will be a very extravagant season, and handsome trimmings are being employed on some of the handsomest suits. For winter use, fur occupies first place. All kinds of fur bands are being used with excellent effect.

Many of the smartest suit coats are cut with very straight lines from the shoulder to the edge of the coat. There are, however, some smart jackets that have seams which curve slightly in at the waist-line, as many women do not like the idea of concealing their figures, as is the case with some of the box effects now being shown.

The new coats fit very closely over the hips, giving at first glance the appearance of a one piece suit. Revers of all kinds are being used, from small notched revers to very large ones which come below the waistline.

The peasant blouse with the body and sleeve in one is still the height of fashion.

In dress costumes the three-quarter length sleeve predominates. In evening gowns the sleeve is usually of the elbow length or shorter.

HINTS FOR CHRISTMAS PRESENTS.

Forget-Me-Not Beads.

Buy small yellow and light blue beads; the yellow serve as the centre and the blue beads as the petals. The beads made into the flowers are very pretty, and a long string of them will make a pretty present.

Crocheted Slippers.

I saw a very dainty pair of slippers the other day. They were crocheted in the form of slippers. They were made of white cotton and were starched and lined with blue silk. They were made to fit over a pair of kid slippers. Either pink or blue silk make pretty linings.

Very pretty covers for beauty pins and hat pins are made of Irish crochet.

Irish crochet is very fashionable now. There are entire dresses made of it, jackets, and all kinds of ornaments. Anything made of Irish crochet will be an acceptable Christmas gift.



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Patronize Those Who Patronize This Paper

Practical Talks to Thresherman

Continued from page 28

and feel safe that it will not suddenly start running, otherwise you may turn it half over and it will set the engine going with the steam trapped in the cylinder, and you are liable to be injured.

Cylinders constructed with twelve bars are known as standard cylinders. This is the size that was in general use for a number of years. At present in addition to the twelve bar cylinders there are some made with sixteen, twenty and twenty-one bars. The small cylinders run at from 1,050 to 1,150 revolutions per minute, and the large ones at from 700 to 900 revolutions. It has been found in practice that the correct speed of the teeth for threshing is in the neighborhood of 6,000 feet per minute. In order to obtain this speed in all cases it is necessary to run the small cylinders very much faster than the large ones. While the threshing speed is roughly given at 6,000 feet per minute and this speed will be obtained by running at the speed stamped on the front of the machine, it does not follow that deviations from this speed are not permissible. As a matter of fact, under certain conditions of grain a change in speed is necessary in order to obtain the best results. When the straw is tough and slightly damp the speed must be increased somewhat above the normal, when very dry it may be kept at or just below normal. The exact speed is a matter for judgment and experience to decide. It depends upon the condition of the straw and the kind of grain. Rules in such a case are useless, and the only guide to correct procedure is the judgment of the separator man. Since this matter of cylinder speed is quite essential to correct practice, the operator in charge should make free use of the speed indicator and make sure in starting that he has the required cylinder speed as indicated on the front of the machine. If the grain is somewhat damp he should have the engine speed up the engine a little at a time until he obtains the best results. From fifty to seventy-five revolutions above normal are usually sufficient increase to take care of any condition of dampness.

Something for Every Western Dealer!

We wish to call the attention of our readers to an advertisement of the Strite Governor Pulley, which is a most successful device and the missing link between the cream separator and the gasoline engine, and is said to be the only successful device for driving cream separators with any kind of unsteady motive power. The Strite pulley is just what its name implies, "a speed governing pulley," which contains a novel and valuable feature in its slow start-



We Want Every Woman to read about this

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J. 101. — Very Special Value. — **LADIES' BLACK CHEVIOT COAT.** This cloth has been very carefully selected and imported for our special use. The High Storm Collar is Mink African Marmot and Reverses to match. It is body lined with fine quality Farmer's Satin. This is strictly a plain tailored coat with tailored seams and pockets on each side. Turn-over cuffs trimmed with one button. Can be had either Black or Navy. Sizes, 32 to 44. Price, **\$13.95**

Have you seen a copy of our Fall and Winter Catalogue? If not, write in to-day. We are the people who build your Coat or Suit to measure, guarantee a fit or refund your money. Thousands say we lead in our line; can we add you to the list?

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ing of the cream separator. The engine may be started instantly at full speed, the Strite pulley will gradually increase until the normal or desired speed is reached. This pulley not only starts the separator slowly, but it controls the speed at all times, regardless of the variation in speed of engine or line shaft, which may vary from 200 to 1,000 revolutions, without affecting the speed of the cream separator. By the use of the Strite Governor Pulley not only the life of the cream separator is increased but the capacity of the machine is increased and it produces a more uniform grade of cream than is possible to produce by hand turning. Read their advertisement and write for further particulars to the Strite Governor Pulley Co., 310 South Third St., Minneapolis, Minn.

Sun's Bi-centenary. Oldest Insurance Company Celebrating Its 200th Anniversary "Early Days of the Sun Fire Office."

Congratulations are being extended the Canadian representatives of the Sun Insurance office on the completion of the two hundredth year of its unique history. Few corporations now in existence can trace their records in an unbroken line so many years back, to the very beginning of fire insurance, so the Bi-Centenary of the Sun Fire Office is an event of more than passing interest. Incidents connected with its inception and early history have been recorded in a most interesting souvenir book entitled "Early Days of the Sun Fire Office." This book is issued by the Head Office in London, England, and gives an insight into what seems to us of

today to be peculiar manners and customs of business procedure. The Sun Fire office was the outgrowth of a partnership of twenty-four members formed by one Charles Povey, pledged to pay claims share and share alike. An office which he named the "Exchange House Fire Office" for insurance of "Goods and Merchandise in London and Westminster" was established in 1706. At that time such fire insurance as was then carried was confined entirely to the City of London. It was in 1708 that the first attempt was made to do business all over the Great Britain, at that time considered quite an undertaking. It was this business which a year or two later was surrendered by Mr. Povey to the Company of London Insurers under its name of the "Sun Fire Office."



THE
Girls' Cozy Corner

The Reciprocity of Smiles.

By J. W. Foley, in Collier's.

Sometimes I wonder why they smile so pleasantly at me, And pat my head when they pass by as friendly as can be; Sometimes I wonder why they stop to tell me How-d'-do, And ask me then how old I am and where I'm going to; And ask me can I spare a curl and say they used to know A little girl that looked like me, oh, years and years ago; And I told Mamma how they smiled and asked her why they do So she said if you smile at folks they always smile at you.

