

THE CANADIAN THRESHERMAN and FARMER

CANADA'S FARM MACHINERY MAGAZINE
WINNIPEG · CANADA

JANUARY, 1911

Per
S
671
C34
V.16, #1



RECEIVED
APR 19 1932
UNIVERSITY OF CALIFORNIA

E.H. Heath COMPANY Limited Publishers

John Deere Engine Gang

FOR PERFECT WORK



MORE JOHN DEERE ENGINE GANGS SOLD IN WESTERN CANADA THAN ANY COMPETITIVE MAKE

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.

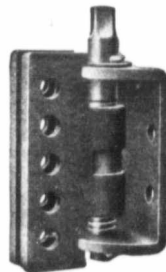
John Deere Engine Plows are built to operate most economically.

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

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



Gives the Plows an Absolutely Accurate Adjustment.

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.

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.

John Deere engine plows have the bottoms attached to frame in pairs. This ensures steady running, best work, easiest handling.

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

JOHN DEERE PLOW CO. LTD.

WINNIPEG

REGINA

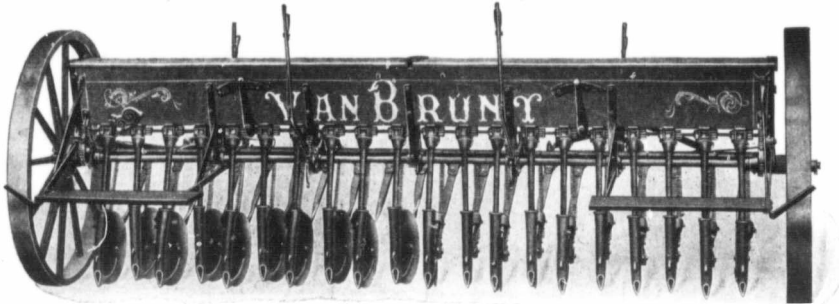
CALGARY

EDMONTON

SASKATOON

Not One Kernel Wasted!

Light
Draft
Disc
Drills



New
1910
Boot
Discharge

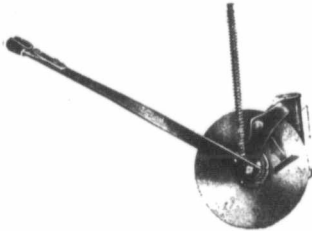
Faultless work in any condition of soil on which a horse or engine can travel. Misses nowhere. Sticks at nothing.

VAN BRUNT

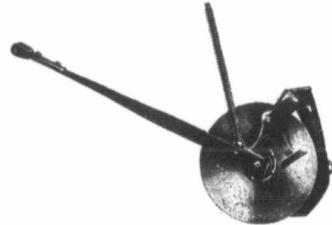
The Only Perfect Grain Planting Machine

The model from which all clumsy copies have been made. Stronger and lighter by 300-400 pounds than imitations.

The first successful Single Disc with closed delivery was made by Van Brunt in 1900. Now, in 1910, Van Brunt again revolutionizes the business of seeding by producing the boot and discharge WITHIN instead of outside the circle of the disc. The direct effect of this is that the seed is actually planted at the required depth. Not a single grain is left on top of the soil or so near the surface that the first strong wind or heavy shower exposes it. This cannot happen with the



NEW STYLE



OLD STYLE

Van Brunt New Model

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

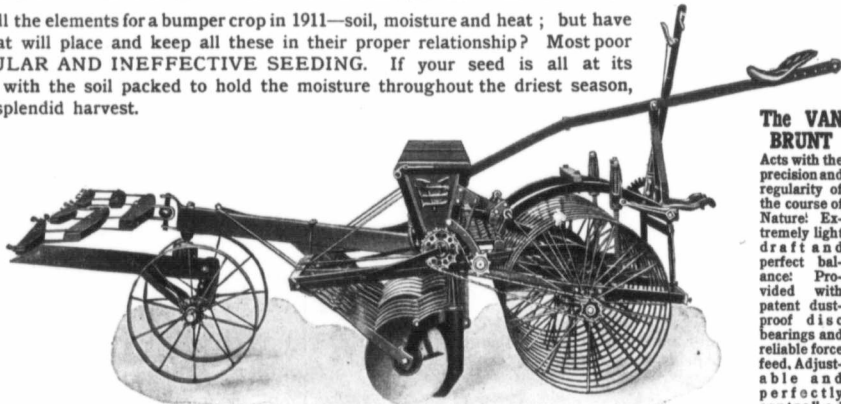
WRITE FOR CATALOGUE

SEED CANNOT FAIL TO GERMINATE IF SOWN WITH A VAN BRUNT PRESS DRILL

With good seed you have all the elements for a bumper crop in 1911—soil, moisture and heat ; but where you the IMPLEMENT that will place and keep all these in their proper relationship? Most poor crops are due to IRREGULAR AND INEFFECTIVE SEEDING. If your seed is all at its proper germinating depth, with the soil packed to hold the moisture throughout the driest season, you cannot fail to reap a splendid harvest.

The Real Purpose of a PRESS DRILL

being to sow the grain at an EVEN DEPTH, the pressure must be uniform at every point. Any inequality or bunching is fatal to the crop. The "VAN BRUNT" will plant every kernel exactly at its proper depth in the seed furrow. It is the only LOW DOWN PRESS DRILL having a perfect balance with an easy adjustment to throw it in or out of gear.



The VAN BRUNT
Acts with the precision and regularity of the course of Nature: Extremely light draft and perfect balance: Provided with patent dust-proof disc bearings and reliable force feed, Adjustable and perfectly controlled pressure.

END VIEW (OF SINGLE DISC PRESS DRILL) Made in 7 inch Feeds, 14, 16 and 18 sizes, Single and Double Disc and Shoe

A VAN BRUNT IS THE CROP'S SALVATION

JOHN DEERE PLOW CO. LTD.

WINNIPEG

REGINA

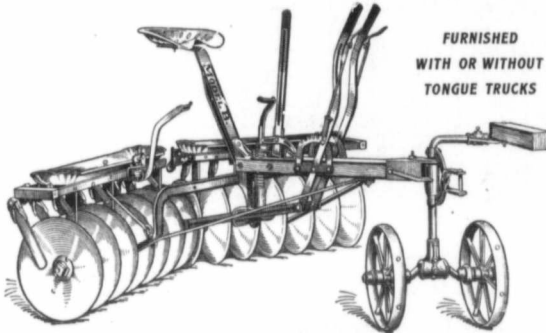
CALGARY

EDMONTON

SASKATOON

DISC HARROWS

Deere Model B Disc Harrow



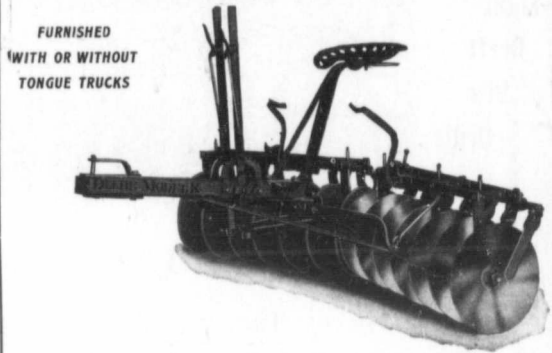
FURNISHED
WITH OR WITHOUT
TONGUE TRUCKS

It is the Only Real Flexible Harrow

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

Write for Catalogue

Deere Model K Disc Harrow



FURNISHED
WITH OR WITHOUT
TONGUE TRUCKS

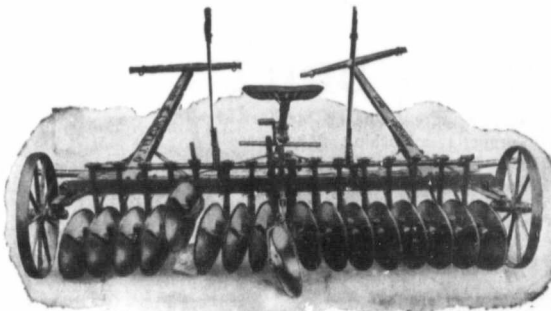
A STRONG, substantial two-lever harrow, slightly lighter than Model "B," but having many of its points of superiority. The Frame is made from a single piece of heavy steel. The frame bars, crossbars and braces are all steel, very securely riveted and bolted together.

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

Write for Catalogue

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

Cyclone Wheel Disc Harrow



557

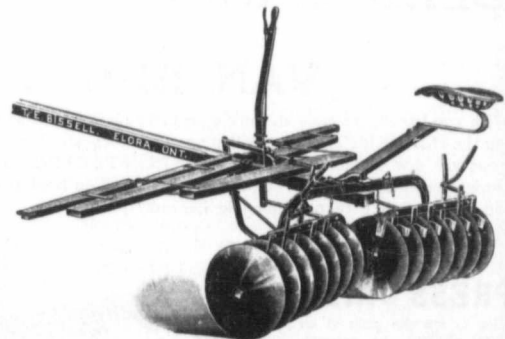
EASY to move from one field to the other. No danger of dulling discs on hard road. Can be backed or turned anywhere. Each disc is independent and equipped with a pressure spring, the same as a grain drill.

More or less pressure can be applied at the will of the operator. For discing stubble fields, summer fallowing, or plowed land, it has no equal.

Can also be used as a weeder or cultivator, being so constructed that the discs can be set at any depth desired; the space between discs being thoroughly worked and much lighter draft than a cultivator.

WRITE FOR CATALOGUE

Genuine Bissell Disc Harrow



THE Disc that farmers want. Some good features are—
Correct Balance—Stays down at its work, does not buckle, bind and hump up in the centre.

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

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

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

WRITE FOR CATALOGUE

JOHN DEERE PLOW COMPANY LIMITED

CALGARY

REGINA

WINNIPEG

EDMONTON

SASKATOON

The Fleury Pulverizer

Pulverizes and Packs the Soil

How a Pulverizer Helps

A good seed bed is composed of a fine mellow soil well packed to ensure capillary connection with the subsoil.

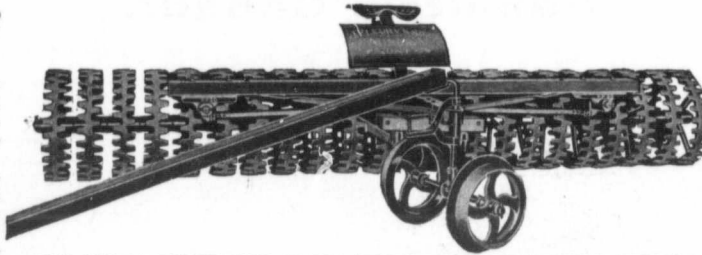
Such a seed bed will produce better crops than a lumpy one of the same chemical composition.

This is why a good pulverizer should be a part of your equipment. Other things being equal it insures better crops.

It is often necessary to plow land when it will break up into large chunks or clods. In such a case, a pulverizer is indispensable for fining the soil.

The fact is, almost any soil is benefitted by being pulverized and packed after plowing, regardless of its condition.

Light, loose, soils are kept from drifting by being treated in this way.



READ WHAT A FARMER SAYS OF THE FLEURY PULVERIZER "TONGUE TRUCK"

John Deere Plow Co., Winnipeg, Man.

Hamiota, July 8th, 1910

Dear Sirs:—Yours of the 5th inst. to hand re tongue truck for pulverizer, and beg to say it is entirely satisfactory and much easier on the horses than the old style. My man drove the old style pulverizer last year, and he says that the tongue truck makes a wonderful difference to the horses; it apparently is perfectly strong and I think there is not much room for improvement. We packed about 175 acres with it and you can hardly tell it has been used, and I would not buy a pulverizer without a tongue truck at any price after using it with one.

Yours truly, WM. WRIGHT

Excellent features of the FLEURY PULVERIZERS. Ask us for further information. Fleury Pulverizers are made in the following sizes: 16 Section, 1 pole, 22 Section, 1 pole. 22 Section, 2 pole. 24 section 2 pole 22 section, 2 pole, pulley hitch, with double-trees. 24 section, 2 pole, pulley hitch, with double-trees. 22 section with tongue truck.

The Fleury Does the Business

In the first place it is sufficiently heavy for its work—there is no necessity for weighting.

The sections are so constructed that they pulverize all lumps and pack the soil so it is in good seed bed condition. At the same time, it helps to produce a surface mulch which holds moisture.

It does the work of both a pulverizer and a land roller. Also, this pulverizer is sufficiently flexible to accommodate itself to rolling land.

Besides this, it is very durable. It has bushings that take the wear instead of the wheels. The ends of the wheel hubs are chilled, which reduces the end wear on the wheels.

These are a few of the excellent features of the FLEURY PULVERIZERS. Ask us for further information.

NEW DEAL WAGON

New-Deal Wagon

Is made of air-seasoned lumber.

Is equipped with double collar skein.

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

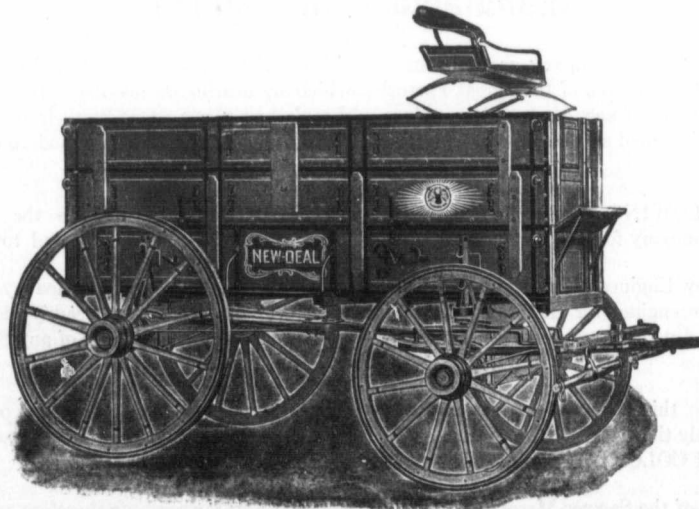
Skeins are heavier; bell is longer and larger, taking more axle.

Has riveted grain cleats (not nailed or screwed).

Bottom of box is reinforced both front and rear.

Has clipped gear, both front and rear.

Box is made flax tight



New-Deal Wagon

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

Steel bolster stake plates on side of box.

Neck yoke 48 in. long (not 42 in.)

Has trussed tongue, cannot break or warp.

Has channel iron reach really indestructible.

Is extra well painted, striped and finished

Possesses a great many distinctive features of merit.

JOHN DEERE PLOW COMPANY, LTD.

WINNIPEG

CALGARY

REGINA

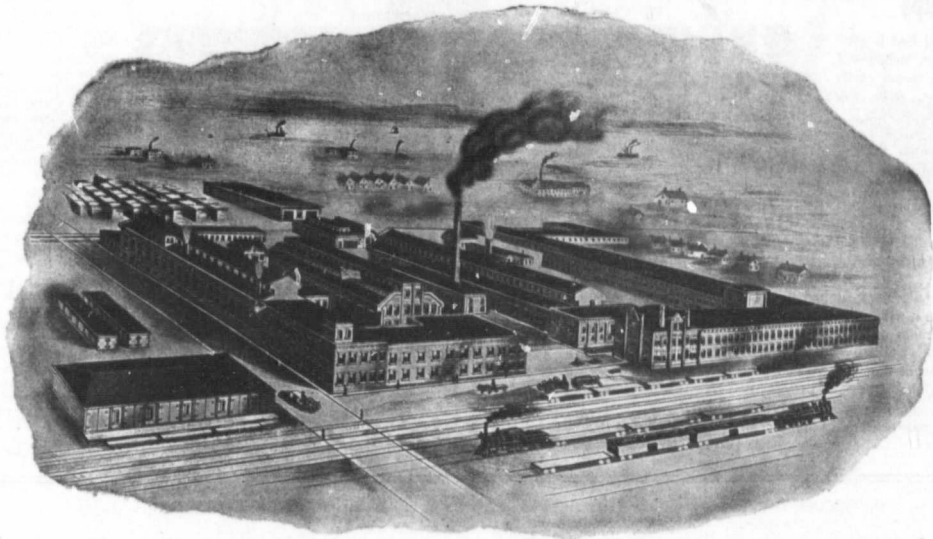
EDMONTON

SASKATOON

SAWYER-MASSEY CO.

LIMITED

Hamilton, Canada



The Largest Engine, Thresher, and Road Machine Manufactory In Canada

With Sawyer-Massey Company great strides are evidenced for the season of 1911. Immense structural additions have been made to 3 of their great Factories, which are nearing completion at this the first of the, New Year. A number of new Mammoth machines and tools are being added to their already large plant most of which are installed and which will make their works the most complete and modern of any found in America today.

BETTER PLOWING AND THRESHING AND MORE OF IT will be the Slogan of the Sawyer-Massey Company for the coming season, which they will be adequately prepared to carry through.

Sawyer-Massey Engines, though highly satisfactory during 1910, will be superseded by more powerful and more effective engines for the New Year. The same will be built up to readily comply with the Boiler Inspection Acts of the North-West Provinces, giving them the highest rating of any Steam Tractions on the market.

In addition to this they will handle the two very finest types of Gasoline Tractors produced at the present time, namely the **OHIO TRACTOR**, manufactured by the Ohio Manufacturing Company, Marion, O., and the **BRITISH COLONIAL TRACTOR** by Marshall, Sons & Co., Gainsborough, Eng.

All customers of the Sawyer-Massey Company, both agents and farmers' can therefore rest assured that their interests will be taken care of during the season of 1911 in a manner not before equalled.

The Sawyer-Massey North-West Staff is being materially increased and new offices and warehouses are being installed at the leading points throughout the North-West.

Western customers may address all of their inquiries, regarding prices, terms, &c., to our Western Office at Winnipeg.



Vol. XVI.

WINNIPEG, CANADA, JANUARY, 1911.

No. 1.

Every Farmer an Agricultural Engineer

By NEWELL SANDERS

Work of Agricultural Engineer Defined.

In speaking of the work of the agricultural engineer, one is somewhat in doubt as to how much to include, particularly as to where the line should be drawn between the agricultural engineer and the civil engineer, the mechanical engineer, the architect, the forester, and the landscape gardener. It will be noticed, however, that the fields of work of these various professions lap more or less, so it is, perhaps, proper to consider that all farm work except the plant industry and the animal industry belongs to the agricultural engineer.

Reconstructive Work.

Creation and development by natural causes previous to the advent of man were constructive. The work of man in its early stages was destructive. The work now left is largely reconstructive. This is especially true with the agricultural engineer. There remains some new country in the United States where the engineer can lay out and do things in an original sort of way, but it is in remote places combined with more or less hard conditions that make living difficult and unattractive. In some other countries there is new land, but only a few will care to go to such places. Even if there were plenty of new country there are other good reasons why one should go to an old country. What was naturally the best country is already occupied. It is where most of the people will continue to live. The towns and cities as bases of supplies, as markets for farm products, and as centres of social influence are in the country that is already settled.

The main proposition is that the greatest farming activities should be as near as possible to where the greatest number of con-

sumers live. This saves freight, makes more convenient delivery, causes farm products to bring more money, and makes it possible to raise and market almost everything, while, with a remote market, only a few things can be produced with profit. This means that the attention of the agricultural engineer should be turned back to the older parts of the country, back to the old farms in other words, to the country about you. It means not to go West, but to go East, where millions of people live. It means the restoring of abandoned farms, the bringing of all other farms up to their highest productive capacity, and the making of all waste lands available for something. It means machinery to reduce labor, improved processes, and everything that tends to heighten utility, comfort and beauty.

Farms Neglected.

Country work and country living have been neglected and unappreciated. People have been moving to the cities until now only one in four is left in the country. This means that one man must raise enough for the other three to eat and to wear. In some states one half of the farm lands have been abandoned. There must soon come a reaction. The abandoned farms and houses must be worked over and brought back to usefulness. These farms may have been abandoned when hogs were selling at two and one half cents a pound. It will pay to work these lands now that hogs are selling above ten cents a pound, and all other farm products at a corresponding price. Many of these farms were abandoned before there were telephones, rural free delivery, or high speed motor cars. Such places were lonesome and the boys and girls would not stay. But now such farms may be made charming places to live.

Early Methods.

In the first settling of the country, man chose habitation in the most haphazard sort of way. He built his house by the spring, no matter how malarious the place might be. He built his barn with the yard running down to the spring branch or creek, where all the richness would be carried away by the water. He cut and burned the best timber first because it grew on the best land and was in his way. He plowed shallow because it was easiest, and let the soil wash away. When that land washed in gullies, he cut and destroyed more good timber to get other good ground to plow. He did everything in a wasteful manner. He reclaimed nothing and restored nothing. To a considerable extent this has gone on until this day. To use a country expression, the land has about all been "hogged over." About this same time there has come the awakening to agricultural education. This, therefore, seems to be an opportune time to be in making the country over again. Our lands have been placed under cultivation in an imperfect sort of way. Appliances for the use of the farmer have been provided to a degree. But all these things are far from perfection and should be done over again.

Laying Out the Country.

After this country had been partly settled, it was laid out by section lines. These have been helpful in the way of describing ownership, but, except in very level country, they have been destructive of all intelligent thought as to the proper laying out of fields, farms and roads. It does not seem to have occurred to our people that what we have learned in books about angles and curves may be used in describing properly laid out tracts of land by the

simple use of section lines and corners as base lines and points. A good example of a properly laid out country is what is known as the Ocoee District, comprising several counties in one of the older states, which has running from northeast to southwest a series of parallel ranges of hills. The early settlers laid off this country with section lines running north, south, east and west, but with lines parallel with and at right angles to the ranges of hills, so that all the field and farm lines would conform to the hills and valleys.

Laying Out Farms.

It is natural that farms should be laid out with reference to streams, because the topography of the country generally corresponds to the water courses. In irrigated countries a farm is usually composed of the watershed of one or more streams, and the boundaries of the farms run along the tops of the ridges between the streams. This is seldom done in this country, but would be a good plan in many places even where irrigation is not practised. In some places where the valleys are level and distinct from the hills, and where the hills are not tillable it is best to make the boundary lines run with edges of the valley so that each valley and hill may be separate. The edge of the valley is usually the best place for the road, which is another reason for this argument. Farms should be laid out with reference to tillable land, pasture land, and timber land, and with especial reference to water supply.

Fields.

In laying out the country, the field or timber tract should be the unit. A group of fields makes a farm. Then a group of farms makes a community. A field



should be laid out according to the kind of soil and the topography. It is now very common to see many kinds of soil suitable to entirely different kinds of crops in a single field. The same kind of crop is planted all over the field. It grows well in one part and is a failure in other parts. Choice pieces of moist grass land is often plowed with adjacent tillable land, making poor crops and spoiling good pasture. Even in places where the land is level and uniform only a few farms are seen with fields running to a common lane, reaching the barn or the water, though such an arrangement would be of great convenience.

Irrigation.

With the destruction of the forests, and the consequent reduction of moisture in the air, has come a great interest in irrigation and the storage of water. The rain must be taken care of. With irrigation the farmer becomes indifferent as to the rainfall. The only other thing he needs is sunshine. Crop failure is unknown with irrigation. But great as its benefits are, our people have hardly thought of using such a system. They seem to think it some great undertaking in some far away place, while, in fact, it can be carried on in a small way in many places at home. It is simply the storing and control of the water according as it is needed by the plants. The same principle may be applied in a modified way in every-day practise everywhere by deep plowing and subsoiling. A loose body of earth from one to two feet deep will hold almost any rain that falls, and the water will stay there until the plants use it up, which will probably be until another rain comes.

Sub-Irrigation.

The new thing is sub-irrigation. The old idea was to plow very shallow, so that the water would not go down and would easily spread over a large area. But it has been found that this also leads to rapid evaporation by the air, causing great waste of water. About the same time came the discovery of the underflow of stream which makes certain valleys immensely productive. Then it was concluded that this natural phenomenon might be duplicated by very deep plowing preceding irrigation, which, while it would take more water and a longer time to irrigate, would reduce the evaporation to a minimum.

Drainage.

The opposite of the storage of water is drainage. Tiling is well understood in most large areas of country to which it applies, but there are small tracts and spots of wet land in a large part of the country where it might be applied to great advantage. The larger projects of drainage in the Mississippi Valley and in the coast country, notably in Arkansas, Louisiana and Florida, seem to be in their infancy. There is work in such places for the boldest spirits. The greatest example in this country going on just now is

the drainage of the Everglades in Florida. Along with it goes the building of dykes. He who would engage in this kind of work should go for study to the little country of Holland.

Farm Water Works.

In olden times the house was put at the spring. Now, the spring may be put at the house by means of farm water works. We have found that disease germs often lurk in the old well and oaken bucket, and that often the spring is no better. Farm life should be more sanitary both for people and for animals. Both should certainly have good water to drink. A water system should be worked out on every farm composed of a pure water supply, tanks or reservoirs, and means of distribution. A whole train of conveniences will follow.

Terracing.

For the purpose of keeping the soil from washing away, and to retain the rainfall on steep hillside land it is time to begin terracing. For want of it millions of acres have been ruined by erosion. On lands where the slope is small and where the washings are not yet serious, the terracing may consist of simple ridges thrown up to even grade with a turning plow. Where the necessity is greater, the work of throwing up ridges and stopping gullies should be thorough. Then, as the land becomes more valuable, terraces should be made by building walls. This seems a great undertaking, but it is not so difficult as it appears if stone is plentiful. As a permanent improvement it is an excellent investment. Examples along the river Rhine and in many other parts of Europe will convince anyone of its practicability and desirability. But as well known and ancient as this method is, it is little used in most parts of this country. Hydraulic engineers have learned that no one mill dam or mill pond can be made to hold all the water that falls when it rains, but that a great number of dams at every place where power can be developed will hold all the water that falls, and that it can gradually be let down from one mill to another, and every mill get the full use of all the water. In the same way, if a hillside is laid out with a system of terraces, all the water will be caught and let down from one terrace to another gradually and uniformly.

Soils.

The very foundation of the whole farming business is the soil, but there is nothing about which the great farming class knows so little. Much is yet to be discovered. Applied science is revealing wonders on every hand. It will soon make the knowledge of the chemical constituent, and physical structure of soils as well known and the results from its use as certain, as had been done by metallurgical research in the iron and steel business, or in surgery with reference to the human body.

Trees.

The preservation, care, and growing of trees is a matter of permanent improvement, and comes in the engineer's line of work. This is a very important question. You will see how acute it is when you remember that our present timber supply will last only fifty years longer, and that it takes a hundred years to grow a small saw log. Equally important, though not so perceptible, is the diminishing moisture in the air, and the consequent decrease of rainfall on account of the cutting and destruction of timber. It now remains for you to replant the country with trees. Use them to cover the bare, worn out places and the places that cannot be cultivated. Plant useful trees where worthless trees grew before. Plant them for wind breaks around buildings. Plant them for shade here and there in the fields and along roads. There is something majestic about two rows of great trees along a roadway. If you doubt this, go to Cuba and see the wonderfully fine rows of royal palms that line the roads and mark the boundaries of the sugar plantations. Railroads and mine owners are planting large areas of trees for future use. The farmer will need a future supply of timber as well. Some varieties will be available for use in a comparatively short time. Plant trees with reference to landscape features. There is no country scene worth looking at without them. And do not forget to plant the thicket for the quails and the rabbits, and the boy with a gun. Treat the trees you find growing kindly. Help them. The idea of tree surgery is good. Trim the trees to make them grow right, and so as to make beautiful forests. The sooner the work is begun the better. Reforestation is the popular word, but to take care of the present forests is the main thing to do.

Records.

When you cross a bridge, you always look to see the date when, and by whom, it was built. In Europe it is common to see a row of trees with a stone monument at the end stating the date and by whom they were planted. Some of these monuments show the trees to be hundreds of years old. You can imagine how interesting this is as you study the kind and size of trees, and the name of the person who planted them.