I never knew I smiled at them when they were going by, I guess it smiled all by itself and that's the reason why; I just look up from playing if it's anyone I know And they most always smile at me and maybe say Hello; And I can smile at anyone, no matter who or where Because I'm just a little girl with lots of them to spare; And Mamma said we ought to smile at folks, and if you do Most always they feel better and they smile right back at you. And when so many smile at me and ask me for a curl It makes me think most everyone likes a little girl; And once when I was playing and a man was going by He smiled at me and then he rubbed some dust out of his eye, Because it made it water so, and said he used to know A little girl up in his yard who used to smile just so; And then I asked why don't she now and then he said, "You see—" And then he rubbed his eye again and only smiled at me.

HONEY AT CHURCH.

Honey liked nothing better than going to church and, I must say, she behaved beautifully for such a little bit of a three-year-old girl. Sometimes to be sure, she would go to sleep during the sermon, but would always wake up in time for the music; and, then, she liked to have the ladies notice her after church. Sometimes they gave her candy, and Honey thought that was the very best of all.

Once there came a rainy Sunday and Honey's parents made no preparations for church. Instead, they went out on the porch with something to read.

"Honey wants to go to church," said the little one.

"Not today," said her papa, "Honey would get all wet."

"Honey wants to go to church," she repeated.

"Don't you see papa and mamma are not going," said her mother.

The little one went into the house, climbed up into a chair and surveyed herself in a glass.

"Ise all yite," she said, hunting up her bonnet and tying it on wrong side

before. Then she found an old umbrella, slit up between every wire, and started out. Her father and mother were on the back porch, so that she was not afraid of being seen by them. When it became very quiet in the house, however, her mamma tipped to the front door and looked out.

There was Honey going down the street through the pouring rain. The church was not far away, and she was almost there.

With a bound her mamma sprang out into the rain and ran after her.

The child heard her and hastened her footsteps. Her mamma was too late. Without putting her umbrella down, Honey was creating quite a sensation as she marched up the aisle.

Honey's mamma was too mortified and too full of laughter to follow. She just stood outside of the door, the rain pelting down on her bare head and listened.

She heard a breeze and a ripple, then a giggle and suppressed laughter. What next? It was the preacher and he was saying:

"Suffer the little children to come unto me and forbid them not, for of such is the Kingdom of Heaven," and then she peeped in to see that Honey had gone right up into the pulpit, bowing and smiling at the preacher who was just in the middle of his discourse.

Could Honey's mamma believe her senses? The preacher was closing the little one's umbrella; he took off her bonnet, smoothed her hair, and then, with a hearty kiss, sat her down on the sofa behind him.

Honey's mamma waited for no more. She hurried home and told her husband almost breathlessly about it, and then both of them dressed hurriedly and went to church, slipping quietly into a back seat.

The preacher saw them, however, and after the benediction he took Honey by the hand and led her down to her parents saying, with a smile, "And a little child shall lead them."

Honey's papa and mamma would have given her a scolding, perhaps, but for these words. Instead, they always went to church after that and took Honey with them, rain or shine.

GIRL'S PRIZE LETTER.

Sweet Valley, Alta., Sep. 19.
Dear Cousin Doris.—This is my first letter to the Girls' Cozy Corner and I hope to see my letter in print. I live thirty miles from a town named Brooks. I am thirteen years old; there is no school here. I am very fond of horse-back riding. We have no crops this season as it has been so dry. I like cooking very much. When my mother is in town I cook for my father and brother. I have a nice girl friend, her name is Annie Erickson. She lives one mile from my home. We have some enjoyable times together. I remain your Cousin. Wishing your paper every success.—Bluebell.

FIRST PATIENT A DOG.

Florence Nightingale Began Her Great Work by Caring for Pet Animals.

A name that has been long known and loved throughout the world is that of Florence Nightingale. There is indeed something almost angelic in the sound of the name. "Angel of Mercy" was the title which she bore in life and by which she will be remembered in

death. The heroic service of this noble woman in soldiers' camps and upon battlefields is one of the greatest examples of kindness and self-sacrifice in the annals of human kind. So beloved was this gentle woman, it is said, that the sick and dying used to kiss her shadow as she passed their cots. The elements which made this life of such beauty and determined so useful a career for Florence Nightingale may be best understood from the following story:

"Her first experiences as a nurse were with her dolls, whose broken limbs and bruised heads she bandaged and cared for with all the tenderness and gentleness of her nature.

"As she grew older she became interested in caring for wounded or sick pets and other animals. Her first patient was a dog named Cap. The dog belonged to one of her father's shepherds and one day she learned that Cap had been injured by some boys and that the shepherd was preparing to kill his beloved dog in order to save him from the suffering. In spite of the fact that she was still a little girl and very timid, she at once drove to the shepherd's home, and, with the aid of the clergyman of the parish, she nursed the wounds of the injured animal, and soon he was well again.

"Her love for pets and her skill in curing them soon became well known, and in a short time she had become the nurse of all the wounded animals of the neighborhood."

THE
Canadian Boy's Camp

Isn't It Queer?

By Anna A. Merriam.

A saw has teeth that can't chew a bite.
A table has legs but can't walk;
Pitchers have mouths that won't open or shut,
And a shoe has a tongue but can't talk.

A clock has a face without eyes, nose or mouth,
Not a single sign of a feature;
It also has hands without fingers or thumbs—
A truly remarkable creature.

Potatoes and needles have eyes but can't see;
A stove has lids but can't blink;
A windmill has arms but they won't hold a thing;
And a pin has a head but can't think.

Now though you may think these things very queer,
They are honestly true, every one.
Suppose you all try to think of some more,
It really is oceans of fun.

THE MOST POPULAR BOY IN ENGLAND.

By J. L. Harbour.