Fences.

In parts of the country where hedges are used, or where there is stone for fencing, this kind of permanent improvement is of great importance. There are objections to hedges, but as the cheap rail fence becomes impossible, cheap fence posts become scarce, and the perishable nature of wire fence becomes better known, the hedge is bound to come into more general use. What needs to be done is to select some of the slower growth evergreen varieties so common in other countries, so that the trimming

will not be such heroic work, and so that cheerfulness will be added to the landscape in winter. Stone fences should be built wherever it is possible. The first cost and the renewal of fences of temporary kinds, together with loss of crops by breaks in the fences which let in stock to destroy them, will soon amount to as much as the cost of a stone fence. The appearance of permanent improvement given a farm by a stone fence adds value beyond the actual cost of the fence.

Bridges.

At too many places on streams the old fords and primitive ferry boats still remain. The banks are hard to pull up. They are often impassable at high stages of water, and sometimes dangerous. Bridges should be built at troublesome crossings everywhere. There is, therefore, a great amount of bridging to be done. The proper selections of right locations are problems for the agricultural engineer. Some bolder bridging than is usual is wanted on many country roads, even suspension bridges are needed in many places. Crossings of railroads should be bridged. Grade crossings should be abolished. By slightly changing the location of roads, and many times without doing so, admirable places may be had for bridging crossings.

Buildings.

Buildings on farms are often inadequate, ill arranged, ugly and inconvenient. To build new farm houses everywhere is impossible. The thing to do is to reconstruct the old houses. This will be found a most interesting business. Buying old places and remodelling old buildings is now the play of millionaires seeking happiness. When new houses are to be built, let the design fit the surroundings. Do not build a great house in a little nook, and do not build a cottage in a place that needs strong treatment. The group of farm buildings should always be in keeping with the surrounding landscape, and so arranged with respect to one another as to facilitate work and cause a pleasing effect. Nothing so mars American farm life as the unhandy, unsightly and unsanitary arrangement of farm buildings. A board or a paved walk connecting all buildings, instead of the acre of mud to be walked through and carried into the house, would be a curiosity in some parts of the country. The proximity of the barn to the house, with all its odors, flies and fleas, should be prohibited by law, if the general intelligence of the people cannot be brought up to the point of setting them far enough apart to be sanitary.

Barns.

Barn building needs overhauling badly. Not one barn in a hundred is designed in a rational way. The average barn is a building of inadequate size, supplemented by all sorts of lean-tos, annexes, and side shows, the whole thing having a

drunk and disorderly appearance. A barn should be a great shed, subdivided according to the necessities of the owner. It is, perhaps, not generally known that a great shed can be built about as cheaply as a conglomeration of small buildings. A large shed without internal arrangements can be built so cheaply that it can be used for storing all kinds of crops. If a farmer needs more than one of these large sheds, he should build them far enough apart to prevent one catching from another in case of fire. Separate sheds for different things is also a good idea. For instance, machines and implements should be in a building away from buildings filled with hay and other inflammable stuff. There should be shed room sufficient for all the animals. The way we allow our domestic animals to suffer and ail on account of exposure to rain, snow, wind and cold, in small numbers on the farms and by thousands on the plains of the west, is our greatest shame.

Shops.

In olden times, all the machinery and implements were made at the cross-road blacksmith shops. Then there came a time when everything was made in the factories at the manufacturing centres, where all the repairs were also made. Now we come to a time when we use so many machines that for keeping them up each farm should have a shop with iron and wood working tools. This will not only facilitate and cheapen repairs, but will stimulate originality and invention. The farmer, and especially the boys, go through a lot of mental suffering for want of tools and power when they get ideas into their heads which they wish to work out.

Farm Mills.

Quite a feature of old country life was going to the mill. It had its disadvantages and youthful tragedies. Now, every farm can have a mill. Inexpensive engines and grist mills are making their appearance and should be encouraged. Powers, large and small, are going to be wanted everywhere. Doing things better and having more conveniences call for more power. Along the streams a great many places will be found where the early settlers had small water powers. All these should be refitted with improved wheels and set to work again.

Machines and Implements.

Our wants are increasing so rapidly, and farm hands are going to the cities so fast, that labor-saving on the farm must go on with increased rapidity. There must be more automatic machines and machines of larger capacity. Machines for almost every known use have been provided. What is needed is improvement and reconstruction. If the field is the best place for such study. Farmers might do much more of this if they only thought they could. On the farm is where the weak-

ness or failure of some function of a machine is most apparent. More machines are needed for handling crops. There should be a very much more extensive adaptation of machines, vehicles, and implements to steam and gasoline power. This probably, is going to be the principal advent of this age.

Engine Plowing.

If the breaking of the land is done properly, it is the hardest part of the whole year's work. In places it amounts to one fourth of the cost of raising the crop. It is principally made up of power. This is so expensive when produced by animals that the greatest awakening just now is on the subject of engine plowing. Manufacturers are doing their part in the way of developing the engines and the plows. In the meantime, the preparation of the farms should be made. The two things most in the way of success are hidden stumps and stones and hills in the fields. A single stump catching a plow is almost sure to wreck something about the outfit before the engine can be stopped. The work is so heroic that breakin arrangements do not seem to sufficiently discriminate between a hard place in the ground that should be plowed and a stump of uncertain size that should not be expected to be plowed up. Engines are built that are fairly good hill climbers, but the amount of reserve power required for this is so great and so expensive that the fields should be laid off in such a way as to avoid hill climbing. This is especially the case where gasoline engines are to be used, because they have no way of developing any reserve power. They have so many advantages, however, that fields should be laid out with a view to their use.

Surveying

Up to the present time surveying has been directed principally to finding straight lines that run up and down hill, but never directed to finding where lines ought to be, nor to tracing the beautiful curves of nature. A cow could lay out a path on a better grade than the road laid out by the average surveyor. In fact, we now seem to be going back to the cow path method, for the first settlers' roads were laid out along animal trails, and there is just now a movement to rebuild these old settlers' roads, such as old National Road, from Philadelphia to St. Louis, and the old Jackson Road, from Washington to New Orleans. Some of the common sense found in some very common people is what is needed. In fact, some of the best surveying to be seen anywhere is the laying off of ditches and corn rows to be irrigated by ignorant Mexican Indians, without the use of any surveying instruments whatever. Agricultural surveying will have a new field of usefulness when skill, art and imagination shall be allowed to have full play. It is the cutting of fields out of the landscape, grouping them into farms and connecting them with roads of gentle

grade until the whole is as harmonious as a song.

Every Farmer an Engineer.

Some of what is here said may not be used by the professional engineer, but what we are trying to do is to make every farmer an engineer. In fact as the farm business goes, the farmer seldom has the necessary means for a general overhauling. His engineering problems must therefore be worked out day by day in connection with his other work as he is able. This is simply another evidence of the good of universal farm education. Such education, cultivation of taste, and lifting of imagination, is also quite as necessary for the farmer who has ample means. There are examples on every hand of farmers who have the necessary money but do not know how to use it. In fact, there are many wealthy farmers who have never awakened to the importance of even fly screens and bath tubs. Farmers are often economists but seldom artisans. They should be machinists, carpenters, stone masons, and all round workmen.

Roads.

Except in the very level parts of this country, nothing seems to need re-arrangement so badly as the roads. Most of them concern the farmers only, and their earnest and prompt attention should be directed to this subject. Even where there is a movement to make good roads, the usual plan is simply to put on gravel or broken stone without any pretence to relaying out the roads with reference to grades. Section lines are followed up hill and down, so that the in ended improvement is little more than a perpetuation of the difficulties that already exist. Roads should not necessarily be built on straight lines, but along lines of least resistance. Grade is more important than distance. A good example of this idea is the rebuilding of old railroads that is going on today. Grades are being reduced so that an engine which before pulled twenty cars now pulls forty to sixty cars. When our farm roads are relaid out a team will pull many times as heavy a load as it can pull now. When this is done, all other road questions become elementary. Railroad builders are now sparing no expense to make roads that are down hill all the way from the coal fields to the sea. It is proposed to carry all the export wheat from the northwest to gulf ports rather than to the eastern seaboard, because it would be a down-hill haul all the way. In early times the roads ran down all the tributary streams to the water mill on the larger stream on almost an even grade. Many country roads might now be laid out the same way by ignoring section lines. It is true that this involves the readjustment of farms, the change of fields and buildings, and in many places hard struggles to bring about the necessary co-operation and yielding of personal interests, but to prove the greater good and to in-

duce the farmers to take such action is the work of the engineer.

Materials.

The most serious handicap to improvement in many parts of the country is the want of materials for buildings, fences, and roads. It should be the business of the engineer to find them as near by as possible. They are often found only a few feet below the surface of the ground, though their presence may have been entirely unknown before. Road builders have sometimes obtained contracts from unsuspecting farmers at high prices on the supposition that the road material would have to be brought a long distance, and then by boring have found an ample supply of gravel in easy digging distance from the top of the ground.

Farm Villages.

Where the topography of the country will admit, the comfort, convenience, and pleasures of country life may be greatly enhanced by so laying out the farms that the corners may come near a common point where all the houses may compose a farm village. These are very common in France, and in many other European countries. Our American farmers seem never to have thought of such a thing. In most places, especially in level country, at least four farms may be made to corner together in this way. One water supply plant and one gas plant would supply all, and many other things might be had in common at much less cost than if each had his own. In a great many cases such an arrangement would make these conveniences possible where they could not be had individually.

Sample Treatment.

The good that the professional agricultural engineer is going to do will come largely from the influence the treatment of individual pieces of land will have on the people in the country round about. A notable example of this is the educational effect that the Vanderbilt estate near Asheville has had on the people of North Carolina and the adjoining states. The engineer may not get paid for this service in dollars, but he will feel paid in that higher compensation which is the feeling that he has contributed to the general good, and had a part in a great work.

Division of Large Estates.

Most of the land was originally acquired in quarter sections, but in many places these have been brought up into very large tracts. Sooner or later the master spirit dies, and his large estate is divided up. Just here is where the agricultural engineer may find his opportunity to relay out the land in the most scientific way. He will find it profitable as well.

Co-operation.

There is no class of people that co-operate in a neighborly way like farmers. This, however, has not gone far enough, for cases where they have joined together

Continued on page 26

Educate the Boy and the Man Must be Educated

It is scarcely possible to pick up a newspaper or magazine today that attempts in any way to discuss agricultural problems and not find something therein regarding the boy leaving the farm. To those who have our agricultural interests at heart it is more than a problem; it is a calamity. The boy on the farm seems to be for ever in the throes of a vision. The curling smoke of the city factory, the click of the typewriter, the endless columns of figures, the hurry and bustle of business babble, conjoined with the artificiality of the city streets, the music halls, the theatres, etc., etc., all tend to turn his attention towards the town, and plodding along between the plow handles or rising at four in the morning and milking an apparently endless number of cows, seems to him the drudgery of the serf, and he longs for the labor that runs between whistle and whistle, and his nerves tingle for the excitement of town life.

The boy is like the man who searched the world over for a four-leafed clover, only to find the desire of his quest at his own doorstep. The average farmer's boy is not an analyst. His outside information is derived largely from printed page and picture and not from actual contact with things. He spurns the clods of the field as things to be despised, feeling that association with such menial things will never permit of his performing the true mission of manhood.

This is due in no small part to the fact that the farm boy does not thoroughly understand the life in which he lives. He does not realize that he is in Nature's great school largely because he has never learned to know his teacher. He does not realize that the town was made for the country, not the country for the town, and that without the farmer the latter could not exist.

Down in the State of Indiana, in the little town of La Porte, there is a man (some might call him a boy, for he is only twenty-nine) who, while realizing the great truth that future generations must be more dependent on the

For the cuts and for a large amount of the material in this article we are indebted to the "Survey."—Editor.

land than what past generations have been, at the same time has realized that if this dependence is to carry its load the boy of today must be trained to a full and complete understanding of what the farm means to future industries. This man is Dr. Edward A. Rumely.

Dr. Rumely, if anything, is a practical man; theory with him counts for little unless it can be vindicated through practice and in order to back up his theory, has established a school known as the Interlaken School. The doctor believes thoroughly that there is

tical work of life, which is also the work of the nation? In spite of 150 years of earnest effort, the school still clearly favors the few who have no other aim than to be clerks in stores, banks and offices, and the fewer who take courses leading to the professions. But it neglects the ninety boys out of every hundred who are to do manual work as machinists, carpenters, printers, telegraphers; the girls who are to be milliners, dressmakers, housewives—the thousand sorts of breadwinners. How shall the future give them their training?"

bicycle, the telegraph, the telephone, the typewriter, the phonograph, the motor engine, with its thousand uses, enter into the daily routine of our lives. All life has come to depend on mechanical marvels, and its face has been keyed to wonderful swiftness.

We must adapt the immense new experiences of the world to the educational needs of the future. As an industrial people, we must see that skill goes with schooling. Practical work in the school must prepare for practical life. Our children must learn to conserve, if possible to increase, our store of natural resources. Think of our pressing need!

We have become a spendthrift race. Extravagance is the order of the day. James J. Hill told us the other morning that our trouble is not the high cost of living, but the cost of high living—privately and publicly the wild waste of natural resources. Four generations ago, our forefathers had to their west a vast untouched continent, rich in timber, ores and soil fertility, beyond anything the white man had ever found. The entire population of the country, scattered along the Atlantic seaboard, was limited to a couple of million people. These natural resources were successfully exploited, our wealth increased as if by magic, and today our population of ninety millions has occupied the whole continent, from ocean to ocean, but not without leaving its mark upon the land. Our forest, laid low by giant mills, are more than half cut. Our streams and lakes have been looted of their fish by water-wheels and steam-drawn seines. Our mines of ore and coal are beginning to show signs of depletion. Our soil, with impaired fertility, now yields eighteen and twenty bushels, in place of the forty of the virgin prairies. At the end of all we are beginning to see that our national wealth is not all the product of wise and intelligent labor. Largely, we have done no more than transmute, and often recklessly, our natural resources into the uses, ornaments, extravagances of our civilization; railroads, foodstuffs, clothes, palaces, monuments, elegances of living, lavish show of gold and silver.

The machinery of plunder has been tremendously developed. By



Showing a few of the Twenty-Eight Tents in the Woods

a need for industrial education. He believes that we must prepare for practical life through actual work as well as through study in the class room. He believes that vocational training should be the essential feature of education. His ideas are best expressed in the following, delivered before the Convention of the National Educational Association:

No one sees more plainly than the manufacturer that the future of the American republic depends upon the school. And he asks this question:

"How can this school, which is giving immediate shape to the nation of the future, give our boys and girls a training that will be efficient preparation for the prac-

Our educational progress has not kept step with the wonderful advance of the world. By practical standards the school has changed little within the last century, while our civilization has been magically transformed from primitive-rural to complex-urban. The age of universal transportation has arrived, and has suddenly made the world small, until remote nations seem next door neighbors. We are now conscious of the swarming tumult of men on the globe, with whom our human relations have multiplied enormously. The small tool of the worker has given way to the vast machines of the factory and the labor-saving implements of the farm. The automobile, the



Picking a Mess of early Beans for Ninety Boys



Laying a Corduroy Road

its use we have been able to export enormous quantities of raw material, and the bounteous products of our fields. Now, however, our agricultural exports are falling, and the time is already at hand when we shall need our own foodstuffs to feed an increased population. It will soon become an actual question of food. Most of the original natural wealth of the land is gone, and every child born in the world brings into it the mouth of a consumer, but no natural wealth except the labor power of its two hands. Life, henceforth, must be supported by high intelligence, skill of hand, the honest work of men, and not by systematic robbery of nature. Henceforth we must export neither our raw materials nor our foodstuffs, sacrificing to other nations the riches of our soil. For the future, we must export the factory value of the skilled work of our hands, which can create wealth of all kinds. For the future, the annual per capita value of our manufactured products must show a steady rise from the present estimated standard of \$74.53.

Germany says consciously to herself: "Skilled workers produce high values. Underskilled workers do not. The hewers of wood and drawers of water are dull peasant types. The men of directive power who lead the world come from the skilled classes. Let us save our own natural resources, and get from other nations our raw materials and the rough manual labor that produces them."

Such competition as this will force us to become predominantly a manufacturing and industrial people, a course upon which we have started and made astonishing progress. We have, perhaps, 4,000,000 skilled workers, perhaps 3,500,000 unskilled workers. While we can get our unskilled labor abroad, it is of huge importance that as many as possible of our own citizens become skilled workers, and so creators by their toil of products of high values. Considering material advantage alone, whether the ninety per cent. of our million boys who will leave school next year become skilled or unskilled workers reaches a prodigious total of hundreds of millions of dollars.

If we are to maintain our present position among the nations, the masses of this country must excel by their superior skill as workmen. For we shall be obliged to meet, at first in the world's markets, and later at home, the products of Germany

and Japan, our ascendant modern nations, crowded throughout with a surplus of skilled and efficient labor. We cannot compete with them through raw materials and a low cost of living, which are things of the past in the United States. We can meet them only by the superior skill and better training of masses of American workmen. Where are they?

It is a curious thing, as Mr. Roosevelt has said, that in industrial training, we have tended to devote our energies to producing high grade men at the top rather than in the ranks. Our engineering schools compare favorably with the best in Europe, whereas we have done almost nothing to equip the private soldiers of the industrial army—the mechanic, the metal worker, the carpenter. Indeed, too often our schools train away from the shop and the forge.

our crowded cities the sons of skilled workers are going in extraordinary numbers into box factories, candy factories—a hundred unskilled trades—hopeless of earning high wages or developing high efficiency. Yet competent mechanics are needed in every branch of our industry, from a pin factory to a giant automobile plant.

All this defines one side of our need for effective industrial education. But there is another view of the question, which is equally important. For the training of manual work, the keen discipline of learning any one of the skilled trades is the schooling that is needed by all boys, not only because it is going to make efficient men of them, but because it is a necessity to their bodies, that are fifty-two per cent muscle. This can now only be got through the

weave their own cloth, make their soap, dip candles. Eighty per cent. of the population was agricultural. The father, if he happened to be a cabinet maker or blacksmith, shaped his wood and forged his metal near at home, within sight of his children. Each child was called upon while still young to share the parent's activity. He gained not only an insight into the industrial processes, but he acquired habits of work, keen discipline, moral training for his future occupation.

But now we are become a new sort of cave dweller. Even in our suburban homes, we have accepted the automatic ways of apartment house life; luxury, indulgence, ease, are softening our fibre, and industry has passed for ever from the home to the factory. This has thrown new duties upon the school. Fifty years ago the academy boy was an efficient and intelligent part of that mid-century civilization. The entire industrial process was known to him. Today, through the enormous complexity of life and its minute specialization in work, this has so far been lost that the city high school boy has not even the elements of knowledge sufficient to build up imaginatively the vital facts of daily life and labor. He has studied books and heard things talked about, but even of his father's productive work he has had little or no share. Chalk and blackboard and books, even when supplemented by our new manual training, are no longer enough.

Our new civilization has its own vital needs. The knowledge necessary for use in the productive industrial processes has increased enormously. Sciences, like physics and chemistry and electricity, have become vital factors in the early work of the world. The tempering of steel formerly meant no more than the heating of the metal to cherry red; it is now an intricate process requiring a difficult study of temperatures and alloys. And today, skill and accurate knowledge in the use of the hands are needed as never before. Clearly, we must immediately have a new school, for children now need the training of their muscles as well as of their minds. And they need the training of their minds through their muscles. Without such training, our race will lose in vigor and fall into decadence. The second and third generations of city-bred men in the past have always shown a weakening strain.

Continued on page 88



The Dutch dining room. Built, finished and furnished by the boys.

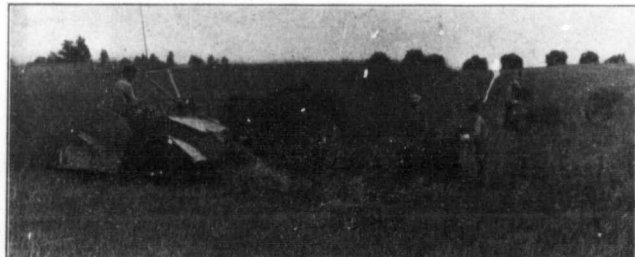
Great branches of our industries have been built up to their present prosperity by the educational foresight of Germany, by her skilled mechanics, trained in her splendid technical and trade schools; but today there is a serious dearth of skilled industrial workers, and we cannot longer depend upon other nations for such supplies of trained men. A carpenter's bench and lathe—the manual training that is being enthusiastically given everywhere, does not solve the problem. And no other sources of supply are discoverable. The old apprenticeship system has almost entirely disappeared, having, at the best, substitutes that supply only individual needs. In all

school, yet from the school until now we have had the one-sided mental training which physicians are beginning to understand is the first great cause of the widespread nervous troubles of today—a thing so exclusive to our own land that our prevailing form of nervous disease is, in Europe, called "Americanitis." From such diseases we shall suffer more and more until the school gives our children strong trained bodies and practical, well trained minds.

Until a few years ago, the work of every-day life at home made special muscular training unnecessary. Industry was centred in the home, where they used to grow their own food, spin and



Successful Test of a New Engine



Harvesting Time, Boys Working with the Farmer Cutting and Binding the Wheat

LUXURIES AND COMFORTS OF HOME TOGETHER WITH PALATIAELEGANCE ARE SHOWN IN THE MODERN TRANSATLANTIC LINER

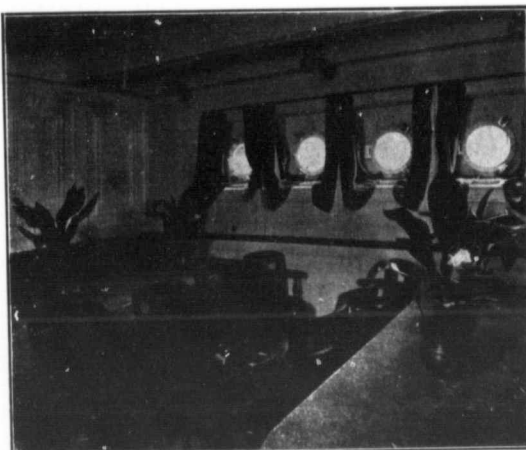
The Illustrations shown on these pages are taken from actual photographs of the liner that go to make up the Royal Line. This line plies between Montreal and Bristol and is in every way representative of what the transatlantic passenger may enjoy in the way of luxury and comfort while on the voyage



One of the Kitchens. Electricity reigns supreme—Electric Cooking—Electric Washing



Corner of Smoke Room



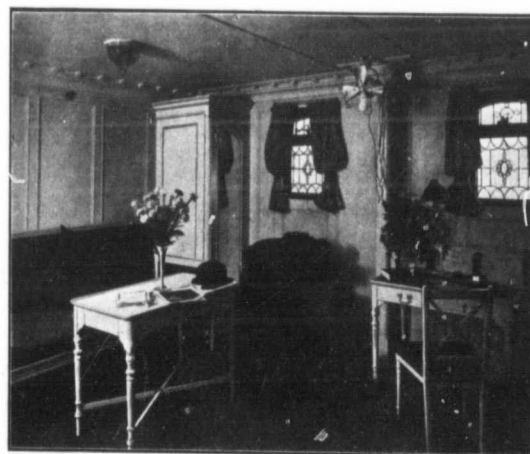
The Children's Nursery



First Class Stateroom



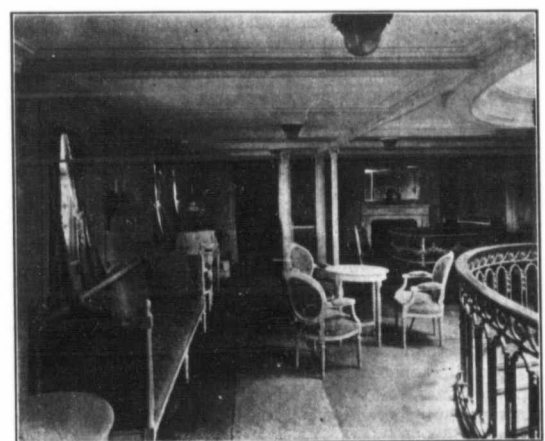
Sitting Room of Cabin, En Suite



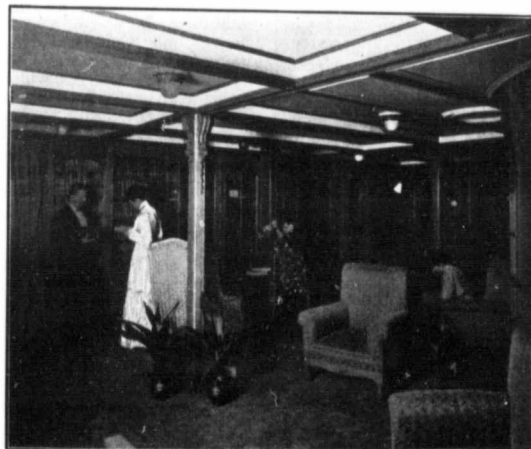
Sitting Room of Cabin En Suite



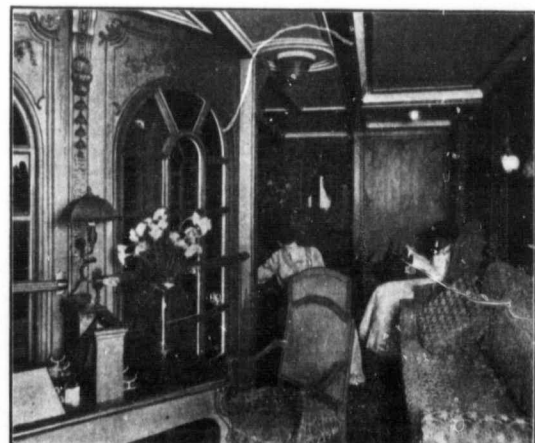
Corner of 'Café' Lounge



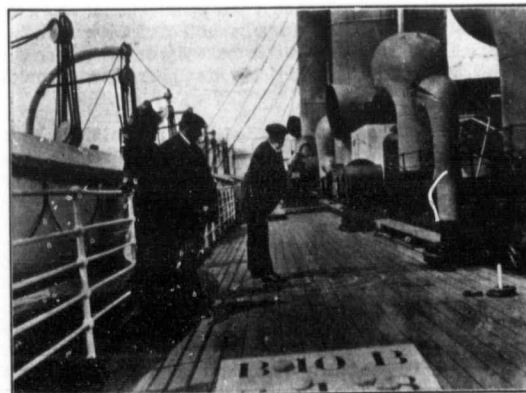
Corner of Music Room



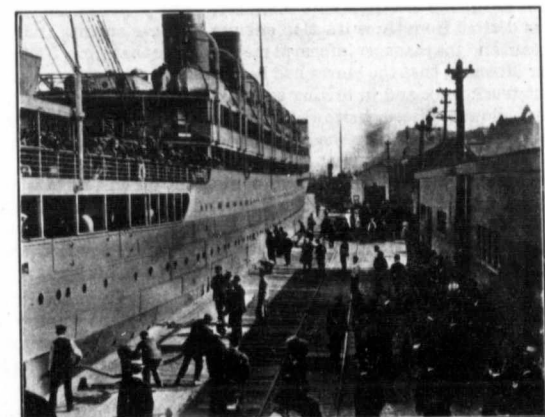
Corner of Library



Corner of Library



Quits on the Boat Deck



Royal Edward wharfing at Quebec after breaking all Canadian Transatlantic Records, August 11, 1910—5 days, 20 hours—Bristol to Quebec



JAN.

The Canadian Thresherman and Farmer

CANADA'S FARM MACHINERY MAGAZINE

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

Members Western Canada Press Association
 Authorized by the Postmaster General,
 Ottawa, Canada, for transmission as
 Second Class Matter.



E. H. HEATH
 PRESIDENT AND MANAGER

E. W. HAMILTON
 SECRETARY

F. C. BRAY
 TREASURER

"Everything begins and ends with the soil."



1911

THAT NEW YEAR RESOLUTION—ARE YOU KEEPING IT ?

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 proof, 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."

THIS is the New Year. This is a heart to heart talk with the young men of Western Canada. It seems to me that I have heard somewhere a song; a certain portion of it runs, "We're here because we're here." This does not apply to the young man in Western Canada. He is here for an entirely different reason. He realizes that in the broad prairies that blanket the three western provinces there exist for him opportunities that can be found nowhere else on the North American Continent. He realizes that town sites are fast becoming villages, villages are faster becoming towns and that towns are fast growing into metropolitan cities.

Horace Greely said at one time, "Go west, young man, and grow up with the country." A great many young men took Horace Greely's advice and went west and while they were growing up they filled their pockets as well. However, Horace Greely's advice was advice of a hundred years ago, when agricultural conditions were vastly different from what they are today. Horace Greely's advice applied at a time when there was no such thing as scientific agriculture, at a time when the plow was little better than the crooked stick, at a time

when modern implements of tillage were unknown. It was considered in those days an unnecessary thing to undergo any sort of training in order to be a farmer. To rise at four in the morning and work till ten at night was the program. It was largely a matter of work rather than how to work.

Today, however, conditions are entirely different. The young man who comes West to grow up with the country, unless he wants to be something more than a crackerbox loafer, must know conditions and must be able to cope with them.

The writer had an opportunity during the past year of visiting one of the large farms in Western Canada. This was a farm of 1,840 acres. The horse equipment of this farm consisted of but four head, two of which were bronchos. The power on this farm was derived from three traction engines, two gas engines and one steam and the manager informed me that up to that time, September fifteenth, that the horses had been used for absolutely nothing but truck work and in driving to and from town. The land had been plowed, disced, harrowed, sown, reaped and at that time a certain portion of it threshed and hauled to market, in addition to a large amount of summer fallow and the work was all done by traction engine. The machinery equipment on this farm would doubtless total \$15,000 or perhaps more and the young man of today who wants to reach the top as a farmer, who wants to be the big man and to do big things, must be prepared to make a good interest on such an investment in addition to the returns on his land.

In order to do this it takes brains that have been developed through training. Every young man in this Western country at the present time has within his reach the opportunity to acquire this training. Five years ago there were no agricultural colleges in Western Canada; today we have two.

Every young man, however, may not be in a position to attend these colleges, but in addition to these opportunities are provided

on every hand for instruction in modern agriculture. The farm press is full of good things; the farmer's institute is a school in itself; the fairs and exhibitions and the stock shows are all object lessons in modern agriculture, each and every one of which the young man has an opportunity to attend.

Farming today is a profession. It requires skill; it requires knowledge, it requires sound business judgment and the young man of today who does not possess all three of these is not going to make the best of his opportunities.

This is the season of the year when the average farm boy who is not attending some agricultural college has a considerable amount of time on his hands. There is very little to do outside of looking after the stock and the evenings are long from dark till bedtime. If every farmer's boy in Western Canada were to make it a point to spend two hours, three evenings a week in careful study he would be surprised at the results that would be derived therefrom. When he goes on the farm next spring and begins to cultivate the soil he would be startled at the revelations that would be made to him. Every turn of the furrow would mean something. There would be a mutual relationship established between man and soil and there would be an increased incentive to work that knows no tiring.

Western Canada offers to the young man of today opportunities that have never before been heard of, but unless he trains himself to take advantage of them they will slip through his fingers like waxseed.

Attend an agricultural college if you can; attend the farmers' institutes by all means, likewise the seed grain fairs, the fat stock shows and anything else that is agricultural. Don't think because you are a young man that you have no business at farmers' meetings. It is not only your business, but it is your duty to attend them. Read the farm press, acquire such books on farming and farm machinery as your pin money will permit; better any time spend a dollar for a book than for a handful of cigars or for a few games of pool. The latter will never make you an interest on the investment, while the former will yield you an interest compounded annually.

Some of our best agriculturists today are men of little or no college training, but they are men who have made it their business to acquire the cream of what the colleges and experimental farms and others have developed, and verily they have reaped their reward, which in a great many cases is a large one.

It matters not in what section of the West you live, or where your farm is, your opportunities are the same. I would like to provide a reading course for every young man in Western Canada. I would like to have the young men write me upon topics that are agricultural. The young man of today is the farmer of tomorrow. He is the one that I personally want to get in touch with. Don't drift, but turn your head up stream and learn to swim.

SUBSCRIPTION RATES

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

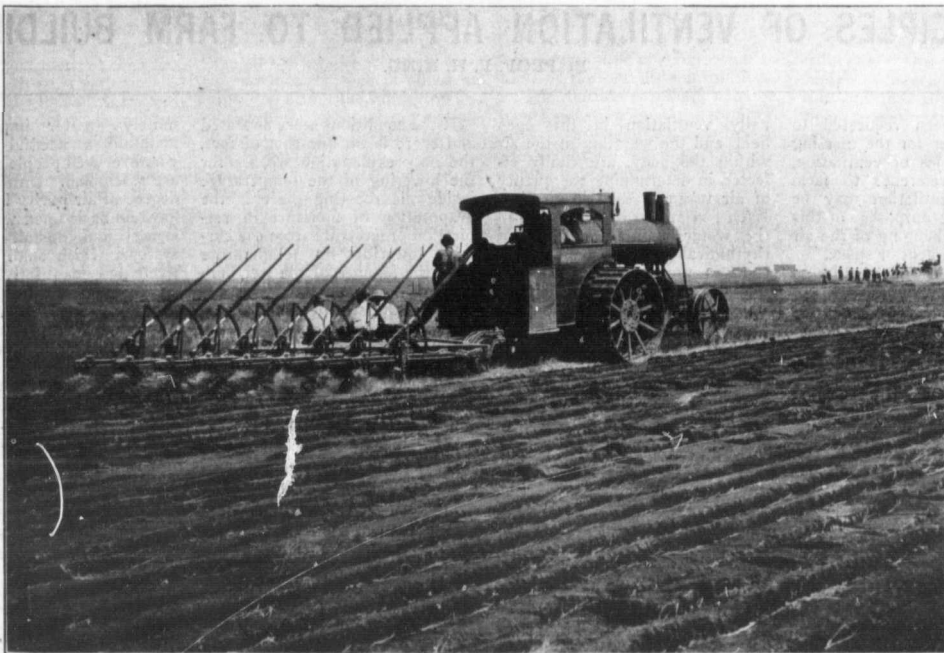
Postage prepaid
 United States and
 Foreign Countries
 \$2.00 Per Year.

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.



Splendid breaking being done by 8-furrow Cockshutt Engine Gang at 1910 Winnipeg Engine Competition.

Choose Between The Original, Simple Practical Cockshutt Construction, and The Complicated, Untried Imitations

The Cockshutt Engine Gang is now entering its fifth successful year. We brought out the first successful Engine Gang Plow, which for many years was the only one with independent beams. Our Gang revolutionized traction plowing and made possible the great development in engine plowing which has taken place since that time. Our Engine Gang, being the first one brought out, was made with the simplest possible construction as there was no necessity of avoiding copying the construction of others. Simplicity in a plow is as valuable as in any other machine. Other manufacturers are now attempting to imitate our plow and in order not to appear to be copying too closely they have found it necessary to complicate the construction at the expense of simplicity and perfect working ability. Choose between the original, simple, practical Cockshutt construction, and the complicated, untried imitations. Extensive additions to our factory will ensure the big demand for our Engine Gang next year to be fully met.

COCKSHUTT ENGINE GANG

The frame of the Cockshutt Engine Gang is built of very heavy angle steel, making it extra strong and rigid and well able to stand the strain of any engine. Again, almost every farmer admits that one lever to one plow (introduced by Cockshutt's) is best. For instance, should plowing become hard in some places the number of plows can be reduced singly, instead of in pairs, thus ensuring the full consumption of power. In finishing up, the correct number of furrows can be plowed with the Cockshutt Engine Gang. Also, the plows, being independent, automatically adjust themselves to any unevenness in the land. Our shares and bottoms, being much heavier than others, have not the same tendency to jump out of the ground in hard land.

Bear in mind that Cockshutt shares are easily the heaviest of any make in the world—particularly on our Engine Gang.

In a book we have prepared on the Engine Gang, you can see some very fine plowing scenes taken from farms all over the West and testimonials that should convince any impartial man which plow is really the best and why more Cockshutt Engine Gangs have been sold in Western Canada than all other makes put together.

WRITE FOR SPECIAL BOOK or SEE THE COCKSHUTT DEALER

COCKSHUTT PLOW COMPANY LIMITED WINNIPEG

Brandon

Regina

Saskatoon

Calgary

Edmonton

PRINCIPLES OF VENTILATION APPLIED TO FARM BUILDINGS

By PROF. F. H. KING.

We have been requested to prepare a paper for the meeting on the principles of ventilation, with special reference to farm buildings. Ventilation may be defined, for the purposes of this paper, as the changing of the air in any compartment or space.

The purposes of ventilation may be: (1) The Control of temperature; (2) The control of humidity; (3) The supply of normal air; and (4) The removal of respired aid and objectionable products.

The process of ventilation consists (1) in forcing air into the space to be ventilated; (2) in securing the proper distribution of the air throughout the space ventilated; (3) in the removal of air and objectionable products from the space or compartment ventilated.

The ventilation of a space or compartment requires (1) single or multiple intakes; (2) single or multiple outtakes; and (3) natural or artificial motive power capable of maintaining continuous inflow of air from the outside and a corresponding outflow of air from the inside, establishing what Shaw has expressed as an "air circuit or continuity of flow."

Within narrow limits, except for very large spaces, the same amount of air which enters a compartment or space in a unit of time will leave it, and vice versa. If the temperature or pressure, or both, change relatively inside or outside the compartment or space ventilated some more air may enter than leaves, or the reverse, but such variations are negligible in practice except in cave, mine and soil ventilation.

The continuity of air flow in ventilation is maintained by difference in air pressure—"aeromotive force" or the established head. The aeromotive force or head may be maintained (1) by wind and impact; (2) by wind suction; (3) by heat, and (4) mechanical appliances or by two or more of these in combination.

Diffusion is far too slow to be made an effective factor in ventilation, and it is a mistake to look upon muslin walls, windows, or screens as in any important sense effecting ventilation by diffusion. Rapid combustion of the most inflammable liquids or solids in the open field would be a physical and chemical impossibility were it not for wind movement and convection currents set up by the heat generated or by the differences in density of the products of combustion. There is scarcely an animal of visible size, aquatic or aerial but is provided with mechanically and thermally efficient means of securing ventilation, even though they live in open fields or water. The belov-
 low action so extensively used by animals for securing, individ-

ually ventilation in the open field, and the warming of the air within the body, are vitally effected in determining the quality of air taken at each inspiration. Even fish at rest or swimming in the water maintain a constant rhythmical gill movement, which changes the water contact and thus secures ventilation mechanically, never depending upon diffusion.

What ventilation is secured through muslin or cotton walls is almost wholly due to current movements through the meshes, induced by wind pressure, by wind suction and by difference in temperature. The diffusion effect is too small to be considered. But the resistance of the fine meshes to the flow of air is so great as to make this method impractical unless it be where very low temperatures are admissible. Ample proof of this is given in such temperature records as these obtained by A. G. Gilbert, Experiment Farms, Ottawa, as reported for the year 1908, in one of their cotton-front poultry houses provided with a cotton frame to let down in front of the roost place during exceptional cold weather. These are the records:

TEMPERATURE.			
	Room	Roosting Place	Diff.
Jan.	Max. 24°	Max. 22°	2°
	Min. 22°	Min. 4°	18°
Feb.	Max. 24°	Max. 22°	2°
	Min. 22°	Min. 0°	22°
Mar.	Max. 54°	Max. 50°	4°
	Min. 6°	Min. 16°	22°

It will be noted that on the warm nights, with the screen down, the roots were 2 to 4 degrees colder than the balance of the house, while on the extremely cold nights the roosting place was 18 to 22 degrees warmer than the room. The holding of the air in the sleeping place from 18 degrees to 22 degrees above the temperature of the balance of the room could only be effected through the breathing of the air over and over, through the condensation and freezing of moisture of respiration and perspiration, and through the conduction and radiation of heat from their bodies, and since this higher temperature is limited to the sleeping place, it follows that the interchange of air was too slow to maintain anything like equilibrium of temperature between the two compartments.

It is not quite clear why the chamber should be colder than the room on the nights of highest temperature. The statement regarding the data is as follows:

The egg laying record, as well as that of the lowest and highest temperatures of the room and of the roosting pen during the night with the cotton frame down, for Jan., Feb. and March are given as follows:

If the conditions were as stated and there is no question of fact, the only explanation we see for the lowering of the temperature inside the roosting place is the evaporation of moisture of respiration of moisture from the curtain, lowering its temperature after the manner of the wet bulb thermometer. If these temperatures on the warmest nights, resulted with the screens down, the warming effect of the hens upon the air of the sleeping place should have operated in the same direction as on the nights of the lowest temperature and might fairly be expected to show similar effects if the freedom of circulation of air were the same. The freedom of circulation could hardly have been the same for the reason that on the coldest nights the moisture must have frozen into the screen and more or less completely closed its pores.

However the differences in temperature recorded are explained there is sufficient evidence in the protection of our bodies with our clothing, and in the shelter secured by the cotton-front poultry house, that even comparatively open cloth offers great resistance to the passage of air through it and consequently disqualifies it for use in the construction of intakes and outtakes in ventilation where large volumes of air are required.

The need of the animal body for air is continuous, and Nature has evolved a mechanical ventilation system which automatically maintains both a quantitative and qualitative continuity of it under door conditions for each individual. The horse normally breathes, in round numbers, 142 cubic feet of air per hour; the cow, 117; the pig, 46; the sheep, 30; man, 18; and the hen, 1.2. It is safe to assume that these amounts of air are necessary and it should be essentially undiluted and pure.

The problem of ventilation for farm buildings is how to secure these amounts continuously and of the essential purity. What constitutes the essential degree of air purity for man and our domestic animals is a matter of the highest economic and sanitary importance, and it is high time the most rigid research methods should be applied to the problem, which shall establish beyond all reasonable doubt what is an entirely sufficient degree of air purity for dwellings and stables and for schools, assembly halls and public conveyances. If great advantage is secured through open air treatment for tuberculosis patients, and if open air schools are desirable under any conditions, and if the advantages secured through them result from the higher degree of air purity, as is believed, it ought to be of in-

initely greater importance to maintain a needful air purity wherever well people and animals are assembled. Until the needed degree of air purity is known we have no basis upon which to construct and install ventilation systems which shall be qualitatively and quantitatively efficient.

The relatively small amount of heat required to warm air when its temperature is too low for comfort, and the readiness with which large volumes of air may be moved, should leave not the slightest excuse for not ensuring the proper rate of air change to secure the desired purity when it is known. A cubic foot of air breathed contains from 91 to 96 cubic inches less oxygen than does pure air; it may have acquired 71 to 73 cubic inches C₂, and 60 to 90 cubic inches of water vapor besides other deleterious and offensive products. A burning candle is extinguished in such air.

DeChaumont's unit of one cubic foot of air per second for an adult man in repose, or 3,600 cubic feet per hour given such a degree of purity that the air of the room would contain only about five-tenth per cent. of air once breathed. It is also held to be the limit of contamination at which the sensitive person fails to detect the "odor of closeness."

We have assumed for stables a degree of purity of 3.3 per cent. of air once breathed, this being about the highest limit of breathed air which is associated with the absence of condensation of moisture on the walls. Whether or not this is an adequate degree of purity we do not know. It is certain, however, that comparatively few stables in this country maintain as high a degree of purity. To do so would require an hourly movement through the stable, for each adult horse, of 4,296 cubic feet; for each cow, 3,542; for the pig, 1,392; for the sheep, 917; and for the hen, 35 cubic feet.

The impact effect of a two-mile wind, plus the suction of effect of a 3-mile wind, added to the heat effect of a temperature difference of 10 degrees, gives a theoretical velocity in an outtake flue one square foot in section and 40 feet high of some 45,000 feet per hour; allowing that one-half of this effect is lost in overcoming friction, the 22,500 cubic feet of air per hour are sufficient to supply air of 3.3 per cent. purity to something more than 6 cows. We think it prudent, however, to allow a cross-section at the rate of 4 square feet of outtake and intake flues for each 20 adult cows. On this basis about 36 square inches of cross-section of flue should be allowed per horse; 30 per cow; 12 per pig; and 8 per sheep.

There are times when the impact effect of the wind is nil and when the suctional effect may be as low as that due to a movement of one mile per hour, or even less, but when these relations hold there is likely to be a large heat effect due to difference of temperature if in mid-winter of cold climates. The flow due to a temperature difference alone of 30 degrees, allowing 50 per cent. lost through friction would be about 20,000 feet per hour, for a 1 ft. by 1 ft. flue 30 feet high; 22,500 feet for the same size of flue 40 feet high; 25,000 for one 50 feet; and 27,000 feet for one 60 feet high. In this series an outtake 30 feet high and 2 ft. by 2 ft. in section has just barely the capacity for 20 cows.

The high outtake flue is especially desirable because both the heat effect and the suctional effect increase with the height, the latter for the reason that the wind velocity increased with the distance above the surface.

Anything which constricts or obstructs the outlet over an outtake, or tends to a down draft, diminishes its efficiency. There should be incorporated in any associated with the outtake every feature which belongs to a good chimney, except it need not be fire-proof. Its walls must be impermeable to air, and this is more important than non-conduction of heat, although insulation in a cold climate is helpful. The walls are best made of galvanized iron, which may or may not be insulated. It is practically impossible to make permanently air-tight walls with wood, even where the best paper is used in combination. The wood shrinks too much and the paper is perishable through decay from the continuous condensation of moisture.

The outtakes should be as few and large as practicable. They should rise straight through the roof, and above the ridge. They should occupy the interior of the barn, away from the outside walls wherever convenience will permit, even if they take the place of one or two cows, if the highest efficiency is expected. If less desirable location is imperative there should be compensation in size and perfection in construction.

One of the very frequent mistakes in the inside installation is several or many small outtakes and these against outside walls which may be wood and a part of them. Even the Ottawa Report, to which reference has been made, says: "Both inlets and outlets occur on each side and should be at intervals of about 10 feet, say 3 on each side." And yet such advice we have never given. We think if a census were taken there would be found many more King Systems of ventilation than there are Kings, and the writer quoted justly says regarding this one of many: "The chief objection is the large number of long pipes and boxes necessary to admit pure air and discharge foul, as the case may be."

Another common mistake is to ceil over a space between rafters in one story and use the space as extension for outtakes, but leaving all the spaces between pairs of roof boards open to admit air from the attic thus filling the flue through the shortest circuit, unless making it useless for the stable below.

While outtakes should be as few and as large as possible, the intakes should be many and small. Wherever studding is used in construction the intakes may be simply the space between pairs of studding, with a screened opening above the sill outside and a corresponding opening between the ceiling inside to admit air at this level and serve as an air trap against the loss of warm air from the stable. Where practicable intakes should be provided on all sides to take full advantage of the wind impact for forcing air into the stable from whatever direction the wind may be blowing. Details of construction and variation to meet different conditions are fully described and illustrated in "Ventilation for Dwellings,

This illustration represents Mr. R. MacKay, who has just been appointed manager of the Canadian Moline Plow Company to succeed Mr. O. F. Berkeley, who has been transferred to the Omaha Branch of the Moline Plow Company as manager.

Mr. MacKay is a Canadian by birth, born in Ontario, 1871. He came West when a young man and pioneered southern Manitoba in the early eighties. In a recent conversation with him he says:

"The weather lately tastes just like it did when I was a boy in Manitoba. It makes me feel quite natural to return to my old haunts under such weather conditions. I am, however, more than surprised at the developments that have taken place in my absence during the last twenty years. I realize, however, that there has only been a start made in the development of this wonderful western country, which is in a class all by itself. It is full of hustlers. In fact they have to hustle to keep pace with the advancement of the great North-west. The West, like all other new countries, has very little time or place for the fellow who don't know how to work and hustle. It is up to the young man with plenty of nerve and energy to develop its best resources and it looks now as if the rising generation, backed up of course with some good wise counsel from the older heads, will make the last West by far and away the best West."

Mr. MacKay has for the past twelve years been associated with the Moline Plow Company in

Rural Schools and Stables," by the writer. The intakes may be placed at intervals of 10 to 15 feet and should have an aggregate cross-section of opening equal to that of the outtake flue or flues.

The outtakes should exhaust continuously from the floor level and be provided with outlets at the ceiling for use only when the stable is too warm or the ventilation inadequate.

Stable ceilings should be especially air-tight and well insulated to conserve the waste heat of the animals for warming the air introduced at the ceiling, so that the largest volume possibly may pass through the stable in the coldest weather without undue lowering of the stable temperature. As the air is fouled, deprived of its oxygen and breathed toward the floor, as the coldest air is at the floor; and as all air must be inspired from near the floor and at it when the animals are lying down, the exhaust should be continuously and as fully as possible from the floor, because then, not only will the fouled air be mechanically with-

drawn from this level, but the warm and pure air will be forced to the floor where it is used.

In the removal of air from the ceiling level there is the greatest tendency to establish short circuit currents, allowing the fresh air to pass directly out above the animals.

Dampers should be provided for outtakes and intakes, to control the flow, which like the power of an engine, should be normally greater than the demand. When it is understood that it requires something like five pounds of air to burn in the animal's body one pound of hay or grain; that air is the one article of maintenance used in much the largest absolute waste; that it is indispensable, there being no substitute, and that it costs only the appliance for admitting it to the animals, the unwisdom of failing to provide adequate ventilation should be self-evident.

In our case, life may be sustained under favorable conditions possibly five weeks without solid food, five days without water, but scarcely five minutes without air. We require daily scarcely 1.5 pounds of solid food, about six pounds of water, but not less than 34 pounds of air must be breathed. Of the 41 pounds of sustenance taken daily, five ounces leave the body by the alimentary canal; 35 ounces by the kidneys, but 38 pounds are thrown into the air we breath. All but the ashes of fuel pass out of the chimney with the used air but all the carbon dioxide, much of the moisture and all of the breathed air are discharged into the room and the stable, too often with no definite provision for their removal.

It may appear that the movement of such large volumes of air through stables and dwellings is incompatible with comfort and economy as regards warmth. It is estimated that a cow gives off her body daily 76,133 British heat units, sufficient to raise the temperature of 79,603 cubic feet of dry air through fifty degrees, or at the rate of 3,316 cubic feet per hour. This is only 226 cubic feet of air less than has been taken as possibly sufficient for dairy stables. Only occasionally is the outside air in the United States as low as zero in temperature, the mean for January in Wisconsin being about 15 degrees and a rise in temperature of 50 degrees above this would give a stable temperature of 65 degrees. Taking Jordan's estimate of the heat given off daily and 35 42 cubic feet of air as the amount needful hourly for each cow, and supposing that the whole heat so generated is lost through the air, this heat is capable of warming the unit volume of air through 47.5 degrees, so that air entering the stable at 10 degrees below zero might have its temperature raised above freezing, or to 37.5 degrees.

In the dairy barn of the Wisconsin Agricultural Experiment Station, whose walls and ceilings

Continued on page 72



A System of Water Supply for the Farm

It may be taken for granted that the near future will see the installation of water systems of one form or another, for culinary and domestic use, for bath and sanitary purposes, in all prosperous farm houses. The scarcity of domestic help requires that the labor of the housewife shall be made as light as possible, and there is nothing that so lessens household work as an abundant supply of hard and soft water, hot and cold, at the kitchen sink. The advantages of the well-fitted bathroom are already appreciated in the country, and there is already a demand for some cheap and effective system of water supply which shall make all these things possible.

There are two methods of obtaining water under pressure for the farm house. These are the elevated gravity tank, and the pressure-tank. Of the former we need say little. Its advantages and disadvantages are well-known. For stock it is, and will remain, on account of its cheapness, the best form of water supply. Here high pressure is not desired, and consequently a high elevation is not required, and while pure water is required for stock, we do not demand nor need the same standard of purity as for domestic uses. The gravity tank has not come into general use for domestic water-supply, because of the difficulty of protecting from frost when sufficiently elevated, and the impossibility, particularly in summer, of obtaining a pure, fresh supply of water from a tank exposed to high temperatures and more or less pollution from dirt and vermin and whose contents are seldom changed.

On the other hand, the pressure tank is ideal as a source of domestic supply. In it the water is protected from heat, dirt and frost, and any desired pressure is easily obtained. So far, however, its use has been attended by certain disadvantages. The chief of these has been a lack of accurate automatic means for replenishing the excess of air dissolved in the water under pressure, and of means of reliably controlling automatically a power pump of any kind. It is, and will remain, too expensive for stock purposes, but will undoubtedly come into wide use for domestic supply. This invention aims to provide means whereby the pressure-tank may be automatically supplied with water either singly or in conjunction with a gravity tank for stock purposes, for making it absolutely safe from danger or overpressure, and for automatically providing for the replenishing of the air in the tank.

It is well to remember that the patent covers exclusively any

means that may be employed for diverting the flow of water from the pressure-tank into another receptacle. This means that by this system alone can the pressure-tank and the gravity-tank be automatically fed from the same source and the same pump, actuated by the same windmill. Thence, by this system alone can we combine the gravity-tank for stock purposes with the pressure tank for domestic use.

There is another system of which we know that can do more

others for farm water-supply, where a windmill or gasoline engine is the source of pumping power.

There are a number of water-supply systems receiving water from a water conduit through which water is forced, and so soon as the pressure within the reservoir of these systems reaches a certain degree, means are operated by this pressure to stop the water-pumping means. Now our apparatus never interferes with the water-pumping means,

led to the pipe A is a pipe C, which is coupled to a two-way valve D. Also coupled to this two-way valve D, by the couplings of E, is a pipe F, coupled to a pipe G which in turn is coupled by the pipe H with the pipe I, which is coupled to the reservoir J. K is any suitable air-valve by means of which the desired air pressure may be initially accumulated within the reservoir J.

L is a cylinder suitably coupled to the pipe I. Operating within this cylinder is a piston M, provided with a piston-rod N, which operates through the cap O, closing the end of the cylinder. P are eyelets or other supporting means, through which the piston-rod N passes, and which holds the same in alignment with the cylinder. These eyelets, or their equivalents, are carried by the support Q. In the position of the parts shown in figure 1, water is being forced from pipe A, into the reservoir J, and so soon as the pressure within said reservoir reaches the desired amount, the pressure forces outward the piston M and its rod N, thus carrying the toothed-rack R (carried by the piston-rod N, and in mesh with the eccentric quadrant S, controlling movement of the valve-plug T) operating said valve-plug so as to prevent the passage of water through couplings E from the valve D, and cause it to pass through the pipe U, which may permit the water to drop back into the well, or convey it to any desired point of consumption. Carried by the quadrant S is a grooved-flange V, which is concentric to the axis of the valve-plug T. W is a cord passing over a pulley X, and this cord is suitably secured to the grooved-flange, and rests in the groove V thereof. This cord W supports a weight Y, and it will be understood that while the valve-plug D is being moved to cut off the supply of water into the reservoir J, that the weight Y will be elevated. "2" is the service pipe coupled to the pipe L, and the same is provided with any suitable tap or faucet 3, which, of course, is normally kept closed. Now when the pressure within the reservoir J is reduced sufficiently by reason of the consumption of the water the weight Y will be caused by gravity to descend, and thus return the piston M and the piston-rod N and connected parts, back to normal position, thus moving the valve-plug T into the position shown in figure 3, thereby preventing the escape of water through the pipe U, and allowing the accumulation of water in the reservoir J. When sufficient water accumulates within the reservoir, in due

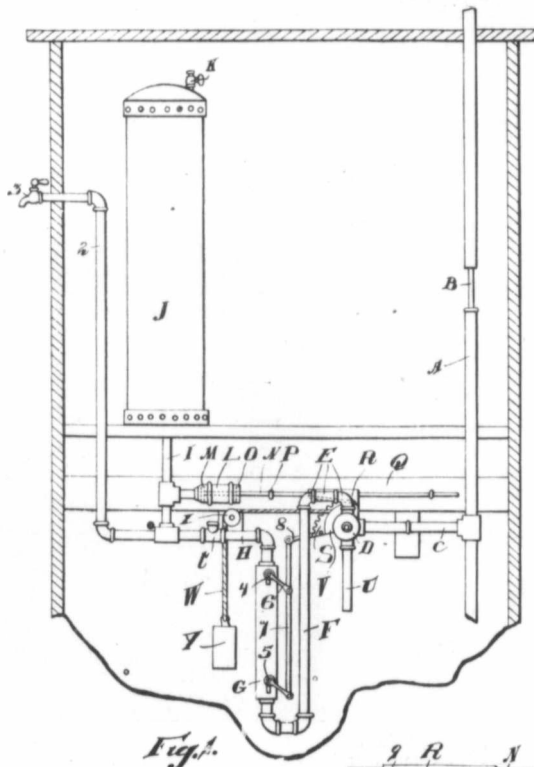


Fig. 1.