The new heir apparent to the throne of England was sixteen years old on the 23rd of last June, and is therefore in what some folks call the "between hay and grass" period of life, which means that he is almost too old to be called a boy and not old enough to be called a man. If all reports are true the elements of boyishness and manliness are

happily combined in young Prince Edward, eldest child of the King of England. He is old enough to think seriously of the duties that lie before him as the next King of England should he outlive his father, as he is likely to do. Training for kingship is rather a serious business, and it will be more serious than ever now that Prince Edward is so much nearer the throne than he was before the death of his grandfather, King Edward. The late King Edward was particularly fond of Prince Edward and the two were often together, and it is said that the king never lost the opportunity of impressing upon Prince Edward the fact that he was heir to the crown and throne of England and that he must conduct himself accordingly. The late king Edward made a point of being kind and polite to every one and the parents of Prince Edward have taught him that this is one of the attributes of a gentleman and a real king. Three years ago young Prince Edward went to Osborne in the Isle of Wight to begin life as a naval cadet. He went with the distinct understanding that he was to be treated just as the other cadets were treated. No favor was shown him because he was a prince of the blood royal and the future King of England. His outfit was just as simple and inexpensive as was the outfit of the other cadets and he had to obey the simplest rule obeyed by the other cadets. When he went to Dartmouth the same rule obtained. He had to "pull out" at half past six in the morning, just as the other cadets did. He had to do three-quarters of an hour's work before breakfast. He had to work in the forge and in the factory as the other boys did, and he took his share of the fagging as the other boys did. Nor did he resent this. The manliness of his nature revealed itself in his willingness to be put on the same level with the other boys, and, in not asking any favors because he was so superior in social station to the other boys. In a letter sent to his father Prince Edward told how he had been sent on an errand by a senior boy in the school, the senior boys being allowed by tradition to make the juniors fag for them. Prince Edward told how the senior had given him a six-pence with which to buy a small box, which it turned out cost only three-pence, and how the senior boy had graciously told Prince Edward that he might "keep the change."

It is the custom at an English school that all boys of over a year's standing may ask a newcomer his name and the latter must reply promptly and truthfully and without any spirit of resentment, no matter how many of the senior boys ask the question. It is recorded that one of the older boys went up to Prince Edward and asked: "What is your name?" "Edward," was the reply. "Edward what?" "Edward nothing—just Edward."

Then the senior was about to chastise the prince for not giving a more definite answer to the name, but evidently thought better of it and turned away saying: "Oh, it's you, is it, eh?"

One of the cadets once asked Prince Edward how it felt to be the son of the Prince of Wales and an heir to the throne of Great Britain. He was asked if it was not a great responsibility and he said in reply:

"No. I have never thought of it in that way. It has always seemed to be great luck to be born the eldest son,

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because when you are the eldest you haven't got to wear any of your brother's old clothes."

"That Prince Edward is not lacking in a sense of humor is told in the following incident that caused the late King Edward a great deal of amusement. He once asked young Prince Edward what he was studying in school and the boy named History as one of his studies.

"What are you learning in history just now?" asked his royal grandfather.

"Oh, all about Perkin Warbeck," was the reply.

"And who was Perkin Warbeck?" asked the king.

"He was a man who pretended that he was the son of a king," was the reply, "but he was not the son of a king. He was the son of respectable parents."

Prince Edward has already announced some of the measures he proposes to institute when he is King of England, for not long ago he said:

"When I am King I mean to make these three laws: No one shall cut the tails of puppy dogs, there shall be no more sin in the country and no one shall use breaking reins because they hurt the horses."

Prince Edward will make himself the greatest king the world has ever known if he is able to carry all three of these laws into effect. All of the stories told about this youthful scion of royalty show that he is an exceedingly likeable boy with many fine and manly traits of character. He has on a number of occasions opened his rather slender purse to contribute to charitable causes. His supply of pocket money is much less than that of the sons of many American rich men and he spends money with care. His mother, Queen Mary, is a very religious and most practical woman who has given great care to the education of her children, and when Prince Edward is a man he can say: "All that I am, my mother made me."

WHAT THE BRONCHO SAID.

I did not know what they wished, and they never told me. I am a horse, and the horse has been for ages the servant of man, and one of the most easily trained and managed of all animals. But they insist that I am different from the rest of my kind. And so they must "beat" me. The other day I was brought out into a ring before a crowd of brutal men and women. In the throng I noticed one man in particular, a man who wore things—blinders, I suppose—over his eyes, and had prominent teeth. They called him Teddy. Well, they brought me out before the crowd, and a beast of a man tried to ride me. I was not angry, but I was frightened out of my horse wits. I was nervous, excited, and, worse than all, puzzled and perplexed. The man tried to get on my back. I heard them talking about a fight, and so I gave them one, supposing that that was what they wished. The man acted as though he were my enemy. Was I to blame for treating him so? There was a fight and I won. The man could not stay on my back. After a hard struggle I threw him.

Then someone cried: "Bulldog him!" I did not know what was meant but I soon found out. While I was held fast by two or three men, another man reached over another horse, caught hold of my ear and bit through it. The idea I learned, was to make me submissive. They tell me that I "ahivered," and I guess I did. Certainly the pain was great. But it did not make me submissive. For when the man tried a second time I ran into a fence and oh, how my ear did hurt! For that, however, no one seemed to care, not even the man with blinders in the stand. I was only a broncho, and so it did not matter. To this hour I have no idea as to what was desired of me. All I know is that the day was hot, the ground hard and "rached," the crowd noisy and cruel, and that I was frightened, excited and bewildered. Oh, yes, I know, too, that my ear is very sore and painful. I have heard that in other parts of the country there are societies for the prevention of cruelty to animals. But there does not seem to be any such organization in Cheyenne. Perhaps people who belong to them are mollycoddles. If I am a brute, what is the man who bit my ear?—Indianapolis News.

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INVENTIONS OF BOYS.

One of the most remarkable inventions made by a boy is a device for signalling on elevated roads. It is in use on part of the Brooklyn L system, and is the work of Morris Schaeffer, 15 years old, a public school boy. Morris was offered \$18,000 for his patent, but on the advice of his friends refused it. The boy expects to be able to get \$50,000 for the idea from the railroad company.

Of quite a different calibre is the machine invented by Donald H. Miller, a student of Columbia University. This, by the mere touching of keys, similar to those on a typewriter, translates Chinese into English. It can also be used to translate any other language. The contrivance resembles an adding machine.

A most ambitious piece of work has just been successfully finished by Francis Lee Herreshoff, the young nephew of the famous yacht designer. This is the construction of a high-power racing automobile, with which has been developed a speed of 80 miles an hour.

Herreshoff has also patented a device for subduing the glare of acety-

lene lamps. The mechanism does away with the necessity of extinguishing the lamps, for it softens the glare, making it hardly more noticeable than an oil lamp.

Irving Hames, a fourteen-year-old schoolboy of Los Angeles, Cal., has perfected a "glider" with which he has captured many valuable prizes. He states that he means to make aeroplane building his life work.

BOY'S PRIZE LETTER.

October 1st.

Dear Campers.—I have received my book and have read it. I think it very interesting and was awful glad when I received it. I helped in haying and I went only when my father went. I have mowed and raked and coiled hay. Once I was mowing a rough place where there were little hills and hollows. There was a hole that had once been an old well and it had been filled to about 18 inches from the top and about two feet square. One horse stepped in it. There is another one about three feet deep and four feet square. One month I only went a week and that was a day now and then all through the

month. About four weeks ago father and I were in the meadow. It was the day the stock stables on the fair ground in Portage la Prairie was burned. A flash of lightning hit about 80 rods away. I was on the mower mowing and both horses stopped and stuck up their heads and ears. Then an awful peal of thunder came and brought rain. I had on a raincoat that belonged to my brother and so I got wet from my waist down and a pool of water was in both boots and my pants were stiff and I did not feel very comfortable. This happened between 11 and 12 o'clock. I have read the following books: "A Debt of Honor," "Julius, the Street Boy," "Tony the Hero," "Tom the Bootblack," "Sink or Swim," "Paul Prescott's Charge," "Moosawa," "The Lives of the Hunted," and "Wild Animals I Have Known." Our teacher read "Beautiful Joe," "The Bishop's Shadow," and "Mrs. Wiggs of the Cabbage Patch." I have handled a walking plow while father drove the horses. I will close, wishing to receive a prize, as my letter is getting long. Yours sincerely, John Blair, Jun. (aged 12), Oakland, Man.

Along the Perilous Way

Continued from page 42

they were up with the wolf; but he turned in across the boulevards, and then sprang into a side lane, throwing off the men and most of the dogs. But two collies, keen and swift of foot, followed him, and, emboldened by the onslaught of a mongrel hound, they snapped at the wolf's rear. Some workmen nearby ran across and with shout and gesture encouraged the dogs, and the fight was on. Once, and twice, the big wolf chopped and shook, and his enemies were two. A collie was as quickly put out of commission; then to escape the missiles hurled at him he put off again.

But now he was very lame and tired. His mouth was open wide, as he panted heavily. Bloody slavers ran from his lolling tongue, and his eyes were red rimmed and bleary. If they would only let him rest a little! But he was a wolf, and it was everybody's duty to seek his life. But because he was a wolf, he had the wolfish heart, that keeps on and on and knows not defeat till it is dead. Northward was the way; and because he could not stop, he loped onward; and though each lobe was very short, still he was a wolf.

For a considerable distance he kept to the lane and secured temporary respite; but a delivery wagon blocked the way and forced him to the street. Before he had gone a quarter of a mile, he was again pursued; and now he could not outstrip his pursuers. As he struggled painfully onward, a long low building suddenly blocked the way. A dozen curs were snapping around him, and, seeing a narrow door, he dashed into it almost against a portly man in a white apron. The pursuers piled promiscuously about the door and fell to fighting, and he of the white apron slammed the door.

Shag limped into a long aisle, and his nose filled with the most delicious fragrance that he had ever encountered. All about him, row on row, was meat, red meat, and raw. He was in the city market. Cries and much confusion followed his appearance. Many customers, regardless of half-filled orders or orders not begun, rushed pell mell from the building. The pangs of hunger that had temporarily been silenced by the fear, excitement, and fierce wrath of battle, now returned, and reaching up, the starved brute seized a mouthful of tender chops. Gulp, gulp; he jerked his neck and swallowed the savory morsels in great pieces.

"Open dat door!" yelled a florid faced man in a white apron.

"No; keep it shut and we'll catch him!" It was a vegetable dealer in the next stall speaking.

"You t'ink you keep dat greedy devil here? You t'ink he not eat your cabbages! My Got! Look! Von chop he eat already! Open dat door!"

And the infuriated German hurled a bare beef bone at the marauder. It found his ribs with

a hollow "bung," and the wolf growled his reply through a mouthful of meat. He was not afraid of these men, not he. They were not hunting him. But the irate meat vendor made an attack with a terrible knife in one hand and a cleaver in the other; and Shag moved on, dragging a long string of sausage through the sawdust on the floor. Up and down the long aisle he limped, looking for a means of exit. Presently he saw an open side door, and he fled through it.

Once again the stern race began, with more dodging of the miscellaneous traffic of the city street. In spite of his feast, he felt more tired. Had he been a wild wolf, he could have run interminably; but on account of his confinement his muscles were not so wiry nor his wind so inexhaustible as it would otherwise have been. Rest, rest! was nature's insistent cry within his tormented body. But he was a wolf, and his wolfish heart drove him forward. Instinct told him that he must soon be through the maze of men and their habitations and he sought the open country as the drowning victim seeks the air. He was going toward the land of freedom. On, on!

Elton-st. was largely warehouse property, and here Shag had a run without much molestation. Soon he reached the railway yard. Long lines of freight cars stood on the sidings, and under and among them he threaded his way. A yard engine was clanging near; but the wolf did not turn aside, for now he was caloused to fear. He paused and looked backward with eyes that saw little; and then he lay down below a box car.

Many hours he lay and rested, and longed for the darkness. Several yard men passed dangerously close, but he crouched low in the shadows and escaped observation. Toward evening that clanging, black, ill smelling monster again passed his way; and a few moments later there was a tremendous shock at the end of the line of cars. A wave of bumps and bangs seemed sweeping his way, and, filled with fear at the commotion, he attempted to get out. It required the third effort to get his stiffened, painful legs below him, and he crawled out just as the long line of cars started backward. Just then he heard the excited shouting of men near him, so he crawled under an adjoining line of standing cars. But every man here as elsewhere was a foe; and soon pieces of coal and stone came whistling his way. He was forced to strike out again on another march on his perilous way.

He was rested somewhat, and, thanks to the German's chops, he felt stronger; but every muscle was painfully sore and tortured him with each step. There were many cuts and bruises too on his gaunt body; for collies and curs bite hard. Still, he was a wolf, and the north called him. By the time that he had crossed the tracks he had limbered up a little.

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Look at the cut. Note the two piece body with the union nut. This is the secret of the model "U"—a feature which is fully protected by us and which can not be had from any other company. By loosening the union nut you can connect the upper and lower parts of the injector at any angle to each other that you may desire without in the least affecting its working qualities. In other words, you can make the one injector a right and left, a left and right, a front and back, a front and front, or any other style best suited to your needs. And yet the flexible feature of the Desmond Model "U" is only one of its superior features. It not only does everything any other injector will do but, owing to its extreme simplicity, does them better. Its range is greater—it will handle hotter water—it will lift a greater distance, and it has a drip cock. Its tubes are all screwed into the body and can not fall out.