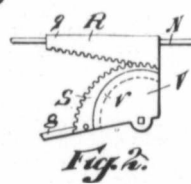


Fig. 2.

than this system. It is entirely automatic in every respect, is simple and cheap, and will not easily get out of repair, and over and above any other system has the advantage of combining the gravity and pressure systems, that one may be used for stock and the other for domestic purposes, each independent of the other, and yet each fed from the same pump, and automatically in control of the same windmill.

For these reasons we believe this system is superior to all

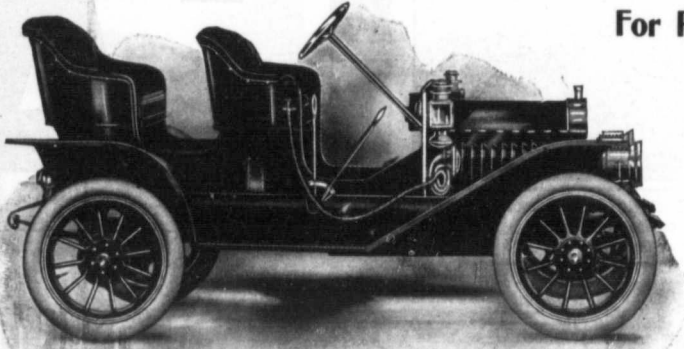
and therefore the same can freely operate to feed water from the water-conduit, even though our reservoir be filled. The pressure within the reservoir of our apparatus determines whether water is to be fed there-into or through a relief outlet or pipe for the water-supply conduit.

A is any suitable water-supply conduit, in the present case a pipe extending down into a well, and operating in this pipe is the pump-rod B, operated by any suitable means, not shown. Coup-

SPECIAL SUBSCRIPTION OFFERS

For Readers of

The Canadian Thresherman and Farmer



Our Wheat Guessing Contest this year is on the number of kernels in twelve pounds of No. 2 Northern Wheat. To the person first guessing nearest to the number of kernels, we will give this McLaughlin Buick Automobile, valued at \$1200.00. Each subscription includes three estimates; however, by subscribing for two or more years, or sending in additional subscriptions, you can secure extra estimates as shown in the table below.

THE AUTOMOBILE

will be delivered to the winner F. O. B. Winnipeg, all complete with oil tail lamp, oil side lamp, two gas head lights, generator, horns, repair outfit, jack, and pump. This is the 1911 Model "D" Four Passenger "Tourabout" McLaughlin-Buick Automobile with detachable rear seat.

THE CONTEST started November 1st, 1910, and closes June 30th, 1911. The contest is open to everyone in Canada except residents of Winnipeg. To secure estimates, all you have to do is to send in either new or renewal subscriptions for The Canadian Thresherman and Farmer. This is the third year we have put on a wheat guessing contest, and the fair and square manner in which these have been conducted in the past, is sufficient guarantee that you will have the same chance as anyone else when putting in your estimates this year. In fact we guarantee to forfeit \$2,000.00 to any charitable institution if anyone can prove that our Contest is not conducted in a fair and square manner.

THE WHEAT is a fair clean sample of No. 2 Northern and was procured from the Dominion Grain Inspector's Office, Winnipeg. The wheat and bottle were taken direct from the Grain Inspector's Office to the Dominion Weights & Measures Office, and exactly twelve pounds of the wheat was weighed out and poured into the bottle. The bottle was then immediately sealed up by the Ass't. Inspector of Weights & Measures in the presence of two witnesses. The bottle was then photographed and deposited with the National Trust Co. to 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 and Farmer.

THE SUBSCRIPTION PRICE of The Canadian Thresherman and Farmer is \$1.00 a year in Canada and Great Britain, and \$1.50 a year in the United States and Foreign Countries. All subscriptions are positively discontinued when they expire unless renewed. Extra subscription blanks, sample copies, etc. assist in forming a club, sent free on request.

GUESSES ARE ALLOWED AS FOLLOWS

- 1 year's subscription and \$ 1 gives you 3 estimates.
- 2 years' subscription and \$ 2 gives you 7 estimates.
- 3 years' subscription and \$ 3 gives you 11 estimates.
- 4 years' subscription and \$ 4 gives you 15 estimates.
- 5 years' subscription and \$ 5 gives you 19 estimates.
- 6 years' subscription and \$ 6 gives you 23 estimates.
- 7 years' subscription and \$ 7 gives you 27 estimates.
- 8 years' subscription and \$ 8 gives you 31 estimates.
- 9 years' subscription and \$ 9 gives you 35 estimates.
- 10 years' subscription and \$10 gives you 40 estimates.

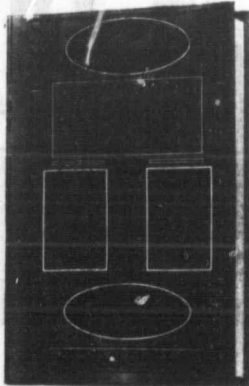
OR BETTER STILL, GET YOUR NEIGHBORS

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 100 estimates and each have 1 year's subscription.
- 20 persons sending \$20.00 get 150 estimates and each have 1 year's subscription.

Send all subscriptions to

E. H. HEATH CO. Limited
Publishers
The Canadian Thresherman and Farmer, Winnipeg, Canada



For one one-year subscription for The Canadian Thresherman and Farmer, we will send you postpaid "Mrs. Boston's Cookery Book" and allow you three estimates on our Wheat Guessing Contest. This Cook Book is so well known that it needs no description. This new edition contains over 400 pages and over thirty full page illustrations.



For one one-year subscription for The Canadian Thresherman and Farmer we will send you postpaid this straight stem briar pipe and allow you three estimates on our Wheat Guessing Contest. The pipe is made from fine clean briar, and is fitted with black vulcanite mouthpiece. The bowl and mouthpiece are well proportioned and highly polished.



For one one-year subscription for The Canadian Thresherman and Farmer we will send you postpaid this "Aw-l-u-Want" handy sewing awl for mending harness, shoes, horse collars, etc., and will allow you three estimates on our Wheat Guessing Contest.



For one one-year subscription for The Canadian Thresherman and Farmer we will send you postpaid this "Self Pulling Cork Screw" and allow you three estimates on our Wheat Guessing Contest. This corkerew is fitted with good substantial handle and is well made throughout.



For one one-year subscription for The Canadian Thresherman and Farmer we will send you postpaid this "Children's Paint Box" and allow you three estimates on our Wheat Guessing Contest.



TRICK LOCK PENCIL BOX
For one one-year subscription for The Canadian Thresherman and Farmer we will send you postpaid this "Trick Lock Pencil Box" and allow you three estimates on our Wheat Guessing Contest. The box is made of beautifully finished hard wood with two compartments and ruler on the side, and fitted with trick lock.



For one one-year subscription for The Canadian Thresherman and Farmer we will send you three estimates on our Wheat Guessing Contest. These Weaners come in two sizes, small size for calves four to eight months. Large size for calves one to one and a half years old. Be sure and state size wanted.

The Canadian Thresherman and Farmer, Winnipeg J.

Please find enclosed \$..... for years' subscription for The Canadian Thresherman and Farmer to be sent to

NAME.....

ADDRESS.....

As per your special offer send me postpaid to the following address the..... and place to my credit the estimates on your wheat guessing contest (Premium)

NAME.....

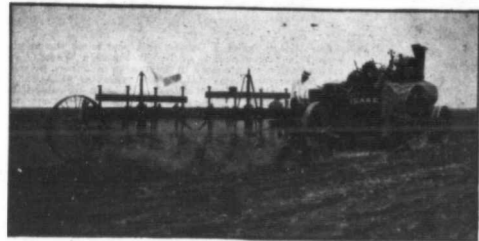
ADDRESS.....

My estimates as to the number of kernels in the 12 lb. No. 2 Northern Wheat are.....

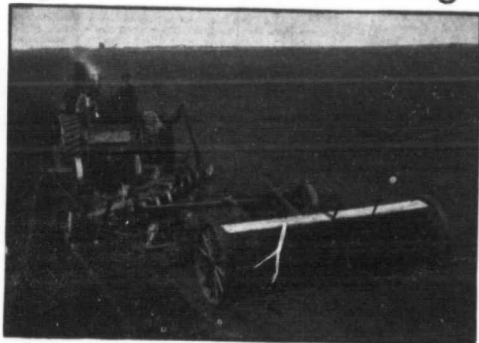
We will forfeit \$2,000 to any charitable institution if anyone can prove that our Wheat Guessing Contest is not conducted in a fair and square manner.



Case 75 H. P. Engine belonging to Cridland Bros., Brocket, Alberta, Canada, completes the entire operation of plowing and seeding at once



The Case Steam Lift Engine Gang Plow gives results. Notice the even furrows and the thickness of the virgin prairie.



Case 75 H. P. Engine pulling eight 16-inch breaking plows, 10-foot packer and 72 shoe drill. Three men handle the outfit. Notice particularly the splendid work done. The engine has improvised fuel bunkers and no extension rims. Mr. O. B. Hoven, Tolna, N.D., owns this outfit.



Case 110 H. P. Engine pulling eleven wagons and 30,000 feet of lumber in Medicine Lake, Montana. The engine is the property of Umbreit Bros. at the above point.

CASE

Contractor's Engines

More CASE engines are pulling contractor's trains of dump wagons, elevated graders, road graders and road scrapers than all other makes of engines combined.

Case Municipal Tractors are built for use on any description of paved streets.

Study our special wheels.

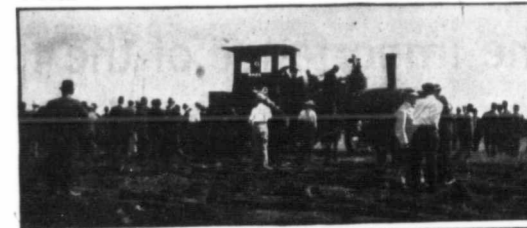
ENGINES PULL, PLOW AND PLEASE

Four-Time First Prize Winners

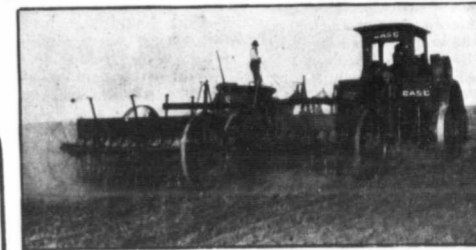
Four times have Case Steam Plowing Engines demonstrated that they're unapproachable in economy in the use of fuel and water as they have won four first prizes in plowing contests in the Province of Manitoba, Canada.

CASE engines plow at least cost per acre and with least cost for repairs.

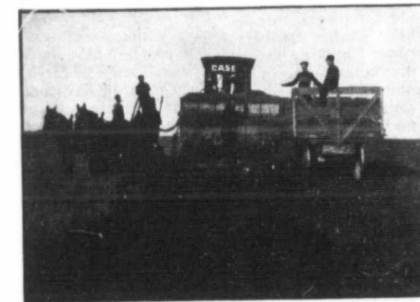
The results CASE engines have produced are ample warranty of their worth.



Notice the way the crowds flocked about the Case 110 H. P. Engine at Winnipeg that won 356.55 points out of a possible 400 points to be awarded by judges of Winnipeg Industrial Exhibition's Plowing Contest. The nearest competitor received 297 points. Case engines plow best.



A Case 110 H. P. Engine, a Case Steam Lift Plow and two Peoria Seeders doing a complete operation in stubble. J. J. Merrilees and partners of Balco, Okla., own this rig.



This Case 110 H. P. Engine pleases Coleman Bros., of Froude, Saskatchewan, Canada, for it burns straw in plowing and costs nothing for fuel. They pulled ten 14-inch Cock-shut Plows two miles on one-half rack of straw.



RACINE, WISCONSIN, U.S.A.

J.I. CASE THRESHING MACHINE CO. INCORPORATED-

TORONTO WINNIPEG REGINA CALGARY

Chicago



The Importance of the Farm Machine on the Farm

By E. H. Hawthorne.

It has been said that a farmer is known by the kind of machinery he keeps. What truth there is in the above assertion is rather hard to prove. It is a well known fact, however, that a laborer will hire much more readily with the farmer who has an up-to-date set of farm machinery than he will with the one who has a second-rate or inferior class of machinery, because he knows that along with the up-to-date machinery goes good stock, comfortable buildings, and best of all, a business-like, enterprising and considerate employer. To the individual that has never acted the part of hired help the full importance of proper equipment in the way of labor-saving contrivances will not be realized, but the persons, be they men or women, who have acted in this capacity, know what the up-to-date farm home means to the itinerant laborer.

In the domain of the farmer may be seen the various kinds of plows, harrows, drills, rollers, land packers, binders, mowers, threshing machines, grain crushers, manure spreaders, milking machines, and automobiles; while in his wife's demesne may be found the sewing and knitting machines, the mincemeat and sausage grinders, and that much abused labor-saving device, the washing machine.

All of the above-mentioned pieces of machinery are not found on the average farm. Most of them, however, are, and, if properly manipulated, give satisfaction to all concerned in their purchase and use. A great deal of dissatisfaction arising from the use of machinery is not derived from any great defects in the machinery, but is simply the outcome of lack in knowledge on the part of the operator with regard to the construction and handling of the machine. Too often a man will purchase an implement of some kind, and because the thing is simply constructed expects to be able to operate it successfully without any particular knowledge of the underlying principles governing its use. For instance, farmer A may buy an up-to-date fourteen inch gang plow with the hope of going right ahead to plow five or six acres a day. When he gets to the field he finds to his disgust that the plow, regardless of the instructions given by the implement agent, will only root its way through the soil. Instead of using his brains in thinking out how the bridle-head, coulters, wheels and levers should be adjusted. A gets off his plow and manfully cleans the mold boards and hopefully starts down the field again, only to find that the dirt sticks fast to the mold boards and shares, thus preventing the plow doing its work. Perhaps half a day, if the man has a good reserve of selfwill and perseverance, will be spent in this sort of procedure,

then, heedless of what the friendly agent may say with regard to the merits of the plow, the implement is taken back to the shop with its fair name and reputation coupled with profane and unjust phrases. While farmer A has been engaged in the alluring pastime of starting a plow, his worthy neighbor, B, has been occupied in the same line of work. B, when he first entered the field, found that his plow's work very much resembled the work of a pig seeking to dig up a row of newly-planted potatoes. Instead, however, of just cleaning the mold boards, as A did, B commenced to adjust the coulters, levers, wheels, etc., and in a short time had his plow turning up the soil in a beautifully moulded furrow. When night came, he unhitched his horses, and, while A was wrathfully seeking a likely-looking plow, went cheerfully home feeling that the farmer was one of the happiest class of men on the face of dear old mother earth.

Kind reader, did you ever stop to consider what time, money, and energy the machinery on a farm has cost? Do you think that farmer B knew or cared how much sleep men, in days gone by, had lost in inventing and manufacturing the various parts of the plow? All that he thought of was the fact that the plow did thoroughly the work for which it was made. He little fancied as he watched the shining mold board turn over the rich mellow soil, that it had been subjected to some twenty different processes in its manufacture; neither did he, as he listened to the shares cutting their way through the stiff, tough roots, think of the labor and skill involved in the construction and fitting of those very essential parts of the plow. Perhaps if more of the farmers realized the cost of manufacturing the agricultural machinery they would not complain so much about the high cost of it, but would wonder how it could be put on the market at such a low cost price.

The real importance of the farm machine dawns on very few men and women. If a particular machine does its work well, it gets a good recommendation and a wide sale on the market, but, if it proves to be of little service it is cast aside and replaced by something more adapted to the market demands.

Let us consider for a few moments the importance of that very widely known implement, the plow. Now, if there were no plows, the soil would have to be spaded or dug up by hand, as it is done in small gardens where plows cannot be used. Any person who has done any spading of gardens will be able to comprehend the amount of work involved in spading up a quarter section of land. Think, good friends, of the backaches the farmers are freed

from by not having to go out and dig up the soil in preparing it for the hand rake, because without the harrows, which are one form of machinery, the hand rake would have to be used in pulverizing the earth for the seed bed. Now it would be altogether too much to expect the kind old father to go out and work alone in the field during seed time, so therefore, dear old mother and the boys and girls go out too to keep him company, and, incidentally, give him help and encouragement. The result would be: first, about one one-hundredth of the soil now under cultivation prepared in an inferior manner for crops; second, the housework neglected on account of mother being too tired to attend to it when she returned from the field; third, the children detained from school, and allowed to grow up ignorant of everything except drudgery on the farm; and fourth, ruination to the farmer, because the season of growth would be gone before enough grain could be sown to yield ample supplies of food to feed the live stock and the people of the world.

The binder is another machine, the importance of which might be dwelt upon briefly. It causes as much, if not more, perplexity and anxiety than any other machine on the farm. The poet says that "a little thing may harm a wounded man." We might say that a little thing may stop a running binder. Did you ever try to picture in your mind the state of affairs if we had no binders? In the harvest time we hear the farmers cry, "More men! more men!" And they think that it is an awful thing that they cannot get enough men to stook the grain. Most assuredly it is a sad thing to see hundreds of acres of grain cut and lying unstocked in the field, but would it not be a much sadder sight to see the kernels all crushed out of the heads as the grain stood ready for the sickle of the harvester? Scarcely a year goes by but there is a great loss to the farmer due to his grain shelling before being cut. However, if the farmer had to depend upon the old fashioned sickle to cut his grain, even though all the men, boys, women and girls were called into the harvest field, there would not be enough of the crop gathered in to feed one fourth of the inhabitants of the earth. The farmers might hopefully sow their thousand acre fields, but the greater part of the crop would simply be left to decompose and go to form humus in the soil. In fact, if it were not for the binders, Canada would not be called the granary of the West.

Oh, worthy reader, did you ever consider the great problem of soil moisture? By some agriculturists it is considered a greater question than that of weeds. In some parts of the world the difficulty

arising from lack of soil moisture has been overcome by means of irrigation; in others it has not yet been overcome; while in still others it has been practically removed by the use of tillage machinery. Good authority has stated that from forty-five to fifty per cent. of the soil moisture lost by evaporation may be retained for the use of the growing plant by having a soil mulch. This soil mulching can be done in large fields only by means of machinery such as the plows, harrows, drills, and land packers. Imagine yourself, my fellow farmer, out in the spring of the year trying to form a soil mulch on a section of land by means of a spade, hand rake, and such muscle developing implements. By experiments, it has been proven that all the moisture in the soil is not available for plant use, and that the plant, for every pound increase in its dry matter, uses up from three hundred to six hundred pounds of water. Since all the moisture is not available for vegetable growth, and the plant uses so much in growing does it not follow that the machinery which will put the soil in a condition to retain water for all the races of mankind?

Supposing that the farmer has managed to get his section of land seeded, the crop cut and stooked, how is he going to get the grain threshed without a machine? Surely, the boys will not have to miss attending school or college during the winter months? Yet how can they avoid doing so since the fall spading and raking (not fall plowing and harrowing), the flailing of the grain and the carrying it to market is to be done? Surely the young man will not leave the faithful old father to thresh the grain out by hand while they attend St. Johns, Wesley or the Agricultural College? They never will. But they and their father will send in an order to the J. I. Case Co. to forward by the fifteenth of September one of the most up-to-date threshing outfits the company has on the market. Then by the time that the Agricultural College opens its doors to the winter session students the greater part of the crop will be on its way to Fort William, Hudson Bay, Liverpool, or the Lord-knows-where.

From the foregoing you may realize something of the vast importance of the farm machine. In fact, we cannot imagine the people of the Argentine, the United States of America, and Canada producing the vast supplies of grain that they are doing yearly unless we consider them doing so by the aid of machinery. Without the use of labor saving devices, such as the plows, drills and binders, farming as a profession would simply cease to exist. Only during very recent years has the work

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 task of opening up 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, then, designed the

Rumely Steam Plowing Engine

and constructed it so that "from track to track" 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 possibility of vibration, side sway or twisting of the counter shaft and sagging or tipping in of the drive wheels.

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

For Authentic Information

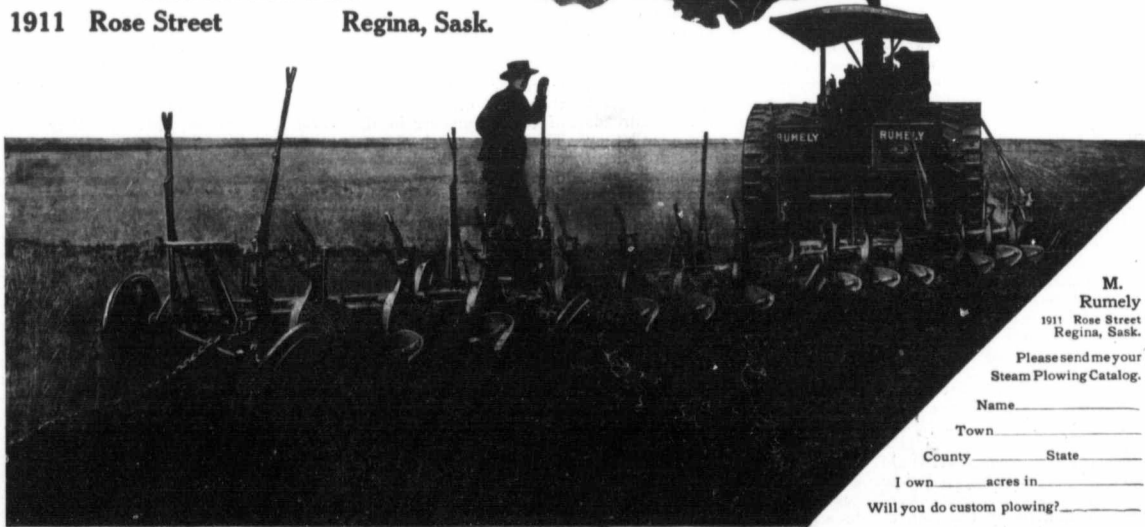
Our Farm and Tractor Expert, L. W. Ellis, located at the Home Office, will answer any and all questions pertaining to mechanical methods of tractor equipment for traction plowing. Machinery constructed with the Department of Agriculture.

M. Rumely Co.

Home Office and Works

1911 Rose Street

Regina, Sask.



M. Rumely
1911 Rose Street
Regina, Sask.

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.

of the agriculturist been looked upon in a proper manner, namely, as the grandest and noblest profession in which men and women may engage. Today we find that some of our most eminent doctors, lawyers and botanists are proud to say that they were born and raised on the farm. Trace this development back to its source, and you will find that the use of machinery is largely accountable for it. Now, if the farmer had to spend his time spading the soil and cradling the crop, and flailing the grain in the old fashioned way, he would have no time for the study of plants and the things concerning the animal kingdom. But thanks to the God of Harvest for the many inventive individuals within and without the farming profession, we have now an assortment of farming machinery that enables the agriculturist to do his work in such a manner as to leave him ample time to so enlighten himself on all subjects of the day that he may truthfully say, "I dare do all that may become a man."

By J. M. Smith.

The production of food and fibre absorbs about three-fourths of the labor of the male workers of the world. In the United States of America, during the early decades of the nineteenth century, about 80 per cent. of the male workers of the nation were employed on the farm. During the past century, however, farm implements and machines have come into use which have so increased the efficiency of labor that about 35 per cent of the workmen of that great republic can now not only do that, but furnish an enormous surplus, which is exported to other countries. Nowhere else in the history of human industry can so striking an illustration be found of the influence of invention upon the welfare of mankind. From time immemorial until the nineteenth century agriculture was carried on by hand labor. Horses or oxen were used for plowing and harrowing, but the labor of seeding, planting, cultivating and harvesting the crops was performed by the exertion of human muscle. Wheat was sown broadcast by hand, cut with a sickle, and separated from the straw and chaff by hand labor. Corn was planted by hand with a hoe, cultivated with a hoe, gathered and shelled by hand. Grass for hay was cut with a scythe, raked and handled with rakes and forks. Production was so limited by these primitive methods, that people who wished, like the pioneers of America, to enjoy an abundance of food and other simple comforts of life, were compelled, of necessity, to live on the farm, where they could be assured by their own efforts of a proper supply. The farmer was unable to produce a surplus that would feed a large urban population. Manufacturing industries were not only limited by the lack of food to sustain cities, but were handicapped by the scarcity of markets for their products, for an agricultural country which could

The Canadian Lightning Arrestor AND ELECTRIC COMPANY



The Townsley System Of Pure Copper Cable

Farmers are seeking our protection against lightning.

We want good, live agents to handle our goods.

Don't delay if you want the agency. Our salesmen are contracting every day for territory.

Write us at once for booklet of information. The secret of success is to grasp the opportunity.