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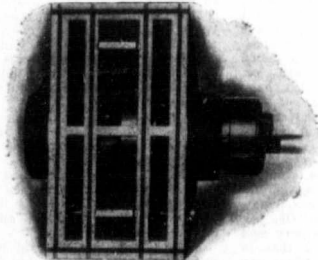
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AND STILL THEY COME



Kankakee, Ill., Aug. 4, 1910
 Baker Valve Company,
 Minneapolis, Minn.
 Dear Sirs,
 Your Mr. Kent sold us one your valves for our Atlas 100 H.P. Engine. The valve has been working for about a month and it is saving us from 20 to 25 per cent. of coal.
 We are very well satisfied with the valve, and would recommend it to anyone working a side valve engine. Yours truly,
 WEST SIDE QUARRIES CO.

Duaville, Ill., July 21, 1910.
 Baker Valve Company,
 Minneapolis, Minn.
 Dear Sirs,
 The valves I purchased of your agent, Chas. E. Kent, have been found very satisfactory both in increasing power of engine and removing entire load of valve gear.
 E. P. JENKINS.

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He crossed the next avenue, went through a vacant lot, scared many bow-wows from a terrified St. Bernard pup, and took to the lane leading him in the right direction, toward the great wild.

Soon he was out in the street again. Ahead, even with his half-seeing eyes, he could see the houses thinning out. Beyond was a stretch of prairie, and there away on the horizon was a dark line of timber. A fierce joy filled him, and he began to lope again. Three or four dogs were around him; but they lacked courage to touch him. Again he quickened his pace. Freedom and the land that he had yearned for for years were almost within his grasp. He would yet reach the land that called to him. Soon he would slip down along the bank of the river to the right and take shelter among the willows, till darkness would hide him.

Suddenly a great gray hound shot alongside of him; then another on the opposite side. They arched their lithe necks as they ran, and rather dubiously prepared to grapple. Behind him Shag heard the quick thudding of a fast horse's feet and shouts of encouragement from the driver. Ted Pentland, one of the city sports, was out for a run with his hounds. Big shaggy staghounds they were, the best that breeding and money could obtain. They had scars of many a dying coyote's teeth upon their bodies; and now their proud owner saw fresh laurels within his reach in the killing of this gaunt, pain racked cripple of a gray wolf.

"Take hold of him, Bobs! Victor! Hi! S-s-s-s-sick!"

And they took hold, one before and one behind, as they had done with many a coyote. But this time they were not dealing with a coyote. Shag went down before the onslaught; but he rolled over, and in spite of his assailants came up again. Victor had a cruel hold behind, and was worrying and tearing; but the other hound could not get a hold, for with that lightning neckwork which characterizes the chops of a wolf, Shag bit and cut and tore with his terrible jaws. With a six-inch rent in his shoulder, and a deep ragged tear in his neck, Bobs

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WESTERN HOME MONTHLY,
WINNIPEG CANADA

gave a howl of anguish and quit, to lie and gasp and cough bloody froth. Then the wolf doubled backward, and with another chop fastened upon his rear antagonist. This time he did not let go; for now he knew that his only strength was in his jaws.

The frantic Pentland was now out of his rig and using his whip unmercifully on both dog and wolf in a wild attempt to separate them; but the two combatants, with scarcely a sound, other

than their sickening, feeble worrying, rolled and guzzled.

Suddenly the hound lurched over, and with a gurgling gasp released his hold on the thigh of the wolf. The latter had bitten him through the neck and killed him. The great fierce brute lay on his victim and bit him again; then in response to the lashings he was receiving he propped himself up feebly on two legs, and growled. Pentland immediately made a rush and scrambled into

his buggy. Seeing the knot of onlookers gathering, he called for a gun. Some instantly volunteered one, and they drove off to get it. The destruction of two fine hounds called for vengeance.

Shag rose from his victim and, standing unsteadily on his two and a half sound legs, gazed with bloody eyes upon the half dozen onlookers across the road. His gray disheveled coat was very red, and the blood trickled steadily down his useless hind leg,

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from the terrible wound in his thigh; but still he was a wolf, there was life still in him, and the north called him. He hobbled limply toward the river, rolled and fell down the steep bank, and a hundred rods farther on reached the spreading willow thickets. On and on he hurried, limping, stumbling and staggering, stopping only once to quench his terrible thirst. Dodging from one thicket to another, he made half a mile by darkness. Then, because he could go no farther, he stopped and fell down to lick his stiffening wounds. Any other creature would have laid down to die, or indeed have yielded to death's call long before; but because he was a wolf and yet had life in him he refused to die.

That night he crawled another mile; and all the following day he lay in hiding and gazed wistfully across the prairie at the long line on the horizon to the northward. Next night he crept into a farm yard and feasted on several sucking pigs; and before morning he somehow crossed that five-mile stretch of prairie, and entered the northern woods.

He had reached the goal of his weary life. He would see again his home, the land of the pines and spruces. It lay many miles yet, away to the north; but there was shelter all the way, and he knew that he could reach it. The voices from the northern wilderness, singing of evergreens, whispering of aspens, the call of the moose, and all the other wood sounds—that had spoken to him so far away—would now whisper in his ear. The joy in his heart was great, and it was well-merited: for through the camp of his enemies, one hundred thousand strong, he had run the gauntlet of danger and suffering and reached the end of his journey along the perilous way.

The Smallest Engine.

Tiny Tim is the name of the smallest engine in the world. It is made of gold and steel, and is so small that a common housefly seems large in comparison. It weighs just four grains complete, which is the weight of an ordinary match. It takes over 100 such engines to weigh one ounce, almost 2,000 to weigh a pound, and more than 3,000,000 to weigh a ton.

The engine-bed and stand are of gold. The shaft runs in hardened and ground steel bearings inserted in the gold bed. These bearings are counter-bored from the inside to form a self-oiling bearing. The fly-wheel has a steel center and arms, with a gold rim, and the complete wheel weighs one grain. The cylinder is of steel, with octagonal base, highly polished.

The stroke is 1-32 of an inch bore, 3-100 of an inch. Seventeen pieces are used in the construction of this engine.

The speed of the engine is 6,000 revolutions per minute. When running 100 per second no motion is visible to the eye, but it makes a noise like the noise of

a mosquito. The horse-power is 1-489,000 of one horse-power. Compressed air is used to run it; and it may be of interest to note that the amount required to make it hum can easily be borne on the eyeball without winking.