GUARANTEED PROTECTION 99% PURE COPPER

OFFICES & FACTORY
199 MAIN ST.
WINNIPEG · MANITOBA
CANADA

not produce a surplus for sale was unable to support urban industries by purchasing goods from them. It is generally assumed that the railroads brought prosperity to the people by affording the pioneer farmer the means to market his produce. But the government statistics of United States throw an interesting light on this subject. Railroad construction began there in 1828, and continued at the average rate of 300 miles a year till 1846. For a few years the commerce of the country made substantial growth. But 1837-46 was a period of great depression, which the railroads were unable to relieve, and they did not stimulate the growth of wheat during this period, because a large amount was imported from Europe. The census report of 1837 showed only 4.97 bushels per head, not enough to make wheaten bread for the people. Now if the first fifteen years of railroading be compared with the first fifteen years of the reaper, a remarkable contrast is found. The reaper was first successfully placed on the market for the harvest of 1845. In 1847 the exports of wheat and flour increased to about five times the average for the preceding forty years, and railroad construction now progressed at the rate of 2,000 miles per year from 1850-1860. But a broad examination of the matter shows they have gone hand in hand. Railroads could not be profitably operated in agricultural states without the traffic produced

in them by labor-saving inventions now used, and vice versa. The farmer of a century ago without these inventions was a peasant, working with his hands to earn a living for himself and his family. Nowadays, he is a machine operator, who rides about on a spring seat, and uses labor-saving machinery to produce crops, which have made farming a commercial business and a dignified profession, in which a man can live comfortably and produce wealth, at the same time enjoying a greater amount of independence than any other class of people of equal numbers in the world. The reaper was the first step, then comes the self-binder, as the value of a crop depends upon the rapidity with which it can be harvested when ripe. This proved to be of inestimable value. We have, nowadays, in haymaking, the mowing machine, hay tedder, horse rake, loaders, and many other ingenious contrivances which reduce manual labor to a minimum. Perhaps no instrument has been welcomed in corn growing countries so much as the corn binder, which was first successfully put on the market in 1895. Then we have potato digging machines, spraying machines, manure distributors, grain drills, cultivators of many kinds, fanning mills and grain picklers, which clean and treat the seed, the good quality of which means so much to the farmer. How can we compare the modern threshing machine, capable of threshing and

cleaning 1,500-2,000 bushels of wheat in one day, to the flail, which the early settlers of the country had to be content with. The steam engine is used a great deal for threshing, and on some of the larger farms for plowing. But this century, young as it is, has witnessed great development in the gasoline engine as applied to agriculture. At all the fairs held on this continent, enormous numbers of gasoline engines, good, bad and indifferent, are to be seen, and that they are there is only explained by the fact that farmers are awakening to the enormous saving they can make in farm operations? They can be used all the year round, in one way or another, requiring neither feed nor attention when idle, thus eliminating much of the drudgery of farm work, which is responsible for so many young people seeking to enter some more attractive sphere of life. Among some people there is still a popular superstition that an engine which "explodes" every other revolution is dangerous. In connection with the gasoline engine this has been overworked until some people would rather work ten hours a day for the rest of their natural lives than have such a thing on the premises, to say nothing of putting one in a house or dairy. The fact is that, with the possible exception of a windmill, these engines are the safest of all motive powers, with no apologies to the horse. The gasoline engine is a



GOOD GOODS WIN

The "Good Goods Win" slogan of this Company is not an idle dream but the very soul of a clearly defined and ruggedly rooted business policy



Lion Rubber Endless Thresher Belts and Maple Leaf Endless Thresher Belts

Go Hand in Hand as Pre-eminently the Best—Ask the fellow that has one

The Winnipeg Rubber Company Limited
Winnipeg NOT IN ANY TRUST OR COMBINE Calgary

highly developed piece of automatic machinery, and can be made practically "fool-proof," while accidents are almost invariably due to ignorance or carelessness, for the only thing dangerous about them is the human element, over which the designer has no control. I might go on enumerating the many examples that go to show the great importance to agriculture of the above subject, but a short paper like this will not permit me to do so.

Summer Fallowing

About the time that this work should be done our farmers are usually very busy, and therefore it behoves them to get the work done as quickly as possible. The quickest and best way to do this work is with a Superior Wheel Disc Harrow and Cultivator. This tool is made in four, five, six, seven, eight and nine foot lengths, and they thoroughly turn over the ground the entire length of the machines. The reason for this is that the discs are set at a permanent angle to the line of draft and every disc cuts from its front edge to the rear edge of its neighbor. Therefore they leave no spaces between the discs that are not thoroughly stirred. Then, too, each harrow is provided with a centre-cut disc which takes out the centre. Each disc and drag bar is independent in action and provided with strong spring pressure, and more or less pressure can be had by means of the powerful levers. Depth of cut is also regulated by this means

assisted by the ground wheels. Any boy who can manage a team can operate a Superior Wheel Disc Harrow and Cultivator, and do more work in a day with one harrow and one team than two men and two teams can do with plows. Send for a Superior Wheel Disc Harrow booklet to the American Seeding-Machine Co., Incorporated, King and James St., Winnipeg, read all about it, and then tell your implement dealer to let you see one. If he cannot do it, let the makers know, and they will see that you get one. This harrow is fully warranted to do everything claimed for it.

Every Farmer an Agricultural Engineer.

Continued from page 9

for the relaying out of farms and the relocating of roads are very few. The ideas of getting the best of each other in a land trade and a horse trade are about even and are as strong as ever. About the only thing in which there has been co-operation is in the larger irrigation projects, and even then the states have found it necessary to work out a new set of laws to regulate private interests, and it has, indeed, been found a very difficult piece of law making. Co-operation in a small way with common neighborhood projects is what is so much needed. The advice and help of the engineer will bring this about.

Books.

Out of the mass of books and papers on engineering and other

allied subjects, the things that pertain to agricultural engineering should be sorted out, and books be made containing all the literature of the profession. In the Congressional Library there is only one book of the kind, which is an English book, and it is called Farm Engineering. Alongside are a great number of copyrighted books on Plant Industry and Animal Industry. Many are almost duplicates of each other except that they are by different authors. An equal number of books on agricultural engineering would look good there. Every topic treated of in this paper and many more might be enlarged into a chapter in such a book. Only the high places have been touched here. In the books yet to be written every detail of making the country over again should be worked out.

Beauty.

To make country life tolerable, to counteract the loneliness, to make the day's work seem lighter, there should be constant thought as to how best to make things more beautiful. Restore natural features of beauty, remove or cover up unsightly places, do a little grading here and there, which does not cost much, and study the scene to bring out the strong points of attraction. Look upon a rocky place as an asset and not a curse. Sometimes the roughest country has the greatest possibilities of adornment. The house should be located so as to have a pretty landscape in view. Along every country road there

should be a string of beautiful farms. Improve in such a way as to make the country beautiful as seen from the railroads. Make every farm like a great park, or like an old country estate. Beautify the whole face of the country. Make Western Canada the beauty spot of the earth.

Conclusion.

We have builded a superficial way, and hardly for an ordinary lifetime. We should now begin to plan and to build for a thousand years. In cities, they may tear down and build again in a few years, but the corrected and beautified natural features of the country will last for ever. Renewed life has been the dream of man through all ages. Let the renewed life of the farm and of the farmer be the dream and work of the agricultural engineer.

SEEDS
DROP A POST CARD for
MCKENZIE'S
1911 SEED CATALOG
A.E. MCKENZIE Co. Ltd.
BRANDON, MAN. CALGARY, ALTA.
WESTERN CANADA'S GREATEST SEED-HOUSE.

TRACTIVE EFFICIENCY

By L. W. ELLIS

Presented at the Fourth Annual Convention of the American Society of Agricultural Engineers

One of the greatest needs in one of the greatest fields in agricultural engineering is that of a standard basis for rating farm tractors. The present lack of uniformity is bewildering to purchasers, most of whom are buying their first engines. The proposal to set an A.S.A.E. standard should meet with hearty approval.

It is needless to state that tractors should be rated upon the basis of actual delivered horse power. Nor can anyone object to a standard conservative enough to protect the purchaser from disappointment, the manufacturer from the charge of misrepresentation, and the tractor from abuse through overloading.

The brake horse power ratings of a tractor are matters easily adjusted. But the brake ratings of a tractor are not sufficient. The tractor is a stationary engine plus traction gearing and a set of wheels. We cannot assume that the wide variety of traction mechanisms will prove equally efficient. We need therefore to consider the tractive efficiency of each tractor in connection with the power of its engine. Further, we cannot assume that the different types will take the same rank on tractive efficiency under varying conditions. Thus it is necessary to establish also some standard set of conditions, conditions which can be easily duplicated and which shall represent at least one set which the tractor will frequently be called upon to meet. Unquestionably, the tractive rating should be upon an even more conservative standard than the brake rating, owing to the greater difference in conditions under which horse power must be developed. However, there is a limit to the conditions which a tractor should be called upon to meet and still develop its rated power.

The difficulties in the way of establishing a standard seem large but not surmountable. The internal factors governing tractive efficiency, such as friction, weight and design of wheel, are largely settled by the maker. The varying nature of the external conditions, which this paper will discuss, constitute the strongest arguments against the establishment of a standard test of tractive efficiency and tractive horse power. It is not the intention to review the efforts to gain traction, but to discuss only those points which must be considered in adopting standards.

We have abundant data as to the stationary performance of tractors and considerable as to their efficiency as whole machines. We have almost nothing to distinguish the efficiency of the power plant on the one hand from that of the transmission on the other.

The term "tractive efficiency" may be properly taken to cover the relation of total weight or weight on drivers to tractive horse power or to drawbar pull. It might relate to the per cent. of drive wheel slippage. For the purpose of this paper, however, it will be taken to mean the percentage of brake horse power delivered at the drawbar.

High tractive efficiency is only one of the essentials of a farm tractor. There are countless efficient devices for securing traction, but none can avoid for any great length of time the supreme tests of practicability, durability and economy. Great weight on the drivers will produce traction, but wastes power in self-propulsion, and may damage the land through compressing it. Extremely high on extremely wide wheels will distribute this weight, but are either flimsy or expensive in construction, and subject the axle and frame to greater strains.

THE "FLOUR CITY" TRACTOR

WILL DO YOUR PLOWING AND GENERAL FARM WORK CHEAPER THAN HORSES OR STEAM!



As an economical factor on the farm, the "Flour City" Gasoline Tractor has come to stay. It is always ready to put on any kind of work, and is cheaper than horses or steam. It will do more plowing in a day than thirty horses.

The "Flour City" is considered the best designed, best built, strongest and most economical tractor on the market today.

It is of the four cylinder type, which admits of a lighter construction. The "Flour City" gives the maximum power with the minimum weight. It does not pack the ground so hard, and will pass over soft places where others cannot

The "Flour City" twice won the Gold Medal at Winnipeg, and the following letter is more evidence of its superiority

"We take great pleasure in reporting to you that the 40 h. p. "FLOUR CITY" engine recently sold to the Roberts Land Co. is working good. It is pulling ten 14-in. plows and has power to spare. It has been running twenty-four hours a day for the past four weeks (from twelve o'clock Sunday night to twelve o'clock Saturday night) and that without any breakdowns or mishaps of kind. They have plowed 1600 acres and the engine shows no wear except on the ball pinions."

DAHL IMP. & LUMBER CO.
White Rock B. C.

Write for catalogue explaining it fully

KINNARD-HAINES CO.

Minneapolis, Minn.

ONTARIO WIND ENGINE & PUMP CO.
Dominion Agents. TORONTO, WINNIPEG & CALGARY

Cleats, or grouters of every description aid in securing foothold without excessive weight. Cable systems, which undoubtedly lead in the conservation of power, really fall outside this discussion. Some types of caterpillar and walking wheels deserve serious attention. Here tractive efficiency is made the dominating factor, and any standards for tractive rating must secure to the makers this advantage, for which, perhaps, other good points may have been sacrificed.

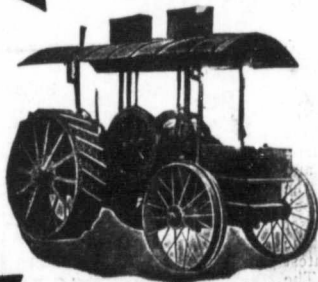
Internal friction has been reduced and the efficiency of transmission increased by various devices, but the question of practicability has eliminated many,

and the gear-driven round-wheel tractor is the most common. We want to ascertain its tractive efficiency; the latter may be either high or low and still be more than offset by other features. But the structural features are much easier to recognize. There should be some way of setting apart the tractive efficiency, also, so that it can be taken into consideration in sizing up the tractor as a whole.

The purpose of this paper is to discuss the external factors which must be considered in tractive tests. Some are so closely related that it is hard to discuss them separately and in logical order.

The Power of the Hour

The Ideal Gas Tractor



MADE IN 2 SIZES 28 H.P., 30 NOMINAL
48 H.P., 30 NOMINAL

Makes farming easy, ensures an early planted crop and an early harvest. Light in weight, yet with an abundance of power. Our wave cleat on drive wheels ensure a firm grip in any kind of ground, yet it will not pack the soil. For Plowing, Breaking, Seeding, Discing, Harrowing, Threshing, or any other farm work where power is required, the "Ideal" Tractor is all that its name implies. It is economical, efficient and reliable, and will make money for its owner every day of the year. Investigate the superior merits of the "Ideal" before you purchase that Traction Engine. A request for a catalogue is the first step.

GOOLD, SHAPLEY & MUIR CO., LIMITED, WINNIPEG

FACTORY: BRANTFORD

Nothing But Good Sound Working Capacity Won that Gold Medal.

The Gas Traction Engine would never have Won the Gold Medal in the Winnipeg Fair Plowing Contest if it could not stand up to the claims we make for it. But **The Gas Traction Engine Did Stand Up.**

It did the work. It proved its quality as an economical labor saver before the largest crowd of expert critics ever gathered together in this country. In the severest test it could be given It Made Good.

Therefore we say to you

**Buy the
Guaranteed,
Golden Rule,
Tested,
Tried and
Proved
Gas Traction
Engine**



**Your Order
must come now
if you are to get
The Gas Traction
Engine.**

The success of the Gas Traction Engine at the Winnipeg Plowing contest, and its success in agricultural work on Canadian and American farms has stirred up the farmers of the west to the advantage of owning this Engine. We are meeting an enormous demand but we still want your order.

Send it in for United States, use, Write
The Gas Traction Co., Minneapolis.
For Canadian use, Write

Gas Traction Co., Winnipeg, Man.

Internal Friction.

Aside from the details of design, one great factor which must not be overlooked is the smoothing up of all parts through hard service. After several weeks of work, bearings are polished, gears worn smooth, and the whole structure limbered up so as to work harmoniously, with a minimum of friction. In establishing a standard for rating stock engines, the manufacturers should be given credit for the added power that will come to the tractor after a period of use which he cannot profitably give it at the factory?

Standard Fuel.

The character of the fuel should have no effect on the tractive efficiency, but of course any traction test must be on a fuel which is commercially practicable and to the use of which the motor is adapted.

Speed of Tractor.

The speed of travel affects the draft per unit of load, as well as the power required to move the tractor itself over a given distance. Trautwine gives a table of draft for a large stage coach and passenger over a given road at different velocities. Averaging all the tests we find the comparative draft per ton to be as 100 at 4 miles per hour, 104.1 at 6 miles, 109.2 at 8 miles and 115.8 at ten miles. It will be impracticable and unfair to test all tractors at exactly the same speed.

Probably the percentage of error would be negligible at the low speeds ordinarily traveled. However, we have one tractor with speeds of from 1.5 to 15 miles per hour, and others of less range, but still designed for rapid hauling, and these must receive consideration.

Influence of Grade.

The effect of grade on draft is so marked on a good road that tractive efficiency on the level is greatly reduced on even a slight incline. In the stage coach experiment cited by Trautwine, the average draft on the level turnpike was 83 lbs. per ton. Theoretically it should have been 38% greater on a rise of 1.50 ft. in 100. Actually it was about 42% greater and was generally above the theoretical figure throughout the test. On a heavier footing the relative increase in draft due to grade would be less. These statements refer only to the draft of the load. It must be further remembered that the added work of moving the tractors weight up grade must be deducted from its tractive efficiency while the work it must do has been increased. By reducing the speed the load may be hauled up the grade, but the tractor will not be delivering the same percentage of brake horse power as on the level.

Road Surface.

Perhaps the most difficult matter to standardize in connection with a traction test is the charac-

ter of surface over which the load is hauled. Only an approximate standard would be practicable, since it would be hard to duplicate in different instances a given character and condition of ground surface. In his most valuable "Physics of Agriculture," Prof. King has collected data showing variations all the way from 28 to 224 pounds per gross ton of load over English roads, and from 110 to 374 lbs. per ton as between a dry gravel road in Missouri and a field rough plowed and not harrowed. It will be necessary then to adopt a standard surface which can be duplicated with reasonable accuracy, and specify a given ratio of draft to gross weight of load, in order to establish a uniform rolling resistance to the tractor itself. This rolling resistance should represent some general farm condition. Any standard surface which may be established will undoubtedly disappoint some designers for the reason already cited that no two tractors of different design perform their best under identical conditions. This factor, therefore, must be decided on the basis of the greatest good to the greatest number.

Character of Load Hauled.

The mere standard of draft per gross ton of weight is not an acceptable basis of judging of a road surface, unless we establish the character of vehicles and load. The height and width of wheels are influential factors, as proved

by the work of Mairs, Sanborn, Waters and others. The distribution of a given weight through-out several vehicles would undoubtedly cause less draft per unit of weight than the concentration of such weight on one. Even the distribution of the net load upon the vehicle has been found to affect the draft.

Brake Horse Power Developed.

The external conditions established, there still remains the question of the brake horse power developed during a tractive test. It is absurd to regard the tractive horse power in one test and the brake horse power in another as indicative of tractive efficiency. The present demand for power in plowing is so much greater than that for threshing, that to do so is simply to invite the sacrifice of brake horse power rating for the sake of establishing a false impression of high tractive efficiency.

We must have some means of determining the brake and draw-bar horse power simultaneously. The brake horse power during the tractive test might be approximated from indicator readings during both brake and tractive tests, in connection with the mechanical efficiency determined during the former.

The difficulty and questionable accuracy of such a method leads us to inquire if a crude but fairly practicable basis for determining tractive efficiency cannot be established from the comparative

Continued on page 51

Course in Gas Engineering

Conducted by D. O. BARRETT.

This is 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 III.

Compression

Having now explained the construction and operation of the indicator, we wish to take up some of its uses. The principal use of the indicator is the determination of the horse-power of an engine, either steam or gas. From the indicator card of the gas engine may be obtained, beside the indicated horse-power, the compression pressure, the point of ignition, back pressure on the piston during the exhaust or expulsion stroke, the suction produced by the piston in drawing in its charge, the mean pressure in the cylinder, the point at which the valves open, etc. All of this forms an exceedingly interesting study and leads to many conclusions. Obviously, the first use for the indicator is in the gas engine factory where the design of the engine is worked out. However, not all engines are built with the aid of the indicator as they should be. Some engines are merely copies of others, while some are constructed along merely practical lines, and, because they develop power and give apparent satisfaction, it is thought that no improvements are necessary in them. Even though an engine is a cheap engine, that is, it is so constructed that the cost of manufacture and placing it upon the market has been reduced to the point where the public is allowed to participate in the matter of first cost, yet there is no reason why the engine should not have a crank shaft and flywheels properly proportioned, why the valves and air passages should not be large enough so that undue back pressure and suction may be prevented, etc. These things only add to the initial cost of the first few engines and increase considerably the value of the product. At the same time, the engines will often develop enough more power, by a careful and systematic study of these fundamentals so that the cost of the engine per horse-power delivered will actually be lessened.

Now that the gas engine is fast supplanting other forms of power, prospective purchasers and students are looking into the principles involved. Anyone who is at all interested should understand enough of these principles so that their judgment of an engine may place it on its merits alone and not be warped or biased by the arguments of salesmen or others who only wish to place a particular kind of engine, regardless of what it can do. Intelligent thought and study of this subject will eventually succeed in raising the standard which is naturally set for any saleable article by the public.

While this gas engine course is

being run as a practical course for operators and students, it is the desire of the author that, during the course, he may deal with some subjects related to the theory, principle and design of the gas engine, and deal with them in such a practical manner that they would be adapted to daily engine work and help to smooth over the difficulties and prejudices that may arise, and assist in making gas power the coming power.

To this end the indicator was described in the previous lesson, so that we might be able to intelligently proceed with some of its uses as they will be brought up in the natural course of events. In this lesson, the subject of compression will be discussed as a preface to other principles. The use of compression is the secret of success in the modern engine, and a slight historical review will help to reveal this.

The first practical gas engine was invented by Lenoir, a Frenchman. It was a small engine of the double acting type, that is, an explosion took place on each side of the piston, whereas in the modern engine, in the smaller sizes at least, an explosion takes place on one side of the piston only. In Lenoir's engine, the suction of the piston drew in the charge of gas and air for about one-half the working stroke, when it was ignited by means of an electrical spark. On the return stroke of the piston the burned gases were driven out of the cylinder, and the process again repeated. It will be seen that the actual impulse, acting on the piston, was for only one-half the stroke, and, counting both sides of the piston, one full stroke out of two was a power stroke, whereas, in the modern engine, one out of four is a power stroke. However, the mixture of air and gas in the cylinder was exploded at atmospheric pressure, or, strictly speaking, at somewhat less than atmospheric, because the gases were drawn into the cylinder by the suction of the piston. This engine operated quite smoothly, due, of course, to the number of explosions, and was destined, it was at first believed, to supplant the steam engine. Their manufacture was taken up by several firms, but their enormous fuel consumption soon made itself evident, and eventually led to the abandonment of this type.

The principle of the modern engine was first expounded by Beau de Rochas, although he did not build an engine operating on them. Four separate and distinct operations were employed. On the first outward stroke of the piston, the charge of gas and air was drawn into the cylinder at as near atmospheric pressure as possible; on the return stroke the gas was compressed into the space behind the piston, and at the end

of the stroke was ignited, and the resulting explosion propelled the piston on the out stroke, the burned gases were then expelled on the return stroke. Otto built the first successful engine operating on this principle, and consequently it has often been called the Otto cycle. Since four operations or strokes are necessary to complete the cycle or series of operations, it is known as the four-stroke cycle, which term has been abbreviated to the common form, four-cycle, by which it is usually recognized. The four-cycle engines are the most prevalent at the present time except for marine work. Suffice it to say, however, for the purpose of this article, that the two-cycle engine also owes its success to the use of compression.

Of course, compression of the gas in the cylinder is effected by forcing the piston back into the cylinder, the power necessary for this coming from the rapidly turning flywheels. This power must be subtracted from the total power produced on the explosion stroke, although, if no explosion took place, practically as much power would be given back as that necessary to produce the compression.

However, there is a point at which the power lost by the compression of the gas tends to equalize the gain in average pressure due to the higher compression, and this fact is instrumental in limiting the maximum compression pressure for an engine operating on a given fuel. Compression of the charge in the modern engine, though, is the cause of its remarkable fuel economy as compared with the engine of Lenoir.

Of the four strokes in the cycle the most important is the compression stroke, and on it depends to a great extent the economy, and consequently, the success of the engine. There are several points to be considered in deciding on a specific compression pressure for any engine. Compressing the charge drives the combustible particles in the mixture more closely together, enabling them to be burned or exploded more rapidly and vigorously. In this connection, it might be well to define the meaning of the word "explosion," merely as the manifestation of the rapid burning or combustion of the mixture of gas and air.

In the Lenoir engine the combustion of the charge took place at atmospheric pressure, and was relatively slow, so that much of the heat developed was transmitted to the cylinder walls and the head of the piston and thereby lost. In the four-cycle compression engine, the charge being burned, and realizing its maximum pressure more rapidly, less heat is dissipated to the surround-

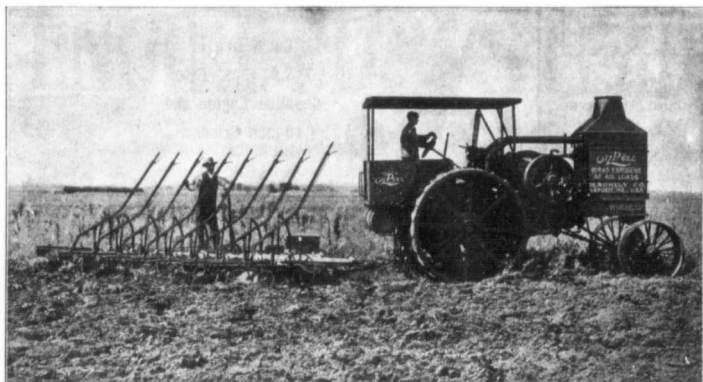
ing walls and consequently retained in the charge producing more pressure on the piston during the entire stroke. In this way, the greatest amount of power is obtained from the expansion of the gases. High compression is thus desirable for the rapid burning of the charge and for obtaining more power, although, of course, this is limited, while low compression is easier on the parts of the engine which is under the explosive stress.

The amount of power which may be developed under the proper circumstances from any particular fuel in any engine is determined by the amount of heat in the fuel and the subsequent losses occasioned through the transformation of this heat into work. Of course, no more heat is developed by the combustion of the fuel in the compression engine than in the Lenoir. The difference lies in the manner of combustion and the means taken to transform this heat into work.

When the exhaust gases are driven out of the cylinder by the return stroke of the piston, the compression space, of course, remains filled with the dead gas. On the suction stroke, then, an amount of fresh charge equal only to the piston displacement can be drawn in. Actually the cylinder is never filled at atmospheric pressure, because resistance is experienced by the incoming gases through the valve passage valves, and inertia of the gas. It is also necessary to place a minimum velocity on the gases entering the cylinder, that it may be sufficient to draw in the fuel along with the air. In gasoline and kerosene engines, the level of the liquid is usually from a quarter to half inch below the bottom of the air pipe. The velocity of the incoming charge of air, then, must be sufficient to lift the fuel this amount.

Now the question of the amount of compression is inherent with the design of the engine, while ignition, the mixture, etc., are in the hands of the operator, that is, provision is made for the ready adjustment of these. In building a new engine, the compression is usually estimated, as closely as possible, by comparison with other engines of the same size and style. The length of cylinder, cylinder head, piston, connecting rod, frame, chambers of any kind, are then made to give the amount of space behind the piston that was originally decided upon. In some cases, after the engine is built, it is found that the power produced is not what might reasonably be expected from an engine of this size. Upon investigation the compression is usually found to be at fault. To increase the compression in the easiest manner, it is usual to lengthen the piston

One Great Success Brings Forth Another



The Great Success of



Type "B"—25 Tractive, 45 Brake H.P.

which, at the Winnipeg Motor Contest, plowed with the least cost for fuel—9% cheaper than the nearest competitor. Ran on the brake at the least cost per brake horsepower per hour—4% cheaper than any other internal combustion engine in the contest. Ran smoother and with less variation in R.P.M. than any other engine, regardless of class or kind of fuel used. Proved that it was designed for heavy duty and severe service by plowing for six consecutive hours without a single stop except for the judges to put on and take off dynamometer. And also proved that the RUMELY

Predicts a Far Greater Success For the



Type "E"—30 Tractive, 60 Brake H.P.

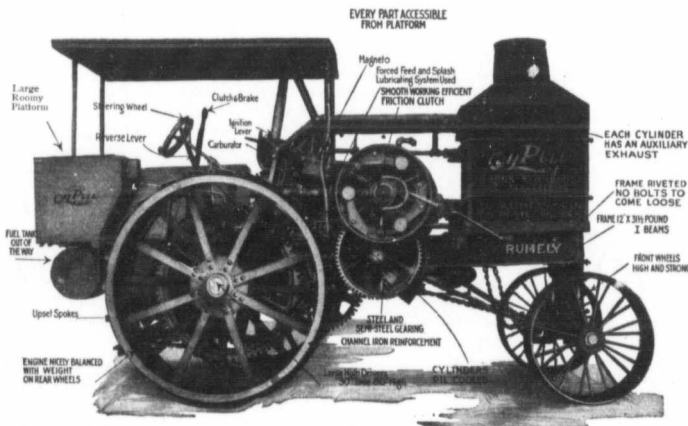
which we are now ready to announce for early spring delivery. The *Oil Pull* type "E" is a four-cycle, internal combustion engine with two cylinders of 10" diameter and 12" stroke. It is equipped with an automatic governor that regulates every explosion to suit the new need; it is oil cooled, has both splash and forced feed lubrication.

We build *Oil Pull* "E" strong and rigid. The tractor frame is built of 12"x 31 1/2" pound I-beams riveted together in one solid block. Rear wheels are 80" high, 30" face, 3/8" steel tire with 16 flat steel upset spokes. Wheels are reinforced with 4" channel iron on the outer rim and a steel band on the inner rim. All parts solidly riveted together. All gearing is large and massive, composed of steel and semi-steel. All shafts superior to United States Naval specifications.

Oil Pull "E" compared with animal power for plowing will save a dollar an acre. Turning 20 acres a day, during 1000 days' use, *Oil Pull* means \$20,000 profit to its owner.

Company in their machinery gives the farmer all that he pays for and a little bit more by delivering 5.8% more drawbar horsepower and 9.3% more brake horsepower than was claimed.