Good Water and Pure the Farmer's Friend

Continued from page 7

water is placed in a clean bottle, tightly stoppered and kept warm for about three days, its taste, odor and color at the end of that time will practically determine its degree of purity. Bacteria can live for about three days, only, in running water; it is in standing and stagnant water that they flourish and multiply.

The farmers of the West must look to their water supply. The old-fashioned method of digging a well represents the earliest attempts of mankind to provide an artificial water supply. That the process is still in use in many localities is due largely to the fact that the great advantages of drilled wells are not generally known. Fortunately it is in growing disfavor and will soon be a thing of the past. When this time comes the farmer will have largely done his part in the great movement towards sanitation and in promoting the health, strength and longevity of his specie.

Problem of The Deserted House

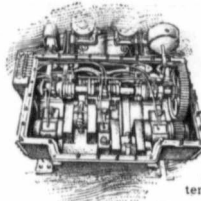
Continued from last month

believable, positively nightmarish; yet true enough, for here he stood in the subway. There was no question about that; for in the distance was the roar of a train, and he discreetly withdrew into the little door, closing it carefully behind him until it had passed.

Finally he popped out again and closed the door behind him, paused only to admire the skill with which a portion of the tiling in the tunnel had been utilized as a door, then went on across the tracks. It was still early morning; the trains were as yet few and far between; so he had a little leisure for the minute examination he made of the tiled walls opposite the closed door. It was perhaps ten minutes before he found a tile that was loose. He hauled at it until it came out in his hand, revealing a dark aperture beyond.

Within fifteen minutes, therefore, from the time he undertook the search for this second door he was standing in another narrow, earthy tunnel which beckoned him on. With the ever ready light to guide him, and still proceeding with caution, he advanced for possibly thirty feet; then came a turn. Round the turn he found himself in a sort of room—another cellar, perhaps. He permitted his light to go out, and stood listening, straining his squint eyes. After a time he was satisfied and flashed his light again.

Directly before him were half a dozen rough steps, leading up to what seemed to be a trap door. He had barely time to no-



Will you look into this crank case just a moment?

The crank shaft in is supported by three long, heavy bearings—one at each end of the crank case and an intermediate bearing between the two cranks.

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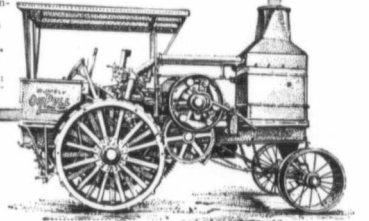
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tice this and to see that the trap door was hanging down open, when there came a cyclonic rush toward him out of the darkness, from the direction of his right, something whizzed past his head, causing him to drop the precious light, and instinctively he ran up the steps. The gloom above was no more dangerous, he thought, than the gloom below, and he went on, finally passing through the trap and standing on a hard floor above.

There was the sound of a fierce, desperate struggle down there somewhere, cursing, blasphemy, then the noise of feet on the steps coming toward him, and the trap door closed with the heavy, resonant clang of iron. He was alone, his light lost. A sudden, strange, awful silence closed down round him, a silence alive with suggestion of unseen, unknown dangers. He stood for a moment, then sank down upon the floor wearily.

Cashier Randall stood beside the ponderous door of the vault, watch in hand. It was two minutes of ten o'clock. At precisely ten the time lock on the massive steel structure, built into the solid masonry of the bank, would bring the mechanism into position for the combination to work. Already the various clerks and tellers were at their posts; books and money were in the vault. At length there came a whirl and a sharp click in the heavy door, and the cashier whirled the combination. A few minutes later he pulled open the outer door with a preceptible effort, then turned his attention to the combination lock on the second door. This yielded more readily; but there was still another door, the third to be unlocked. Altogether the task of opening the huge vault required something like six minutes.

Finally Cashier Randall threw open the light third door, then touched an electric button on his right. Instantly the gloom of the structure was dispelled by a flood of light, and he started back in amazement. Almost at his feet, on the floor of the vault, was the huddled figure of a man. Dead? Or unconscious? Certainly there was no movement to indicate life, and the cashier stepped backward into the office with blanched face.

Others came crowding round and saw, and startled glances were exchanged.

"You, Carroll and Young lift him out, please," requested the cashier quietly. "Don't make any noise about it. Take him to my office."

The order was obeyed in silence. Then Cashier Randall in person went into the vault and ran hurriedly through the piles of money which lay there. He came out at last and spoke to one of the paying tellers.

"The money is all right," he said, with a relieved expression in his face. "Have it all counted carefully, please, and report to me."

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He retired into his private office and closed the door behind him. Carroll and Young stood staring down curiously at the man who now lay stretched full length on the couch. They looked at the cashier inquiringly.

"I think it's a matter for the police," continued the cashier after a moment, and he picked up the receiver of the telephone.

"But how—how did he get in the vault?" stammered Carroll.

"I don't know. Hello! Police headquarters, please."

"Anything missing, sir?" inquired Young.

"Not so far as we know," was the reply. "Don't make any excitement about it, please. He is breathing yet, isn't he?"

"Yes," answered Carroll. "He doesn't seem to be hurt—just unconscious."

"Lack of air," said the cashier. "He must have been in there all night. It's enough to kill him. Hello! I want to speak to the chief of detectives. Mr. Mallory, yes. This is the Grandison National Bank, Mr. Mallory. Can you come down at once, please, and investigate a matter of great importance?"

Fifteen minutes later Detective Mallory walked into the cashier's private office. Instantly his eyes fell upon the recumbent figure on the couch, and there came with the glimpse a strange startled expression.

"Well, for—" he blurted. "Where did you get hold of him?"

"I found him in the vault just now when I opened it," was the reply. "Do you know him?"

"Know him?" bellowed Detective Mallory. "Know him? Why it's Professor Van Dusen, a distinguished scientist. He's the fellow they call The Thinking Machine sometimes." He paused incredulously. "Have you sent for a doctor? Well, send for one quick!"

With the tender care of a mother for her child the detective hovered about the couch whereon The Thinking Machine lay, having first opened the window, and pausing now and then to swear roundly at the physician's delay in arriving. And at last the doctor came. Quick restoratives brought the scientist to consciousness within a few minutes.

"Ah, Mr. Mallory!" he remarked weakly. "Please have the doors locked, and put somebody you can trust on guard. Don't let anyone out. I'll explain in a minute or so."

The detective rushed out of the room, returning a moment later. He found The Thinking Machine talking to the cashier. "Have you a man named Cranston employed here in the bank?"

"Yes," replied the cashier. "Arrest him, Mr. Mallory," directed The Thinking Machine. "Doctor, just the least bit of nitroglycerin, please, in my left arm, here. And also, Mr. Mal-



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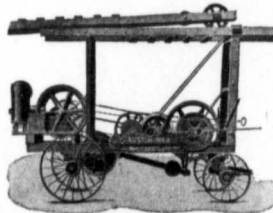


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lory, arrest any particular chum
of this man Cranston; also a
young man, almost a boy, possi-
bly employed here—probably
a relative or closely connected
with Cranston's chum. That
will do, doctor. Thanks! Any-
thing stolen?"

The detective glanced inquir-
ingly at the cashier.

"No," replied that official.
The Thinking Machine drop-
ped back on the couch, closed
his eyes, and lay silent for a
moment.

"Pretty bad pulse, doctor," he
remarked at last. "Charge your
hypodermic again. What bank
is this, Mr. Mallory?"

"Grandison National," the de-
tective informed him. "What
happened to you? How did it
come you were in the vault?"

"It was awful, Mr. Mallory—
awful, believe me!" was the re-
ply. "I'll tell you about it after
a while. Meanwhile be sure to
get Cranston and—"

And he fainted.

Twenty-four hours' rest in his
own home, under the watchful
eye of a physician, restored The
Thinking Machine to a physical
condition almost normal. But
the whys and wherefores of his
mysterious presence in the vault
of the bank were still matters
of eager speculation, but specu-
lation only, to both the police
and the bank officials. His last
words, before being removed to
his own apartments, had been a
warning against the further use
of the vault; but no explana-
tion accompanied it.

Meanwhile Detective Mallory
and his men rounded up three
prisoners—Harry Cranston, a
middle aged and long trusted
employee of the bank; David
Ellis Burge, a young mechanical
engineer with whom Cranston
had been upon terms of great
intimacy for many months; and
Richard Folsom, a stalwart
young nephew of Burge's, him-
self a student of mechanical en-
gineering. They were held upon
charges born in the fertile mind
of Detective Mallory, carefully
isolated from one another and
from the outside.

The Thinking Machine told
his story in detail, incident by
incident, from the moment of
the telephone call until the trap
door closed behind him and he
found himself in the vault of a
bank. His listeners, Detective
Mallory, President Hall and
Cashier Randall of the Grandison
National, and Hutchinson
Hatch reporter, absorbed it in
utter amazement.

"Certainly it was the most
elusive problem that has ever
come under my observation,"
declared the diminutive man of
science. "It was so elusive, so
compelling, that I indiscreetly
placed my life in danger
twice, and I didn't know
definitely what it all meant until
I knew I was in the vault. No
man may know that slow suffo-
cation, that hideous gasping for
breath as minute after minute
went by, unless he has felt it.
And, gentlemen, if I had been

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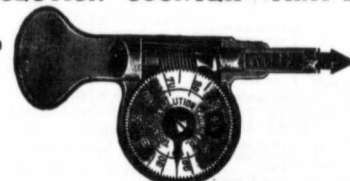
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killed one of the most valuable minds in the sciences would have been lost. It would have been nothing less than a catastrophe." He paused and settled back in that position which was so familiar to at least two of his hearers.

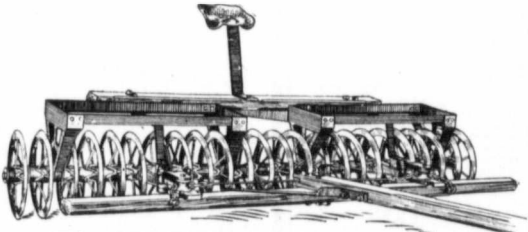
"When I got the telephone call," he resumed after a moment, "it told me several things beyond the obvious. The logic of it all—and logic, gentlemen, is incontrovertible—was that some man was in danger, in danger even as he talked to me, that he had tried to reach me, seeking help, that the first interruption on the wire came because perhaps he was being choked, and that the second came—the shot which wrecked the instrument—a desperate expedient to prevent further conversation. The scene was quite clear in my mind.

"The wire was dead then. Central didn't know the number. There was no way to get that number save by the tedious process of testing the wires in the exchange, and that might have taken days. It took only two hours or so fortunately; but I got the number at last from which I was called; that is, I got a wire which was inexplicably dead, and assumed the rest. The number of that wire was forty-one-seventeen. The records showed the street and number of the house where it came from. Therefore I went there. Before I went I took the precaution of calling up police headquarters to see if any report of a murder or attempted murder or anything unusual had come in. Nothing had come in. This fact in itself was elucidating, because vaguely it indicated that I had been called, rather than the police, because—well, perhaps because it was not desirable for the police to know.

"Well, as I explained, I searched the house; and by the way, Mr. Mallory, I don't know if you know the advantages of always holding your dark lantern as far away from your body as possible when going into dangerous places; because if there is danger, a shot, say, the natural impulse of the person who shoots is to aim at the light. Incidentally this precaution saved my life in the cellar, when I feigned death. But I'm going a little ahead of myself.

"I found telephone number forty-one-seventeen, and there was a heavy coat of dust on the receiver. Obviously it had not been recently used. The line was dead, it is true, but the instrument was in perfect condition. There was no sign of a bullet mark anywhere round or near it. If the bullet that was fired had killed the man who had been using the line, it would not have deadened the wire; therefore instantly I saw that the line had been tapped somewhere; that this instrument had been cut off from it, and the instrument which was demolished was the one on the branch wire.

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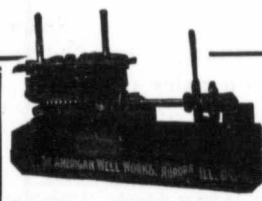


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"I knew this, and was going to the window to see if the wire led up or down, when I heard some one approaching. I first supposed that the person, whoever it was, was in the room with me, the steps were so distinct; but when I flashed the light, intending at least to see him, I knew he was above me. One loses the sense of direction of sound, particularly in the dark; and it is an incontestable fact that footsteps, or any sound above, can be heard more clearly than the same sound below. Therefore I knew that some one was in the room above me. For what purpose? Possibly to disconnect the branch wire on the telephone line.