To insure delivery place your *Oil Pull* orders early. Our factories are now working night and day to supply orders already in hand



M. RUMELY CO. 1912 ROSE ST., REGINA, SASK. HOME OFFICE AND WORKS LA PORTE, IND., U. S. A.

in the rear, or else provide a longer connecting rod. While the amount of compression space can be calculated, yet so many variable factors enter into consideration that the cut-and-dry method is the only final solution. For this reason, many engines are sent out with faulty compression simply because stock parts of other engines were used, and to change other parts of the engine would entail considerable expense.

For this reason, the operator, at least, the intelligent operator, of an engine should know what the compression of his engine is when he gets it, and should also know what it really ought to be for the fuel which he is using. On many engines, the compression can be quite readily changed, and higher compression will often re-

sult in a considerable saving in the amount of fuel used.

In the next lessons we shall take up the subject of the specific amount of compression, the measurement of the compression, both by the gauge and the indicator method, factors affecting compression, etc. D. O. Barrett.

Automobile School at Portage

A feature of interest and importance to owners and operators of gasoline engines and automobiles is announced from Portage la Prairie in the establishment for the handling, care and repairing of all machinery of that class. Alex McLarty, one of the most successful gasoline experts in the West, will be in charge. Mr. McLarty has been with the Fairbanks Morse Co. and Hart-Parr Co. for several years, during

which time he has had supervision of all the special repair work in connection with the many engines that these firms have placed in the West.

This school will be established in Brown's Stock Exchange Block, Portage la Prairie, and the first class opens January 8, 1911. A course varies from one week up, and a moderate fee will be charged according to length of course desired. The establishment of this school has resulted because of the many requests and inquiries from all parts of the West, asking if such training was not available for farmers, their sons and others, who had to do with the operation of either gas engines or motor cars.

Practical exhibitions and demonstrations will comprise a large portion of the instruction,

and while Mr. McLarty will be in charge there will also be other experts thoroughly conversant with all necessary details. This school will afford an excellent opportunity for those who desire to utilize the dull months of the winter by securing a valuable training at a minimum cost, which training will repay many times over those whose business has to do with gasoline engines.

Mr. McLarty is well known throughout the West as a first class expert, and the arrangements made include a most suitable place for all the work of demonstration. Those from the distant points will be enabled to secure excellent accommodation in Portage la Prairie at a reasonable price.

For information, address Alex McLarty, Gasoline Engine Dept.

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.

Well Pleased With His Engine.

In reply to yours re gasoline engine experience, I beg to say that my experience is very limited as it only covers a period of about one year.

My neighbor, Mr. Wheaton, and I bought a twenty horse power International Harvester gasoline tractor and a 28 x 42 American-Abell Cock O' the North separator last fall, but we did not have very good success with it threshing, for it was delayed coming down and then the so-called expert got mixed up with it so badly that it took him a week to bring it thirty miles, and we still had eight or ten miles to go when he turned it over to us and said we knew as much about it as he did. This was a pretty kettle of fish to have handed out to us, but we did our best and we took it the rest of the way home ourselves.

Then when we got the separator belted up and in good shape it snowed, and Mr. Wheaton and myself had our crops in the shock yet. So we turned to and threshed a few stacks until the snow went off the ground. Then our troubles commenced. We would get the separator buzzing and running fine, when everything would stop all at once. We found that we had no speed governors on the engine, so off we had to go forty miles to town to try to get them, only to find that they would have to send East for them. Then we broke the reverse gear and we would have to tighten the belt by pulling the engine with horses, and so we went on until snow came on for the winter, with only half of our crop threshed and the other half in the stook.

In the spring we threshed the rest, but the birds had played sad havoc with it. In fact, they had cleaned out more than half of the wheat. The oats they did not bother with.

Having a little gasoline left Wheaton turned to and disced with the engine, pulling four 16 x 16 discs and a 24-foot harrow, but this seemed no load for the engine.

Then we went to Calgary to see the agent from whom we bought the engine and talked matters over with him. He told us to get everything that was needed and give it a good trial and if it was not satisfactory they would trade us something else. But the summer was so dry we could do nothing until August when we got a good deal of rain. Then we tried breaking.

We started with one gang plow and we had some little trouble with that, which, however, did not last long and we then put on a sulky, then two

gangs of four furrows. We gave it a trial on rough land. Some of the places were very steep and we have tough sod in this part of the country. We are now going to get a four or five bottom engine gang and we think they will pull much easier than the ordinary gangs.

Our gasoline cost us 30 $\frac{1}{2}$ c. per gallon and when using the four plows, used on the average of three gallons per acre. It can track at a trifle over two miles per hour with four plows, and I think that is quite fast enough if you want long life out of your engine.

Our experience has taught us that if we want to start easily we set the speed lever in the first notch on ratchet and begin on dead centre. When more power is wanted the lever is put ahead.

We also find that some barrels of gasoline are more dirty than others and it is well to see that the spark plug is kept pretty clean from soot and that the ignition points are bright and have a good spread.

Though we have had lots of trouble, we are very well pleased with the engine and we would hate to be without it now. We did not thresh this fall as the crops in this locality were almost a failure, so we turned to breaking. I might say that the separator we have is a dandy and does such good clean work.

I might say in conclusion that we bought this outfit second-hand from the American-Abell Company, and although we had hard luck and lost most of our last year's crop, the company has treated us like gentlemen and the agent at Calgary has done all one could ask to help us over the stile.

Yours truly,
C. W. P. Chapman,
Hearnleigh, Alta.

Pull Three 14-Inch Plows.

We have a 20-horse power International gasoline engine. Before getting this engine we had very little experience with the gasoline engine. Our first work was that of seeding. We hauled two four-section harrows and one twenty-two double disc drill. The engine handled this with ease.

In breaking we could only haul three fourteen inch plows. We backset with three stubble plows. We broke two inches deep, and we lifted about two more in back-setting.

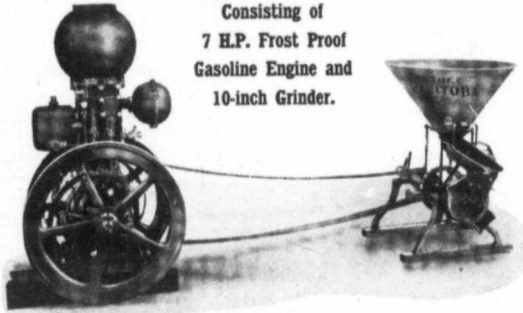
We are plowing stubble now with four plows, part of which is backsetting, as the crop was grown on land that was broken and disced. On old stubble we haul five plows. Our plow is a

Continued on page 36

A

Manitoba GRINDING OUTFIT

Consisting of
7 H.P. Frost Proof
Gasoline Engine and
10-inch Grinder.



Will earn lots of money for you this winter

Dear Sirs: Ebor, Man., Jan. 17, 1910
The Manitoba Gasoline Engine I purchased from you a year and a half ago, is giving me good satisfaction: It runs smooth, and is easy to operate. My wife can operate it as well as any expert. I can recommend it to any farmer who wants a good all around power. Yours truly,
B. W. SHARRATT.

We Manufacture GASOLINE ENGINES in all sizes, from 2 to 25 H.P., VERTICAL and HORIZONTAL, STATIONARY and PORTABLE, also POWER and PUMPING WINDMILLS, STEEL SAW FRAMES, PUMPS, ETC.

Write for catalog "C," or see our local agent

THE MANITOBA WINDMILL & PUMP CO. LTD.
BOX 301, BRANDON, MAN.

WESTERN CANADA'S FIRST ANNUAL AUTOMOBILE SHOW

Under the auspices of the Winnipeg Motor Trades Association

In The Cockshutt Plow Building
BONSPEIL WEEK, FEBRUARY 13-18

A full line of the 1911 Automobiles and a fine display of Accessories.
Band Concerts each evening.

**A. C. EMMETT, Manager, Free Press Building
Winnipeg, Man. Phone Main 6648**

SCHOOL OF INSTRUCTION IN GAS ENGINES AND AUTOMOBILES

BROWN'S STOCK EXCHANGE BLOCK, Portage la Prairie

CLASS OPENS JAN., 8, 1911

MODERATE FEES

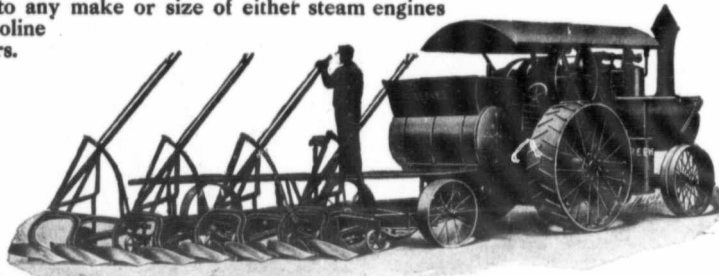
COURSES LAST FROM ONE WEEK UP

Address **ALEX. McLARTY**

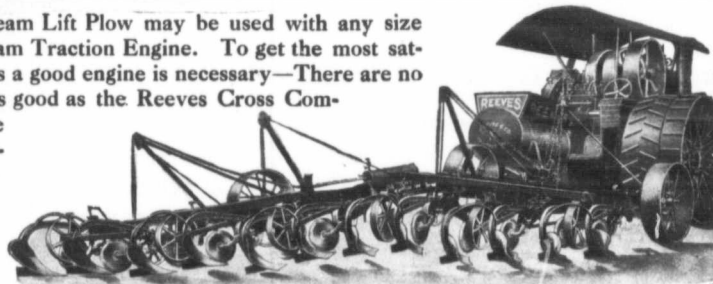
**GAS ENGINE DEPARTMENT or AUTOMOBILE DEPARTMENT
Drawer 433, PORTAGE LA PRAIRIE**

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. Write for special catalog which tells all about it.

REEVES & COMPANY

· MANUFACTURERS ·

COLUMBUS · INDIANA · U · S · A

Chicago
1892-1910

CANADIAN BRANCH: REGINA, SASKATCHEWAN

Continued from page 34

Parlin and Orendorff Mogul, five bottom engine gang.

We find that we can do about the work of 12 horses in the field. If we try to do more we have trouble. There is also a great difference in the gasoline. I have always bought the best, and find that the best gives far more strength than the cheap. We use about 20 gallons of good oil per day, plowing ten acres, and with poor oil we have used 40 gallons, doing the same amount of work in the same time.

We had considerable trouble owing to our inexperience, but much prefer our engine to twelve horses for plowing and seeding.

If there is any question that I have not touched on and that you would like me to answer, I will be only too glad to give you an answer to the best of my ability.

Thanking you in advance for your handbook on Gas and Oil Engines, I remain

Yours respectfully,
Thomas A. Foster, Hanlan, Man.

Starting, the Problem.

In answer to your letter, I might state that I use a 7 h.p. Stickney engine. I use this engine chiefly for well drilling with a 6-inch Monarch rock drill, built for a depth of 500 feet. Our deepest well so far has been 300 feet and the engine handles the outfit with ease.

We have also done some crushing with a ten-inch plate crusher. Of course there is not much use talking about the wood sawing that we have done, as it is a great snap for the engine. The biggest trouble is getting the wood fast enough.

As to the consumption of fuel to run ten hours. At drilling it takes from 4 to 5 gallons of oil, according to the depth we are working at. This summer our oil cost 27c. per gallon.

I have no photo of the engine itself, either working or idle. It is enclosed in a caboose so could not get a good picture. As to the engine itself, the starting of a gas engine seems to be the biggest problem for most operators to overcome. As for myself I have very little trouble along this line. The main thing is to be sure your igniter is clean and makes the necessary connection, and if you run with a battery, be sure it is strong enough to give the spark to ignite the charge in the cylinder. Also keep the engine oiled well at all points and troubles will be few.

Regarding the use of an engine in winter. It seems to me that it is absolutely necessary to have an engine house warm to get an easy start. I don't mean that the place has to be kept warm all the time. I always go to the engine about half an hour before time to start and put on a little fire in one of the steel air tight stoves, having it as near the mixer as possible. In half an hour's time the mixer on engine will have all frost taken out of it and will be nice and warm and the engine will start all right.

I don't want you to run away with the idea that I have had no troubles. For I knew absolutely nothing about a gasoline engine when I bought my own, so you can easily understand that I had the usual starting troubles. I remember once that I could not get it to go and went to another operator to see if he could get it to go. He came to the rescue, went into the engine house, looked over the engine, asked a few questions as to what I had done and not done, pointed to the timing lever, asked if I had turned that over, and then I knew the trouble as soon as he mentioned it. This was easily remedied.

Then last winter the caboose caught fire, and it was all burned. Of course I looked for trouble; in fact never expected that the engine would be of any use again. I went to work to find out just what damage was done and found our boxings all melted out, etc., but in a week I had it rebabbitted, new springs in and a coat of paint and put it into a new caboose and started it to work again and to-day it is as good as ever.

I had always run with an auto sparker until it was rendered useless by the fire, after which I used a battery for a while, but I found the battery not in it with the sparker, so I got a new Wizard Sparker as soon as possible.

Yours truly,
W. J. Beard,
Birtle, Man.

A Dandy for Wood Sawing.

I have a Monitor 4-horse power hopper cooled gasoline engine, which I find very handy. I can start up in winter no matter how cold it is by using a pail of hot water, which warms up the engine.

I used my engine to saw wood, grind grain and pump water. I cut about 300 loads of poles last winter, besides some cord wood. We cut from 16 to 22 loads per day into 18-inch wood, using about 3 1/2 gallons of gasoline per day, which cost me 30c. per gallon.

I found that the rig would cut wood just as fast as four or five men could handle it, and would run all the time, even when it was 30 below zero.

Grinding grain I can grind from 25 to 30 bushels per hour of barley and from 15 to 20 of oats. I have a six-inch grinder and the oats will not run through any faster.

I have lots of power to run an 8-inch plate in oats. I use about the same quantity of gasoline to grind as cutting wood.

Hoping this will be of some use to you, I remain

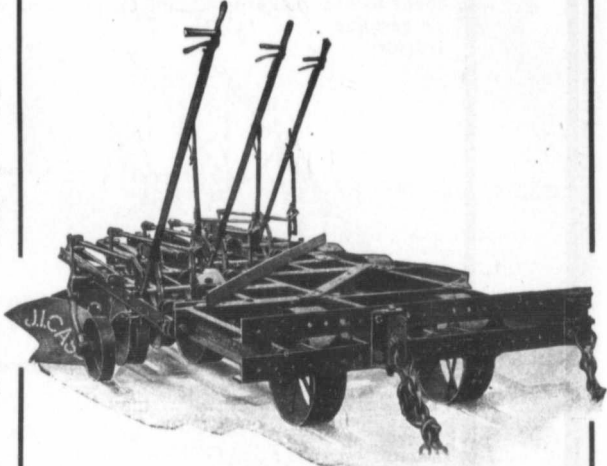
Yours truly,
H. T. Porter,
Elm Creek, Man.

Gas Engine Has No Equal.

My experience is limited to a 7 h. p. Stickney portable gasoline engine. It gives entire satisfaction. This engine is used for well drilling.

J. I. CASE ENGINE GANGS

Why They Are Endorsed By Farmers Everywhere



Made with 4, 6, 8, 10, 12 or 14 Bottoms of 14 inch cut each, either Breaker or Stubble shape.

1st. The name **J. I. CASE** insures their reliability. You know and your father knows that this name stands for all that is first and foremost in good Plows, from Hand Plows down to this powerful Engine Plow.

2nd. They are **economical in operation.** Economy and capacity for work are the first essentials in a good Engine Plow, and you cannot afford to have any but the best. There are at least five convincing answers to the question, "Why are **J. I. CASE** Engine Gangs economical in operation?" all contained in our new literature. Write for it.

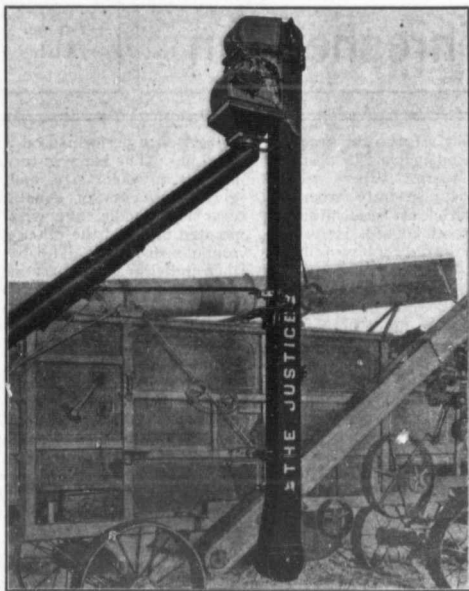
3rd. They do **excellent work**—the best that can be done. The reason—a number of improvements found only on the **J. I. CASE.**

Write today for our new descriptive circular—just off the press. Address

DEPT. C T.

J. I. CASE PLOW WORKS RACINE, WIS.

Stocks carried at all Trade Centers



When placing your order for that 1911 Threshing Outfit be sure and see that it is equipped with a Whitesford Justice Measure. Insist on it and you can have it.

ADDRESS THE

Viriden Manufacturing Company Limited BOX 678 **Viriden, Man.**

Every Bushel Accounted For

BY THE

WHITEFORD Justice Measure

A machine that cannot lie, cheat or steal. A servant whose fidelity is never in doubt. A detective that no species of dishonesty can tamper with. An accountant whose accuracy can never be questioned, whose statements never mislead. The only Government Standard for this purpose having the sanction of the Department, made and sold by us at a price within the reach of every farmer.

Would you forget all your Engine Worries? Then get a "McCullough" Oil Pump

An absolutely perfect appliance—a god-send to every engineer and thresherman. It cannot get out of order and is so simple in every part that a novice can handle it easily and without risk by following the simple instructions accompanying it. Agents wanted in every town.

My experience has thoroughly convinced me that for convenience and economy in labor, fuel and time, the gasoline engine has no equal. I have never operated a gasoline tractor, or traction engine, but my close observation of my neighbors who own them, bears out my conviction that it is the engine for all-round farm work.

Yours truly,
J. Y. Clark,
Carlstadt, Alta.

Gas Better Than Steam.

Your favor to hand asking for information and my experience using my gasoline engine. I am not an expert at writing articles of this kind, so hope you may excuse me if this is not worded just right.

I own an International 20-horse power tractor and must say that it has given me satisfaction. I was not an expert as I had never run a gasoline engine excepting an International auto buggy. However, I got along fairly well. In 1909 I ran a Nichols Shepard 32 x 52 separator. We made from \$6.00 to \$9.00 per day at the wheat and from \$18.00 to \$21.00 in oats and barley.

This year the crop is light and consequently poor threshing. With 6 teams we cleared about 150 acres per day, making from five to seven hundred bushels per day.

The separator is too large for the engine, or we would not use as much gasoline as we do. Our gasoline costs us about \$6.00 per day. We figured up the difference in the cost between our 25 h. p. steamer and the gas engine and the results were in favor of the gasoline.

I tried plowing with a 6-furrow disc plow, but did not give it a fair trial, so cannot give my figures for that, but will do so later after I have given it a more thorough trial. I am satisfied with what I have done so far, however.

I find that the gasoline pulls better than our 25 h. p. steamer.

I have no photos yet, and am sorry as I asked the photographer to come several times.

Hoping this is satisfactory for the present, I remain,

Yours respectfully,
R. J. King,
Whitewater, Man.

Experience Necessary.

In reply to yours will say that last fall we bought a 30 h. p. Flour City gas tractor. We have used it for plowing, breaking and threshing.

In the beginning we had no man who knew anything about operating an engine, and of course we had an abundance of trouble with it. So this summer our engineer (one of the owners)

took the transmission gear and went to the shops in Minneapolis and spent two weeks carefully studying the making and adjusting of the engine.

We had it in A1 shape when we started threshing this fall, and knew how to operate it. Of course the new gear fit close, and would hit some the first few days, but after it got so that it was running quite well. All at once, however, the crank shaft broke. That cost us more than we had made clear yet this fall, and we lost two weeks of the best threshing time and in the meantime three steam outfits stepped into the jobs that we had and cleaned up all of them excepting two small jobs outside of our own grain (about 500 acres). We are putting the engine together now and hope to start again soon.

The engine has plenty of power and gives complete satisfaction, but in the past, owing to our inexperience, something or other has gone wrong so often that the work it has done has cost us more than what it would to have it hired done. We think, however, that our operator understands the engine now, better than most gas traction operators at the present time.

We have an American-Abell 28 x 48 separator. We have never had a moment's bother with it. Our engine is economical on fuel, as a barrel of gasoline will run it two full days

either breaking or threshing, and for going over soft sloughs, it is a regular crane, will run on the top of wet sod where the separator will mire to the hubs and have to be pryed out.

In summing up the whole matter, will say that there may be gas tractors that can be run successfully by inexperienced men, but don't count on it. If I were buying another gas tractor to-day I am sure it would be not smaller than a 30 or 40-horse power, as it costs just as much to operate a small one at small work as a large one at large work. Be sure also never to overload your engine, because with a light load the strain is light with less danger of breakages or heating. Never load it to its full capacity if you want to be sure that it will remain in good running order and keep at the work.

I think no one should buy a gas traction engine with the full confidence that it will give no trouble unless he is an expert. However, I am sure that the internal combustion traction engine is the coming farm power, and that in a few years they will be so perfect that they will be perfectly dependable, and when that time comes they will be much cheaper than horses for all heavy farm work.

Yours truly,
D. G. Collins,
Rouleau, Sask.

Conducted by
Professor
P. S. Rose

Practical Talks to Threshermen

Talk No.
XLI.

It is stated in nearly every manufacturers' catalogue and quite generally accepted that, to be successful, a thresher must separate most of the grain from the straw at the cylinder. This is accomplished in a variety of ways which will be shown in our next lesson by illustrations suitable for the purpose. It was stated in a former lesson that the large cylinder was brought out originally for this purpose and there is no doubt that it has been successful, especially in

The size and shape of the teeth are important considerations. With the advent of large cylinders and large separators, designed to do heavy work, it was found advisable to make stronger, heavier teeth. These teeth act as cantilever beams in doing their work and according to the theory that beams should be wider at the shank than at the points, but as a matter of fact the contrary construction prevails. The reason for this is two-fold; first, the wear due to abrasion comes mostly

or slipping and rub the grain out of the head in passing a similar concave tooth. Where seed is difficult to separate from the chaff, like clover seed, a similar form of tooth is used. Here, then, is where the old rubbing principle which I mentioned in my first lesson on separators finds its present day application.

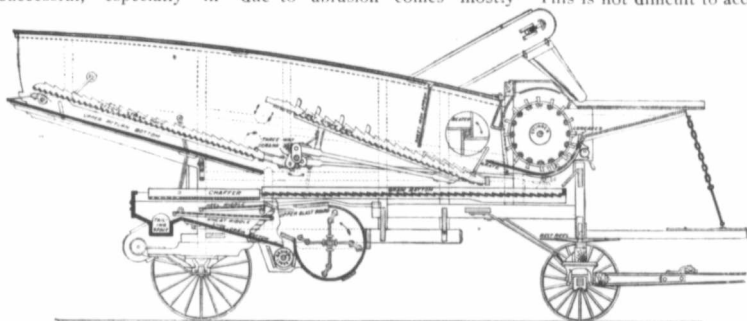
In some machines the cylinder teeth differ in form from the concave teeth, but the modern tendency is to make them the same. This is not difficult to accomplish

ment I once performed on a hard steel bar. The bar was turned in a lathe to exact size, and then given two cuts of equal depth near the middle, one with a V pointed tool and the other with a round nosed tool. The bar was then pulled apart in a testing machine and broke at the V notch. Several repetitions of the experiment always brought the same result.

The spacing of the teeth and the number used in the concaves have a marked effect upon the quality of threshing done. If the teeth are not spaced right, that is, if the cylinder teeth do not divide the spaces between the concave teeth about equally, grain will be cracked on one side and some whole heads are liable to pass through on the other. If too many rows of teeth are used in the concaves, the straw will be cut up and there will be a heavy burden of chaff on the sieves, which will make the work of separation and cleaning difficult. The ideal way to thresh is to merely beat the grain out of the heads without breaking up the straw at all. This is, of course, impractical in rapid mechanical threshing, but any breaking of the straw more than is absolutely necessary not only makes difficult separation but consumes power and in that sense becomes expensive.

The exact number of rows of concave teeth which should be used can not be stated off hand. In very dry wheat four rows are plenty and sometimes only two rows are found sufficient. Where four rows are used it is customary to place a blank in front, then a double row of concave teeth, another blank, and finally another

Continued on page 80



The above represents a sectional view of the Gaar-Scott Separator. This machine is made with two sizes of cylinders, 12 bar and 16 bar respectively. The twelve bar cylinder has a speed of 1200 revolutions per minute and the sixteen bar cylinder has a speed of 900 revolutions per minute. One of the features of this particular separator is what is known as the three way crank separator. This consists of two sets of racks so arranged that the straw is agitated upward during the entire course except when it drops from the first to the second rack, a fall of about fifteen inches. The upward throw of the racks, it is claimed, turns the straw upward and backward and its impact with the succeeding upward stroke agitates the straw thoroughly. In addition to the opening grate concaves there is also an intermediate open concave between the front and rear concave. This machine is also equipped with iron sides on the cylinders.

combination with a suitable arrangement of concaves and grates. At any rate its introduction marked the beginning of a careful study of the front end of the machine, which has resulted in the present rapid and altogether successful threshers. One of its manifest advantages, often pointed out, is the large driving pulley which provides for a large area of contact for the drive belt, thus considerably reducing the tendency for belt slippage.

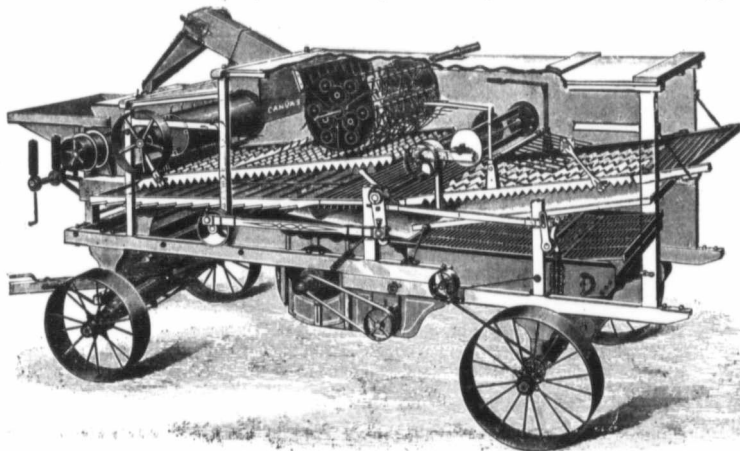
So far as is concerned the power necessary for operating either the large or small cylinder, it is not likely there is very much difference. Under certain momentary conditions one cylinder may run harder than the other, as for example in starting, the inertia of the large cylinder, due to its great weight, absorbs considerable power for a moment. This, however, is not lost but is returned as useful work when the teeth strike a wet bundle and the speed slightly slackens.

Cylinder Teeth: The teeth used in the cylinder are made in a drop press from bars of a tough hard steel which contains carbon enough to take a mild temper, but not so much as to cause brittleness. A brittle tooth would not only be useless but dangerous. The material of which teeth are made must be such as to meet the exacting requirements of very hard usage and this is found in what is known as a mild tool steel or rather hard machinery steel.

near the tips of the teeth, and second, the teeth should have some surface in order to rub the grain out of the straw at the time it is passing the corresponding teeth in the concaves. The necessity for this rubbing effect is clearly shown in the case of grain that is difficult to rub out of the heads, like Turkey Red wheat or Durum. The teeth generally recommended for these wheats are corrugated. These corrugations hold the head from rolling

and makes less trouble and confusion in the field to have them interchangeable.

Where the flattened upper portion of the tooth meets the shank it will be noticed there is a large fillet or easy curve joining the two parts. This is a necessary feature of design to obtain the required strength. If a square corner or small fillet were provided the tooth would be weak at that point. This principle is nicely illustrated by a little experi-



The above represents the interior of the Great West Separator, manufactured by Sawyer-Massey Co. This machine is provided with a large heavy double barred cylinder set in broad boxes. One of the features claimed for this machine is what is known as the IXL Picker. This picker is so arranged as to thoroughly shake the straw as it passes over the riddles. Large grate surfaces are also provided for this machine. The IXL Picker consists of a rotary device equipped with upwards of fifty teeth some eight inches in length which revolve in such a manner as enables them to deal with the straw at entirely different angles. Its object is to materially increase the speed of travel of the straw, thereby thinning it out.

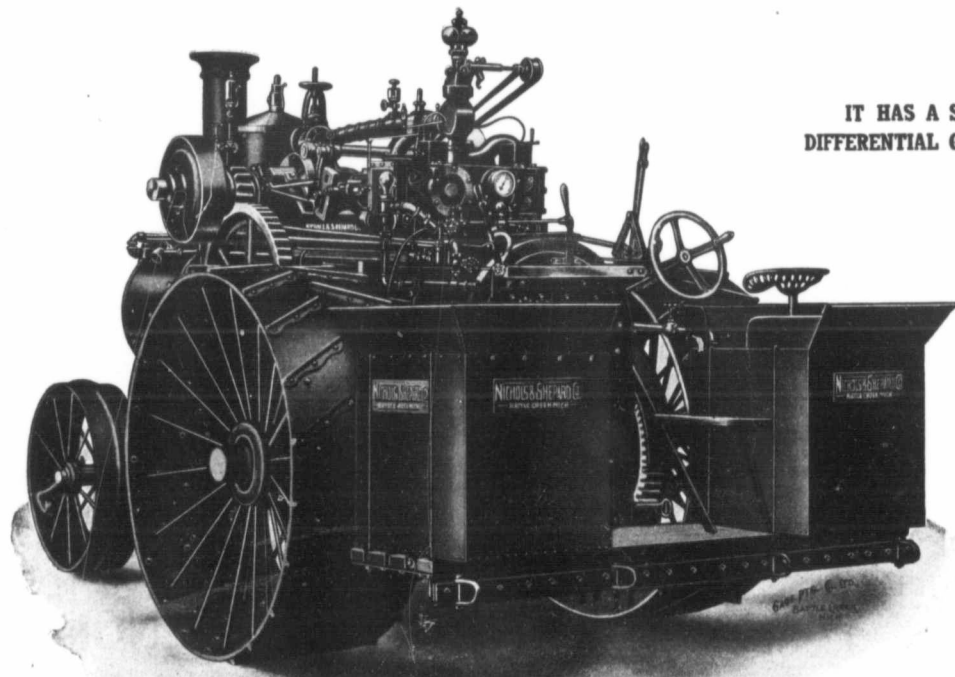
You Want an Engine You Want It to Plow With

INVESTIGATE THE

Nichols-Shepard Double Cylinder Plow Engine

*Built on a Boiler made out
of Steel Half Inch Thick*

*Compare It With the Thin
Sheet Boilers Offered You*



IT HAS A SPUR
DIFFERENTIAL GEAR

Nichols-Shepard Big Double Cylinder Plow Engine—25 H.P., 30 H.P. and 35 H.P.

Compare it with the old style bevel differential with its waste of power in side pressure and trouble from break-downs. It has a Steel Frame Platform that cannot break or sag, and which will carry all the coal and water you can load upon it. It has a Great Big Crank Shaft that cannot break or bend, with Great Big Bearings which constantly run in oil. It has Great Big Brackets that never do and cannot pull loose. Its **Big Countershaft** cannot spring or get out of place.

Link Reverse, double hung, with every bearing bushed so that it is easily and cheaply kept in repair. **Rocker Grates** and without extra charge. Large strong drive wheels which stand up under all conditions. Look at the Big Axle Bearings. A full line of Double and Single Cylinder Engines, Threshers, Stackers, Self Feeders, Weighers, etc. Write for catalogue if interested.

NICHOLS & SHEPARD COMPANY, Battle Creek, Mich., U.S.A.

Branches with stocks of Machinery and Repairs: CALGARY, ALTA., CANADA, WINNIPEG, MAN., CANADA, REGINA, SASK., CANADA

The Thresherman's Question Drawer

Answers to Correspondents

L. B. Q. We have a Crosby steam gauge on our engine. When we pulled in and cleaned out, the pointer stood at 0, but since then the pointer has traveled 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 a 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 adjusted and if there is much out of place about it the best plan would be to send it to the gauge factory where they will make it as good as new for a very small sum of money.

L. Y. Q. The sheet around the safety plug in my engine is getting very thin. About one-half inch from safety plug it is full thickness. Safety plug is three-fourths inch in diameter. Crown sheet is good. How can this be fixed best?

A. Get a new safety plug made for 1 1/2 inch tap (which will be about 1 3/4 inch. on outside of threads), and cut the hole larger, which will take out the thin part of the sheet.

L. W. Q. I have Kunkel Pop valve on 16 h. p. boiler set to pop at 135 lbs. When the pressure gets to 120 lbs. it begins to leak steam, and continues to until it reaches 135 lbs. Then it will pop, till the pressure is reduced 15 lbs. and close all right and at once begin to fizz again. I would like to carry 130 lbs. without any loss. How can I remedy this? Engine has been in use for two years, valve worked that way from first start.

A. The valve may be of an inferior make. Some valves have a loose lip on the seat which can be adjusted. To make it pop quicker and not blow down so much the lip should be raised. If there is no such arrangement in your valve you likely cannot do anything for it. A new valve may be the only thing that will help you.

R. R. Q. There has been much dispute around here among

threshermen as to whether a machine runs easier or harder when the engine is set higher or lower than the machine. My theory is that there is no difference; but most of the threshermen around here vehemently declare that a machine runs much harder when the engine is set lower than the machine, both being levelled, of course. Would be pleased if you would answer in regard to this.

A. There will be very little difference either way. When the engine is set higher than the machine the thrust of the belt takes some weight off one end of the cylinder bearing and when set lower or level it puts additional pressure on the bearing. To make the case plainer, suppose the engine to be directly over the machine, this would be quite effective in relieving the friction of the box caused by the weight of the cylinder; and if the engine were directly under the machine, this would have the same effect as if it pulled in a horizontal position. So far as the machine is affected, having the engine higher is a help, and having it lower makes little difference from a horizontal pull, except that the lower the engine is the more of the weight of the belt is carried on the cylinder shaft. It will be easily seen that when the belt is horizontal, half the weight of the belt is carried by the machine, and when it is vertical the whole weight of the belt hangs on the machine. However, the case will average up for the engine and the machine are always affected in an opposite way when one is higher or lower than the other.

H. B. Q. How would you test an engine with cold water?

2. Will an injector work in anything attached to the steam pipe?

A. If you have a crosshead pump on the engine you can fill the boiler to the top and then pump the pressure up by turning the flywheel by hand. A force pump, of course, is the best. It is customary to pump the water up to twice the working pressure.

2. An injector should never be connected to a pipe in which the steam is used for another purpose, neither should steam be taken out of an injector pipe for any other purpose, as the full pressure is required to make it work well.

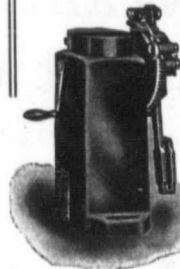
A. R. B. Q. What is the best way to repack the steam chest cover?

2. Is there any law against running an engine without steam gauge or safety valve?

3. What is the best way to regrind a check valve?

4. How can I regrind a globe valve that has a loose disc?

YOU HAD LUBRICATOR TROUBLES LAST WINTER Then You Didn't Have a MADISON-KIPP



The present Madison-Kipp construction is the result of years of actual experience in oil pump manufacture. The plugs are all drop forgings, forged from open hearth steel and hardened in the most modern hardening ovens. The plungers are a special grade of steel, case hardened as hard as the hardest glass and after hardening are ground as smooth as a mirror.

Our style B force feed lubricator is especially recommended for use in temperatures where the oil will not remain in a liquid state.

OVER 50,000 PUMPS IN ACTUAL USE

Our shop is devoted exclusively to the manufacture of oil pumps and force feed lubricators. All our engines 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.

PARSONS HAWKEYE MANUFACTURING CO.
Sole Agents for Canada WINNIPEG, Man.

Manufactured by MADISON-KIPP LUBRICATOR CO., Madison, Wis.

Sawyer Drive Belt

Is Not
The
Same

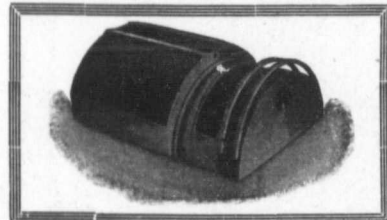


As Any
Other
Belt

It lasts longer. The Lap NEVER comes apart. It never gets Stiff in Cold Weather. Dont cost a bit more.

Write for Book "L"

SAWYER BELTING CO.
CLEVELAND, OHIO.



DON'T BLAME

THE ENGINEER

If he doesn't keep up steam, or allows the valve gear to rattle. No doubt he's doing the best he can. Your valve drags so heavy across the ports that he can't keep steam enough in the boiler to pull the load and pull the valve with 24 tons on its back at the same time.

Better send us a postal card asking us to mail you our catalog which tells you how to

**Increase the Power of your Engine from
18 to 30 per cent., besides saving
the wear on Valve Gear**

AGENTS WANTED

GENERAL AGENCIES

JOHN M. BRANT CO., Bushnell, Ill.
KENNEY MACHINERY COMPANY, Indianapolis, Ind.
MOTT IMPLEMENT CO., Columbus, Ohio.
FIDELITY THRESHER CO., Mason City, Iowa.
SACHEB-BUNN & CO., Cherokee, Iowa.
ELLSWORTH A. BULLOCK, Norfolk, Neb.
HAUG BROS. & TELLERBOS CO., Winnipeg, Manitoba.
GEO. WHITE & SONS COMPANY, London, Ontario, Manufacturers in Canada.

ADDRESS

Gould Balance Valve Company
Kellogg, Iowa, U.S.A.

A. Any kind of packing will do for packing a steam chest cover. The thinner the better as this packing is not so apt to blow out. A sheet of any kind of heavy paper is a good substitute for regular packing in case of emergency.

2. Some cities require two safety valves on a boiler. While there may be some places where there is no specific law on this point, yet there would be a law to punish any one who would destroy life and property, caused by the explosion without these appliances of safety.

3. Fine emery or sand and oil is good to cut the metal and a bit brace is a good thing to turn the valve. In some cases the valve has a slot in the top, so that it can be turned with a screwdriver. In other cases the valve can be fastened in a piece of wood and the wood turned by the brace. If there is no room to turn a brace the stick or screwdriver may be turned with the hand. This is a little more tiresome, as the power can not be applied as with a brace.

4. Take the disc off and put it on a stick of wood to grind it, or fasten it on the stem by placing a piece of hard board between the disc and the end of the stem and then turn the valve by the stem to grind it.

P. B. Q. Can a boiler blown off at night and refilled, injure the flues after working hard all day? What is the best method of keeping a boiler clean during threshing season?

A. As a general rule a boiler should be cleaned out once a week, but in some sections once a day would not be too often. The boiler can be blown out at a low pressure, say 20 to 40 lbs. The hand hole plates should be taken off and a scraper used wherever it is possible. It should also be washed out with water. If mud or sediment is allowed to collect in the boiler the sheets are apt to be burned out, as the water cannot get to the sheets.

N. T. Q. I have a 10 h. p. engine but very little worn. Flues $2\frac{1}{2}$ inches by about 52 or 53 inches. Shell 27 inches I think on inside. I would like to know how much increase of power or capacity I would get by lengthening boiler two or three feet, and moving the flue sheet out that distance. I see you calculate horse power by area of heating surface, but I would think the additional surface being so far away from the fire would not increase capacity in proportion. I think cylinder is $7\frac{1}{4}$ x 11. Would it be practicable to extend supply steam pipe down into and across fire chamber to act as superheater, or is there a device of that kind made for traction engines?

A. The grate surface in a boiler should be in proportion to the heating surface. If the waste gases in the stack are not much above the temperature of the boiler, when the boiler is used at its average rate of power, the tubes are long enough and to

make them longer would be a detriment, but if the waste gases are much hotter than the temperature of the boiler, the lengthening of the tubes would be a help. Some boilers are so small that the waste gases make the stack red hot. This can best be noticed at night. You do not give the number of tubes in boiler and size of fire box, therefore we cannot tell the increase of heating surface, if tubes are made longer. We would not advise you to run the steam pipe through fire box to superheat the steam as it would not pay you for the trouble in making this change.

B. R. Q. In a crosshead pump, such as is used on most traction engines, where one valve works over the other, what is the best thing to use to reduce the lift of the valves and how to hold it in place?

2. What is the proper lift of pump valves?

3. The diameter of a valve is round valve seats measured; in the small opening at the bottom, or at the top?

4. What is the best way to pack a piston rod and what is the best packing to use?

5. What is the best packing for a crosshead pump?

6. In an old engine on which the babbitting is worn down to the box so it heats, how can we continue to run it without stopping to rebabbit? Can the boxes be bushed with anything outside of rebabbitting?

7. Admitting that the return flue and the fire box boilers are both good, what are the advantages of each? Is one any better for steep hills than the other?

A. You can put a disc or washer on top of the valve. It does not need to be fastened, only see that it is fixed so that it cannot get out of place.

2. If the valve is allowed to lift one-quarter of its diameter, the area of the opening will be equal to the capacity of the valve.

3. The diameter of a valve is measured at the smallest part of the seat.

4 and 5. There are quite a number of good kinds. The Peerless, Seldon's, America, Crandall's, Metallo, Pilleys, Doodsell's, Regal, Daniel's, "P.P.P.," Lubroboston, Gordon, Duval, Gould's and others. You will surely find some of these with your dealer. Give size of the packing you want. This is all prepared packing and should be cut in rings and put in stuffing box so as to break joints.

6. In a box which is simply prepared for babbitting metal nothing will do for a substitute. Your best plan will be to rebabbit it.

7. The two kinds of boilers mentioned are equally good if both are properly designed. Neither will have any advantage in climbing hills.

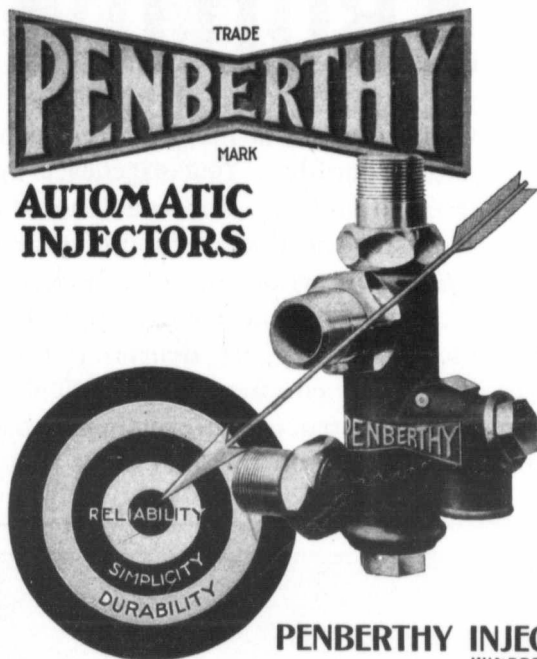
O. R. Q. What causes the breaking of the wrist-pan on

threshing machine engines? My instance is a 13 h. p. engine running a 36-inch cylinder and a 56 rear with blower. Last year was the engine's fourth year. When we had threshed about 15,000 bushels it broke the wrist-pin and knocked out the cylinder heads. Had it fixed and threshed about 10,000 bushels when it did the same thing again. Some say bad water caused it, others say the wrist-pin was not in line with the cylinder.

A. Very likely your engine is a little light for the work you are doing. A 36 x 56-inch separator with blower is all a 16 or 18 h. p. engine can take care of when in the hands of some threshermen. However, a 13 h. p. engine will run a 36-inch machine, but it should not be fed very fast. Some engines are built strong enough to be run beyond their rated capacity. The suggestion that bad water caused the break will hardly stand. There may have been water in the cylinder at the time of the breaking of the pin, caused by foaming of the boiler and due to bad water, but a crank-pin should be of sufficient strength to stand a certain amount of water-shocking.

The suggestion that the pin may be out of line with the cylinder is hardly the reason. The writer's opinion is that the work is too severe for the pin, and the steel becomes fatigued, or as some people say crystallized, and in this weakened condition is broken.

HITS THE BULLSEYE



And Makes a HIT
With All Engineers

MADE BETTER,
WORKS BETTER and
LASTS LONGER than
any other Injector and
"Always Dependable"

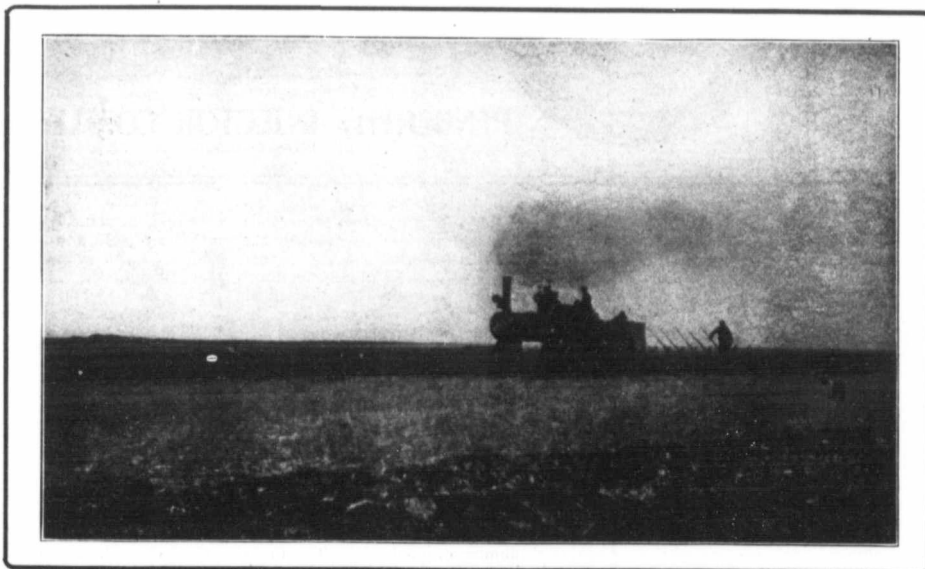
More than half a
million have been sold—a
proof of their popularity.

We make Injectors,
Ejectors, Sight Feed Lubricators,
Oil Cups, Grease Cups, Whistles, Plain Tallow Cups, etc. Write for Catalog today.

PENBERTHY INJECTOR CO., Limited
WINDSOR, ONT.

HOW ABOUT THAT 1911 PLOWING ENGINE?

THIS is the season when you as a farmer or thresherman are doing your thinking. Resting from your past season's labors you have the time and opportunity to go into any proposition thoroughly. **Your experience** in the past has given you an idea of what you want, and your better judgment tells you that as a business proposition it is up to yourself to find it. But, speaking of **Plowing Engines**, if you have operated one, or, better still, owned one, you have a fund of first-hand information that will serve you in good stead in the selection of that new plowing outfit. As a general proposition **you know** what kind of an engine it requires in order to stand the strain of plowing; **you know** what sort of a boiler it requires to deliver the proper amount of steam on a reasonable amount of coal; **you know** more or less about gears and drive wheels; **you know** that some engines handle easily while others tax both strength and patience; **you know** that some fairly eat up both coal and water, while others make you feel that they are delivering power in proportion to the fuel and water consumed; **you know** a whole lot of other things about plowing engines that is not necessary for us to enumerate here, **but do you know** that **American-Abell Plowing Engines** are real engines when it comes to **traction plowing**? **Do you know** that they are designed and constructed in every joint, bar, beam, wheel, gear and stay-bolt for plowing purposes. We know it, and a large number of our customers know it also, and we want you to get in on the real thing in a plowing engine. It is built on experience that is as old as the traction plowing game itself, with the result that



**The Purchaser of an
American-Abell Plowing
Engine is Assured of an
Engine that will Meet
all Traction Plowing Re-
quirements**



Think it over, but let us make **your thinking** easier by sending you a catalog that goes into the matter in detail

The above plowing scene shows one of our new 28 horse power Simple Special Plowing engines at work in the Red River valley, plowing heavy Gumbo soil, seven inches deep with three inches of frost in the ground, pulling ten 14-inch plows.

This engine is of the tricycle design, rear mount, equipped with our new balance valve, and is of the same design as our 32 horse power Cross Compound, rear mount, which proved itself to be not only the most popular but the strongest and most efficient plowing engine in Western Canada in 1910.

This engine is worth every dollar of the thirty-five hundred dollars it costs you. It will do anything that any plowing engine

will do, and will do more of it at less cost. It is a pleasure for us to write and talk about our engines, because they always make good in the field, and in the belt. Our customers testify that our line of plowing engines have not only made steam plowing a success, but have made it a pleasure for the owners and operators.

With the American-Abell engines you can safely contract a given amount of work and you can bank on the engine doing the work because it is well built of good material. It is well designed. It has a simple valve gear. It has the nearest to a perfect balance valve. It is a beautiful design and is sold with an honest desire to suit and serve the purchaser.

Our Creed is: We believe honest goods can be sold to honest people by honest methods.

It is a pleasure for us to show our goods, you should look them over and compare them with other makes, then judge for yourself. Make our office your headquarters when in

WINNIPEG

REGINA

SASKATOON

TORONTO

CALGARY

EDMONTON

American-Abell Engine and Thresher Company, Limited.

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



Agricultural Engineering as a Branch of Agricultural Education.

By PROF. J. B. DAVIDSON.

As yet Agricultural Engineering is not a general feature of the agricultural college course. An investigation in the United States, however, reveals the fact that 36 out of the 48 state colleges of agriculture are now either offering courses along Agricultural Engineering lines, or are preparing to do so at once.

It is the purpose of this paper to discuss the position Agricultural Engineering should occupy in the college curriculum. A consideration of this subject ought to be important to all engaged in or interested in agricultural education. Owing to its undeveloped state and unsettled position, Agricultural Engineering is quite apt to be shifted before the wind, so to speak, unless the instructor in charge is well prepared to defend its position and prevent radical changes in the College course. Stability along these lines tends to further development and to make for progress. A feeling of confidence upon the instructor ought to be conducive to a higher grade of work.

Preparatory to this discussion is an outline of what may be included under the head of Agricultural Engineering. An investigation of all the subjects taught under this head indicates that they may be included under the following titles:—

Shop work — Blacksmithing; Carpentry; Horseshoeing.

Farm Engineering—Drawing; Surveying; Drainage, Field, Sanitary; Irrigation; Road Construction.

Farm Mechanics—Farm Machinery; Farm Motors; Farm Buildings; Fences; Cement work; Farm water supply.

Other special courses are found at certain institutions on spraying machinery and dairy machinery. It is at once seen that the field of Agricultural Engineering is a very broad one.

The author has had occasion to define Agricultural Engineering and has done so as follows:—

“Agricultural Engineering is the name applied to the agricultural achievements which require for their execution scientific knowledge, mechanical training and engineering skill.” A committee on methods of teaching agriculture of the Association of American Agricultural Colleges and

Experiment Stations reports as follows in regard to rural engineering: “In its most comprehensive sense, rural engineering includes all branches of Civil and Mechanical Engineering relating to the location, arranging and equipping of farms, and the construction and operation of farm implements and machinery.”

It is recognized that Agricultural Engineering is to fill a place in the general Agricultural course; and also that there is the professional Agricultural Engineering course. These are entirely distinct from each other. The major portion of the following discussion will refer to the former, the course designed to aid the man who is to do the actual work of the farm, and produce the products which are to feed the people of the land. In this course it is recognized that Agricultural Engineering will not be paramount. It occupies an important place in such a course which is extremely difficult to determine. College courses vary largely at the various institutions, and it is to be expected that they do so as conditions vary widely. An inspection of the course outlined indicates that they depend largely upon the personality of the instructors. The aggressive instructor is able to secure a more prominent place in the way of time for his subject than the less aggressive one. It is generally recognized that the personality of the instructor is a large factor in determining the value of a course to any student. Thus a course may be good training regardless of the subject matter. In the light of this, variance in courses can be overlooked to a large extent.

Agricultural Engineering should not occupy in any course a place of greater prominence than it merits. Instructors in any subject are apt to become over enthusiastic and to secure a larger number of hours than the work would justify. Such an action is not progress and is quite sure to produce a reaction. In the special Agricultural Engineering course, we are provided with an opportunity to release our enthusiasm.

The making of a college course is really an important matter. The students' time is too valuable to be wasted and if we are to secure well trained men from four years' work, nothing should be included which will not be of direct value to him.

A determination of the proper position of any line of work in

WHAT IS MAGNET QUALITY IN A CREAM SEPARATOR ?

Read what the Dairying Instructor for the Government of Saskatchewan says about it.

Province of Saskatchewan,
Department Agriculture, Dairy Branch,
Government Creamery,
Moosomin, Sask.,
July 20th, 1907

TO WHOM IT MAY CONCERN.

This is to certify that I have tested the **Magnet** Cream Separator for skimming qualities and also for its out-put capacity.

I tested the **Magnet** severely and I must say that it is the best Cream Separator with which I have come in contact.

I strongly recommend it to any prospective buyer and can assure him that he is procuring a first class machine.

(Signed) H. A. SHAW,
Dairying Instructor,
Saskatchewan Government.



MAGNET Quality means double support to the bowl, strong square gear, one piece skimmer, perfect skimming, easy turning, easy cleaning, improved ball-race, strong and rigid frame, absolute safety.

These points are where the **Magnet** differs from all others.

Get latest Catalogue.

THE PETRIE MFG. CO., LIMITED

Head Office and Factory: **Hamilton, Ontario, Canada**

Branches: **Winnipeg, Man. Calgary, Alta. Regina, Sask. Montreal, Que.**
Vancouver, B. C. St. John, N.B.

Pickering Governors

made for

Every Build of Engine



A Record Breaker for Output and
Reduced Operating Expenses

Did you ever figure your Expenses for stopping to fix up that Governor that was causing all your trouble and then the fixing did not last?

PATENT BALL RANGER SPEED CHANGER SUPPLIED ON ALL GENUINE PICKERING GOVERNORS

If you have Governor troubles write

The Pickering Governor Co.

PORTLAND

CONN., U.S.A.

ALLAN, LANG & KILLAM

Insurance and Financial Agents
BULMAN BLOCK, WINNIPEG

Fire, Life, Marine, Accident, Liability and Burglary Insurance

GUARANTEE BONDS - - - MONEY TO LOAN

the college curriculum is a most difficult problem and not subject to any definite solution. The data to be secured is indefinite and consists almost entirely of opinions which are erratic to the limit. In endeavoring to find evidence bearing upon the subject, the following sources have presented themselves:—

(a) Opinions of educators, sub-committee on Rural Engineering, Assoc. Amer. Agricultural Colleges and Experiment Stations.

(b) Capital invested in property in the management of which Agricultural Engineering training is involved.

(c) Opinions of men engaged in practical farm work.

(d) Influence of Agricultural Engineering upon the earning capacity of the farm worker.

The following extracts from the report of the sub-committee of the A.A.A.C. & E. S. in November, 1908, will contain all the material collected under the first head.

"Instruction in farm engineering may have two quite different ends in view, viz.:

"(a) To provide a practical working knowledge of the ordinary mechanical operations of the farm.

"(b) To prepare the student for a professional career in some field of engineering applied to Agriculture.

"The former may be a proper part of a course in Agriculture; the latter constitutes a special engineering training.

"The committee had to deal with the former only.