"I waited until the person, whoever it was came down and went his way; then I found the wire, and saw where the connection had been made on it. Then I went straight down to the subcellar. There I saw this Folsom lying on the ground, bound. He was not gagged; yet he didn't answer my questions; obviously because he knew if he did he would place himself in danger. The shot was fired at me, or rather at my light and I went through the farce which ultimately placed me in a coal bin. Then I began to get a definite idea of things from the conversation, when Cranston's name was mentioned several times.

"Folsom persisted in an outspoken declaration to reveal everything he knew, including the story of my murder. He insisted until he placed himself in grave danger, and then, under cover of utter darkness, I extended one hand and pinched him twice on the ankle. He knew then that I was not dead, that I had heard, and did the very thing I wanted him to do—begged for his life. It was a bit of justifiable duplicity. I knew if he was the man his very act so far had indicated that he would humbug Cranston and the other man into letting him go, or at least not committing another murder. Subsequent developments showed that this conjecture was correct.

"From the coal bin I went back to the subcellar, knowing positively now that there would be no one there. Those men were frightened when they left me, and men run from fright. What they would do with young Folsom I didn't know. There, with my electric light, I found the branch telephone. The transmitter box had been ruined by a shot, as I imagined. So, thus far at least, the logic of the affair was taking me some place.

"And then I followed that tunnel through the subway into an other tunnel. I should not have ventured into that second tunnel had I not been fairly confident that no one else was there. In that I was mistaken. I don't know now, but I imagine that young Folsom was temporarily being held prisoner there, and that possibly Cranston was on guard. Anyway, there was a

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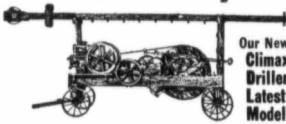
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fight, and the trap door was open—the trap door into the vault. And I don't know yet whether Folsom and Cranston, if they were there, even knew I was at hand. Certainly the trap door, once closed behind me, was not opened again. And you know the rest of it." Again there was a pause, and the scientist twiddled his fingers idly.

"Now, it all comes down to this," he continued at last. "Cranston dragged Burge into the affair,—Burge is a mechanical engineer, and a good one was needed to do this work,—they rented the house, and went to work. It took weeks, perhaps months, to do it all. Folsom in some way learned of it, and he is an honest man. He took a desperate means of getting the information into my hands, instead of the hands of the police. Why the telephone was in the house I don't know—perhaps it was already there, perhaps they had it put in. Anyway, of your prisoners, Mr. Mallory, this young Folsom is guilty only of an attempt to shield his uncle, Burge, while Cranston is the ringleader, and Burge the man who achieved the immense task of getting under the vault of the bank.

"This vault has a floor of cement, cut into small squares. The trap door is in that floor, and so perfectly concealed in the lines of the squares that it is invisible unless submitted to a close scrutiny; just as the doors in the tiled walls of the subway were invisible to a casual observer. They overcame tremendous difficulties, these two men, in cutting through the immense foundation of the vault, even the steel itself; but remember that they worked at night for weeks and weeks, and were making no mistakes. They did not actually rob the bank, because, I imagine, they were awaiting the deposit there of some immense sum. Is that correct, Mr. Hall?"

President Hall started suddenly. "Yes, in a week or so we were expecting a shipment of gold from Europe—nearly three million dollars," he explained. "Think of it!"

Detective Mallory whistled. "Phew! what a haul it would have been!"

"Now, Mr. Mallory, either of these three men, if properly approached, will confess the whole thing substantially as I have told it," remarked The Thinking Machine. "But I would advise that Folsom be allowed to go. He is really a very decent sort of young man."

When they had all gone except Hatch, the eminent man of science went over and laid one hand upon the reporter's shoulder and squinted straight into his eyes for a moment. "You know, Mr. Hatch," he said, and there was a strange note in the irritable voice, "my first fear, when the telephone call came, was that it was you. You must be careful—very careful, always."

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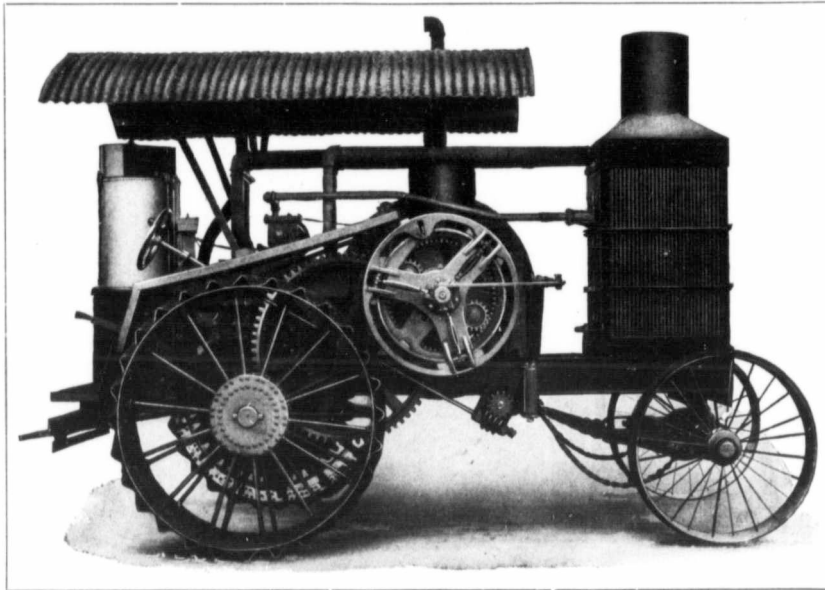
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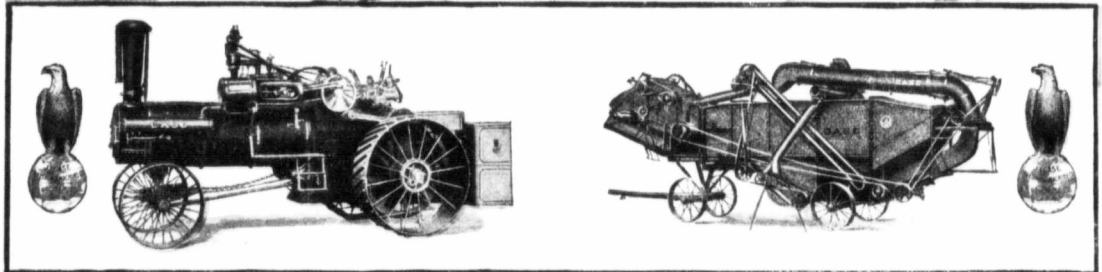
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