"The relative place of the subject of farm engineering as above defined in a course in Agriculture is a subordinate one, since the average undergraduate student in such a course does not look forward to undertaking extensive or difficult mechanical or engineering operations, and cannot afford to devote a considerable part of his college course to the subject. He cannot expect in pursuing such a course to become a skilled mechanic or architect or engineer. If he is to undertake work on a larger scale involving such knowledge, he will wish to entrust it to an expert. It is sufficient that he undertakes practically the operation of standard machines, the use of building materials, the construction of fences, drains and roads, and how to make a simple drawing. A fair working knowledge of the principles involved can be gotten out of a course occupying two 2-hour periods weekly for one school year of about 75 hours. The subject should be administered chiefly as a practicum consisting of laboratory exercises, demonstrations and observations. In the absence of any comprehensive single text book, the student should obtain certain standard works for present and future references, but the course should not be administered chiefly from text books."

Perhaps no comment need be made upon this report. It is significant, however, that the personell of this committee was made of educators from institutions where Agricultural Engineering has not been developed to any considerable extent. Furthermore, as a general rule, men who have received a certain college course are not willing to accept any striking departures from the same.

In the census of 1900, the fixed capital of the farms of the United States is divided into land, buildings, implements, machinery and live stock. The following table indicates their relative importance:

Land	59.9%
Buildings	21.4%
Live Stock	15.0%
Implements and Machinery	3.7%
	100.0%

It is seen that the combined value of buildings, implements, and machinery is 25.1 per cent., exceeding that of all live stock by 10 per cent. It will be rightfully argued that the live stock represents, in so many words, the tools of the farmer, and should be given more attention than the buildings which exceeds the live stock in value by over 6 per cent. In a like manner the same argument will apply directly to the implements and machinery which represents only 3.7 per cent. of the total fixed capital of the farmer.

The American farmer is spending, according to the 1900 census, over \$100,000,000 for machinery, which amounts to about 3.4 per cent. of the value of the crops grown. No data is at hand to indicate how much profit is made upon the crops grown by the farmers, but making a crude estimate of 25 per cent., it would seem that the farm machinery would involve nearly 15 per cent. of the net profits.

Well planned farm buildings not only have a direct bearing upon the cost of producing live stock by conserving labor and feed stuff, and protecting the health of the animals by warmth, light, and ventilation, but much is added to the comfort and pleasure of farm life by good farm homes. It is the candid opinion of the writer that ultimately a college course will not be complete without a good course on the subject of farm buildings.

The future extension of our farm lands must come through either drainage or irrigation. The fact that areas which may be reclaimed are large has been called to your attention. It is significant that about 79,000,000 acres of land can be reclaimed by drainage alone. It is true that much of the work of this reclamation must be turned over to the professional engineer, as indicated in the foregoing reports, yet there is no doubt but what the farmer or farm manager who settles upon this reclaimed land will be in a



DE LAVAL

The Cream Separator by Which all Others are Judged

For more than thirty years the DE LAVAL has been acknowledged as the world's standard.

You may hear it said of some separators that "It's as good as a DE LAVAL," or if some competing salesman wants to make his argument particularly strong he'll say "It's better than a DE LAVAL." The concern with a cheaply and poorly constructed machine says "Just as good as a DE LAVAL and costs less."

Everywhere the DE LAVAL is recognized by experienced creamerymen and dairymen and even by makers of inferior competing machines as the

World's Standard

The cream separator is more frequently used than any other machine on the farm, and for that reason, if for no other, only the very best should be purchased, and that's the DE LAVAL.

The more you come to know about cream separators the more apt you will be to buy a DE LAVAL.

The De Laval Separator Co.

Montreal - Winnipeg - Vancouver

More Than 1,250,000 De Laval's In Use

All Point the Way to Success



Name over the farmers you know that own good Fanning Mills. Aren't they the prosperous (progressive) men in your neighborhood? Aren't they the men who are making a success of farming? Haven't they good bank accounts? Don't you think they are able to point the way to success?

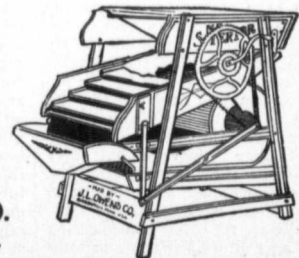
THE IMPROVED NEW SUPERIOR

Is the best of all Good Fanning Mills

Ask any of your neighbors who own one. Find out if what we say is so when we say that the New Superior is the best built machine. The most thorough in its separation of any kind of grain, and is the King of Wild Oat Separators.

"THE PROSPEROUS FARMER IS THE FARMER TO FOLLOW" Why don't you follow the way these farmers have taken?

We want to send you our booklet on our IMPROVED machine: OUR 1911 MODEL. We have improved our mill, increasing the capacity fully 25%. Our New Wind adjustments make it so you can separate by weight, which is the proper system you want in grading your seed oats. We have lots of other things we want to tell you about, which is to your interest. Write now. Be sure and see the Improved New Superior before buying any Fanning Mill and then judge for yourself.



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

position to fill a larger and more useful place than otherwise.

Perhaps no opinion is of greater importance than those of farm owners and farm managers who have had a college course and who are now doing the actual work of the farm. Several letters were sent out in an endeavor to obtain the opinions of these men. Up to date, the number of replies have been so limited that no direct conclusion can be drawn. Significant, however, are the following opinions:

½ would not include shop work. ½ would not include any drawing. ½ would not give long courses in shop work. ¾ would give an average of 1½ credit hours to surveying. All would give an average of 2 credit hours to drainage. ½ would give an average of 1 credit hour to irrigation. All would give an average of 3 credit hours to Farm Machinery. All would give an average of 1¾ credit hours to Farm Motor. All would give an average of 2¾ credit hours to Farm Buildings. All would give an average of 1¾ credit hours to Roads. All would give an average of 1¼ credit hours to Cement Work. One would give an elective average of 5 credit hours to Irrigation. All would give an elective average of 19 credit hours to entire branch.

Lastly, taking up the influence of the Agricultural Engineering upon the earning capacity of the farm worker, is it not true that the production of agricultural products is largely a mechanical process? Take the production of wheat, for instance, the grading of seed, the turning of the surface of the soil, and smoothing it for a seed bed, the placing of the seed beneath the surface at a certain depth, the tying of grain into bundles when ripe, the threshing of the grain from the straw, and lastly the transportation of the grain to the local market where the commercial transportation companies will handle it; are they not all mechanical processes and subject to engineering methods?

Man unaided can do little. It is only by the utilization of outside power that his capacity is increased, and man's ability to produce bushels of grain, or in other words dollars, is dependent largely upon the amount of power he can utilize.

The fact that we are coming to more intensive farming need not hinder in any way the extended use of power. The writer is inclined to think that one reason why agriculture as a vocation has not been popular, is because the small thing has been held up before the prospective student. He was informed that the ultimate of agriculture would be the 40-acre farm, and naturally this did not appeal to the young American. Whether he is able to attain large things or not, they must be shown as possibilities. The thing that will popularize agriculture is large salaries.

We expect to see consolidation of agriculture. Farms are in-

creasing in size and it cannot be viewed otherwise than the tendency of the times, indicating that ultimately we are coming to the estate plan in vogue in older countries. Each of the estates must have a capable manager and agricultural engineering will be essential to complete his training.

In the courses for the various agricultural specialists, as the plant breeder, the experiment station investigator, etc., Agricultural Engineering will not fill an important place.

Lastly it is always to be kept in mind that Agricultural Engineering should be given a place in the Agricultural Course only so long as it enables the graduate to do his work more easily and efficiently, to live a better and more comfortable life, and to establish a better home.

Two systems of outlining college courses exist in the various Agricultural colleges of the country. In one the work is largely elective, and in the other the work of the entire course is practically all prescribed and a few electives allowed. For each of these, the following courses in Agricultural Engineering are suggested.

Elective system with minimum number of hours of required work:

Required (1) Farm Mechanics, Farm Machinery and Farm Motors; including principles of mechanics, transmission of power, farm machinery, pumps, farm motors, use, adjustment, and repairs. 2 hours credit, 36 actual hours.

(2) Farm Structures, Drawing. Materials of Construction, farm buildings, fences, concrete work, water supply. 2 hrs. credit, 36 actual hours.

Elective (3) Shopwork—Blacksmithing, 1 or 2 hrs. credit.

(4) Shopwork—Carpentry, 1 or 2 hrs. credit.

(5) Shopwork—Horseshoeing, 1 or 2 hrs. credit.

(6) Farm Engineering—Surveying—Drainage—Irrigation—Road Construction or separate courses in each depending upon conditions. 3 hours credit.

(7) Cement work, use of cement in all farm structures. 1 hour credit.

(8) Advanced course in farm machinery and farm motors. 3 hours credit.

Where a prescribed system prevails, it would be well to make six hours required.

Special Four Year Course in Agricultural Engineering.

As far as known, only two four-year courses in Agricultural Engineering are offered, the one offered by the Iowa State College a year ago and the one recently presented to the University of Nebraska. The course outlined at Iowa is an attempt to include all of the engineering taught in the institution having a direct bearing upon agriculture and the fundamental courses in agriculture. Special Agricultural Engineering studies are being rapidly developed. A summary of this course is as follows:

The Famous Rayo

Does Not Strain the Eyes



Don't use a small, concentrated light over one shoulder. It puts an unequal strain on your eyes. Use a diffused, soft, mellow light that cannot flicker, that equalizes the work of the eyes, such as the Rayo Lamp gives, and avoid eye strain.

The Rayo is designed to give the best light, and it does.

It has a strong, durable shade-holder that is held firm and true. A new burner gives added strength. Made of solid brass and finished in nickel. Easy to keep polished. The Rayo is low priced, but no other lamp gives a better light at any price.

Once a Rayo User, Always One.

Dealers Everywhere. If not at yours, write for descriptive circular to the nearest agency of the

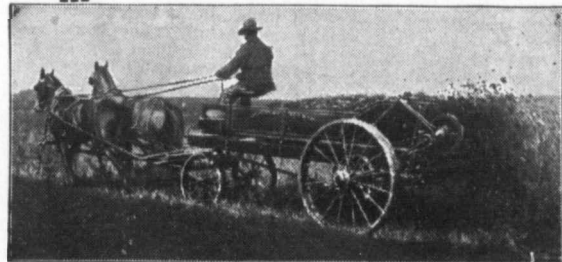
The Imperial Oil Company Limited.

I H C Manure Spreaders Have Proved Their Efficiency

WHEN it comes to choosing a manure spreader there is no need to run any risk. Satisfaction is a certainty if you choose an I H C. These machines have been proved under all conditions. Their efficiency is a matter of record.

The superiority of I H C spreaders is not due to any one feature of construction but to the care—the material—the brains—that are used in making every part.

I H C spreaders have many advantages—all of which tend to make the machine, as a whole, more perfect than any other. It is folly to suppose that one or two good parts make a satisfactory spreader.



A close comparison between I H C Manure Spreaders and others, will result in your choice of one of the I H C line—the Corn King or the Cloverleaf. You will see the many features which place I H C spreaders so far in the lead in simplicity, strength, efficiency, and durability. You will notice the absence of troublesome gear wheels, the few levers, the perfect-working apron, the wide range of feed, the light draft, and the other advantages which have made I H C spreaders the choice of careful farmers everywhere.

You also have a wide range of styles and sizes to select from in the I H C line. Corn King spreaders are of the return apron type. Cloverleaf spreaders have endless apron. They are made in several sizes ranging in capacity from 80 to 70 bushels. See the I H C local dealer for all information and catalogues, or write nearest branch house for information desired.

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
Chicago (Incorporated) USA



I H C Service Bureau
What is it? A clearing house of agricultural data.
What does it do? Helps farmers to help themselves.
How can it be used? By sending your farm problems and posing questions to the Bureau.
How are we cooperating with the highest agricultural authorities and every source of information will be made available to solve your difficulties. We shall be pleased to have an opportunity to assist you. Write the I H C Service Bureau.



Patronize those who patronize this Paper.

FOUR YEAR AGRICULTURAL ENGINEERING COURSE AT IOWA STATE COLLEGE

	Hours	Credit
Agricultural Chemistry	10	
Agricultural Engineering	23½	
Animal Husbandry	6	
Civil Engineering	6	
Dairying	2½	
Economic Science	6	
English	8	
Farm Crops	8	
History	2	
Horticulture	7½	
Library	R	
Mathematics	19	
Mechanical Engineering	22	
Military	R	
Physics	10	
Soils	8	
Veterinary	2	
Electives	8½	
Total	146	

Some Facts About Poultry—Lessons from Restaurant Bills.

By J. R. COTE.

I met a friend of mine the other day and talked chickens, of course. He is one of those people I call successful poultry raisers, that is, having started about five years ago with about \$5 and his good will, and having lived comfortably, and having supplied his family with all the necessities of life, paid for a home with his poultry and now being at the head of a business worth about \$5,000 net profit every year, I am safe in saying this man is successful.

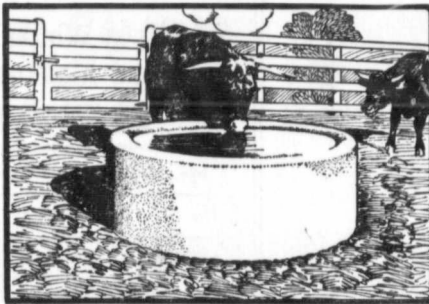
Just now he sells his eggs for market. In Toronto he gets forty cents a dozen for his eggs. He will be getting fifty and sixty cents a dozen before the winter is over, and that sounds like money.

There is no trick in getting eggs when they bring the most money if you have good birds and feed them right. It is all a question of good management.

My friend showed me an article written by a Mr. Kenyon in the N.Y. Tribune which is worth reproducing.

"As I went trolleying from Pennsylvania to Maine, visiting many hotels, restaurants and homes of friends, I received bills of fares and noted prices. For anything with beef in it 40 to 85 cents was a common charge. Hotel prices have doubled in twenty years, and have advanced twenty per cent. in the last two years.

"On the road I saw acres and square miles of beef cattle lands and sheep lands, but I did not see the cattle and sheep. But for the cows and hens we would have to go hungry; to date we can get two eggs for 15 or 20 cents. While I saw many poultry plants, I saw too few. Some of them are doing wonders; in one, four hundred white leghorns, occupying an orchard of 4 or 5 acres, were giving their owner \$1,000 a year, and he sold annually \$200 of fruit. The whole thing was a model, the coop was a two-story building, 18 by 20 feet with a wing on each side 12 by 48 feet, and one and a half stories high. The wings were divided into four 12-



Which is Your Choice?

Sloppy, leaky wooden troughs, or clean, durable Concrete?

Wooden drinking troughs are about as reliable as the weather.

They are short-lived and require replacing every few years—not to mention continual patching to keep them in repair.

The best of wood cannot withstand, for long, constant dampness and soaking. Its tendency to rapid decay soon shows itself in leaks and stagnant pools of water around trough.

Contrast with this the durability, cleanliness and well-ordered appearance of Concrete.

Which?

The dampness which destroys lumber only intensifies the strength and hardness of Concrete.

You can impair a wooden trough with comparatively little use; but it takes a powerful explosive to put a Concrete water tank out of business.

Which

is your choice—expense-producing Wood, or money-saving Concrete?

We'd be glad to send a copy of our book, "What the Farmer Can Do With Concrete,"—Free—if you'll ask for it. It tells the many uses of Concrete in plain, simple language—tells how to make

Barns	Hens' Nests	Stables
Cisterns	Hitching Posts	Stairs
Dairies	Horse Blocks	Stalls
Dipping Tanks	Houses	Steps
Foundations	Poultry Houses	Tanks
Fence Posts	Root Cellars	Troughs
Feeding Floors	Silos	Walks
Gutters	Shelter Walls	Well Curbs

Canada Cement Co.

Limited

82-92 National Bank Building, Montreal



foot rooms each; one-half of these rooms were for nests and feeding and one-half for roosts. The upper part of the wings were occupied in the daytime by the hens, who were getting grain in a foot or two of hay. That orchard was a clover meadow except around the trees, which were banked with coarse sand and ashes.

The feed was not unusual—principally wheat and oats in warm weather, and these, mixed with corn, in cold weather. I saw separated milk, grit, apples and fresh bone; this last named, at one cent a pound was the cheapest feed in the ration. All of these are obtainable. The cheapest thing I found were farms. My advice would be to keep sheep, keep hens until you can keep sheep. Do not then give up either; they go well together. Seven to ten cents each is a fair price for eggs, but that does not reach the present price of meat."

So you see that poultry gets endorsement from every source. In fact it is a well-known fact that whoever desires to make money on the side can do it very easily by keeping poultry. Any little town lot can be made to bring large returns if occupied with poultry coops, and many of my readers would find it not only a profitable investment, but prob-

ably some of them could make a specialty of raising some fine poultry and make a success out of the venture. When you start watch for the top always. Try and make your name, and the breeder of good stock in a few years from now need not fear anything as to selling his stock. Poultry industry is in its infancy yet. Many a breeder has made a fortune out of it, and it is up to you to try your hand at it.

When you make a start, start right. Start with good stock and keep your stock always the best.

There is no necessity for laying out large sums of money either, and the man who succeeds in poultry is not the man who has started with capital, but, in almost every known case, the man who to-day enjoys a reputation and who has made his fortune out of one breed of chickens started with practically nothing. They started right and stuck to it.

Keeping Butter.

As Hoard's Dairyman is a reliable authority on all that pertains to the handling of milk and butter, the following recipe may be tried with confidence:

The butter must be worked until the water from it runs out perfectly clear.

Make a brine of one-half pound of salt to two gallons of water.

Boil and skim till quite clear. When cold put in a stone jar. Sterilize pieces of cheese cloth, wrapping each pound brick with in and place in jar, which is kept in a cool, sweet place. Keep butter weighted down so that it is under the brine all the time and cover jar. Add the butter from each churning.

Butter may come out a little too salty for some tastes, but can be made all right with very little working in fresh water.

This is very easy, but, like all dairy regulations, deviations from details make deviations in results. The above directions, if implicitly followed, work to perfection, so those who have experimented declare.

In the Farmers' Interest.

We are continually looking to the interest of our readers. We realize that you are in need of some good reading outside of our farm Journal. It pleases us to announce that the Canadian News and Subscription Company, of Winnipeg, who are the Western Canadian Representatives of some two thousand (2000) publishers, can supply you with any Magazine or newspaper published. They have an interesting catalogue, which will be sent upon request, that gives the prices of the various Canadian, English, and American, pub-

lications; in most cases, they offer you a reduction of ten (10) to twenty (20) per cent., when two or more are ordered.

The Magazines ordered through them are sent direct from the publisher to you, postage pre-paid. Your home will be better and happier by having two or three Magazines of general interest besides the Canadian Thresherman and Farmer.

A System of Water Supply for the Farm.

Continued from page 18

course the pressure therein will increase so as to operate the piston M and its connected parts, as before described.

"t" is any suitable means, such as a check-valve, to permit the free passage of water through the pipe H, into the reservoir J, and will operate to prevent the water from said reservoir from passing back into pipe A.

The cylinder L, together with the piston M, and piston-rod N; the valve D, and the means operated by the piston-rod N for turning this valve, constitute what I term, my pressure-operated automatic means, and it will be clearly understood that this automatic means operates according to the pressure in the reservoir J, so as to cause water to flow alternately into said reservoir, and through the relief outlet (in this case the pipe U for the pipe A.

It will be, of course, understood that sufficient air must be provided within the reservoir J, so as to provide the necessary pressure for raising the water to the desired height at which the faucet 3 may be placed. To the air-valve K may be coupled any suitable means for quickly providing the necessary air-pressure in this reservoir. Now in order to make our apparatus automatically supply its own air to the reservoir J, we provide a pipe G, with two pet-cocks 4 and 5, which are each provided with a lever 6, pivoted to a rod 7, which in turn is pivoted to an arm 8, carried by the eccentric quadrant S. When the parts are in the position shown in figure 1, the pet-cocks 4 and 5, are closed. When the pressure within the reservoir J forces the piston M outward, and through the parts before described, turns the valve-plug T, the movement of the quadrant S will elevate the arm 8 and the rod 7, and move the lever 6, thereby opening the pet-cocks 4 and 5. Air will then rush through the pet-cocks into the pipes G and H, from which water will escape by the pet-cock 5. Now when the weight Y descends, the pet-cocks 4 and 5 will be closed, and it will be readily understood that the air imprisoned in the pipes G and H will be forced into the reservoir J.

Upon referring to figure 3 it will be noticed that the toothed-rack R gradually gets wider from its inner end 9, and it will be also noticed that the quadrant S is eccentric to the stem of the valve-plug T. As the toothed-rack is forced outward by the pressure

against the piston M, the leverage on the stem of said valve-plug will be gradually increased sufficient so as to positively insure the valve-plug 7 being given the desired movement.

Of course it will be understood that if it is desired to vary the pressure within the reservoir at which the automatic device initially operates, it is only necessary to vary the weight of weight Y.

It is pointed out that at no time is there any undue strain on any of the pipes or parts in the various forms of our apparatus.

The grooved-flange V is made concentric to the stem of the valve-plug T so that no force will be brought into play to hinder the free operation of our automatic means.

Up in an Aeroplane.

The correspondent of the London Times at the Lanark Aviation meeting, was invited by Mr. Grace to take a short flight on a Farman biplane. He records his sensations as follows:

The first wind register showed the velocity to be from 25 to 30 miles an hour, but toward half-past 1 o'clock it dropped to 18 to 22. The competition for this period was weight-carrying round the course, each machine to carry 350 pounds. By virtue of my weight of 14 stone (96 pounds) I was invited by Mr. Grace to share his adventure in a wind that warned off all other competitors. The worst part of such a journey for the novice is the waiting until everything is ready for the start. The sensation of anticipation is not unlike the feeling that one has when one is waiting for a wounded boar to break cover from the corner into which he is driven. But once the propeller starts to whirl behind you all other thoughts beyond exhilaration of rapid motion vanish. You have gripped the struts thinking that you will have to hold on like grim death, but you immediately find that this is not necessary. The machine moves along the ground at an extraordinary pace, and I only knew that it was actually flying when I saw the elevating plane change from the horizontal. Of the motion of flight it is difficult to speak clearly. Even in the high wind that Mr. Grace was now climbing, it was not more than the sensation of a beautifully balanced motor-car. The earth—in this case the sward of the Lanark race-course—seemed to be racing away from under us, and in a flash we were level with the first pylon and the judge's box.

The machine was now up to 150 feet, and I became engrossed in Mr. Grace's method in flying. It seemed to me that his attention was glued to his elevating plane, with just momentary glances out of his eye to judge the distance by which he had to shun each pylon in its turn. We were now crossing fields and water. I could observe the gates, the wire

Manitoba Winter and Fat Stock Show and Manitoba Poultry Show

BRANDON

MARCH 11th, 13th, 14th, 15th, 16th, 17th, 1911

The Great LIVE STOCK EXPOSITION of Western Canada

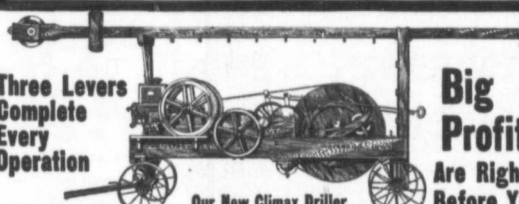
HORSES SHEEP POULTRY JUDGING - LECTURES CATTLE SWINE GRAIN

Annual Convention of Live Stock Associations of Manitoba

JAS. D. MCGREGOR, Pres., Brandon W. J. SMALE, Sec. and Mgr., Brandon

Big Money in Well-Drilling Business!

Three Levers Complete Every Operation



Big Profits Are Right Before You

Our New Climax Driller

Get into the well-drilling business, right now. Buy a Waterloo Outfit. They pay for themselves. Demand for drilled wells is growing everywhere, on the farms and in the towns right around you. People are afraid of the old-fashioned dug and bored wells that cause typhoid fever and other terrible diseases. The drilled well is always clean, sanitary—and it does not go dry. Well drillers are scarce. The business is yet in its infancy. Don't miss this fine chance for big money. Get in touch with us. We will show you how to get all the work you can do—how to advertise—how to manage your Waterloo Well-Drilling Machine—and furnish you contract blanks. A

Waterloo Well-Drilling Outfit

means a profit of thousands every year. It means being your own boss, with a solid growing business. We have scores of letters from men in all parts of the United States and Canada who are reaping a harvest of dollars with Waterloo Drillers. You can have a Waterloo Outfit for any locality—good in any kind of earth or rock. Our machines have been perfected by 44 years of continuous manufacture.

The Waterloo is the standard—the old reliable driller, proved by performance. We give you full and plain instructions so that you can run a Waterloo, whether you ever had any experience with machinery or not.

Our 12-page Free Illustrated Book, printed in colors, is full of interesting information. Write us today and it will come to you free, by return mail.

ARMSTRONG-QUAM MFG. CO., 1638 Chestnut Street (Estab. 1867), WATERLOO, IOWA, U. S. A.

CANADIAN Sales Agent Ontario Wind Engine and Pump Co. Water Supply Department

(38) Calgary—Winnipeg—Toronto

Alex. Naismith, Pres. Wm. Paterson, Vice-Pres. C. D. Kerr, Treasurer

The WAWANESA MUTUAL INSURANCE COMPANY

HEAD OFFICE: WAWANESA, MAN.

A. F. KEMPTON, Secretary-Manager

Amount of Insurance in force Dec. 31st, 1909	\$24,136,616.00
Assets over Liabilities	\$74,682.43

THE NUMBER OF FARMERS INSURED 19,193

Over 16,316 Farmers Insured. The Largest Agricultural Fire Insurance Company west of Lake Superior. Agents wanted in unrepresented districts

A. Naismith, Pres. R. M. Matheson, Vice-Pres. C. D. Kerr, Treasurer

A. F. KEMPTON, Sec. and Mgr.

Authorized Capital, \$500,000.00 Subscribed Capital, \$300,000.00

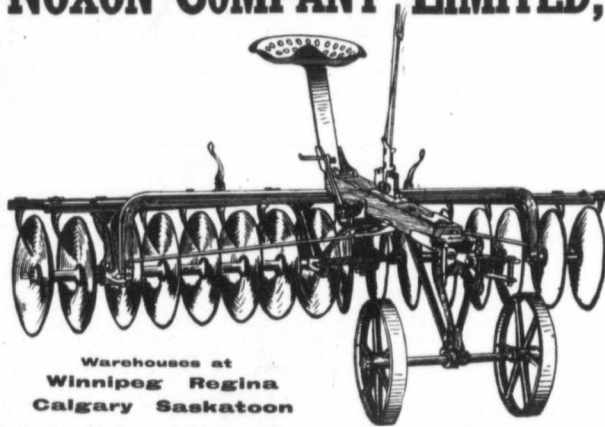
THE OCCIDENTAL FIRE INSURANCE CO.

FULL GOVERNMENT DEPOSIT

Agents wanted in unrepresented districts. Head Office—Wawanesa, Man.

THE NOXON COMPANY LIMITED, INGERSOLL

Noxon
No. 15
Disc
Harrow



Warehouses at
Winnipeg Regina
Calgary Saskatoon

Strongly built.
Properly balanced.
Light draft.
Spring pressure.
Independent gangs.
Does not buckle in center.
Every disc stays in the ground and does its work.
Supplied with or without tongue truck.

TUDHOPE-ANDERSON COMPANY, LIMITED

fences, and a man bathing in the water. Then we were round into the wind. Our pace immediately slackened, and Mr. Grace was working to keep his machine in the air. As we crossed a road we were going so slowly that I could observe the direction of the hoof marks of a horse that had recently passed. Here all observation ceased, as Mr. Grace was now battling with the wind. We had only 500 yards to traverse to cross the winning line, but the dead weight against the wind was bringing the machine down. Then there came a heavier gust. It took the machine just up the requisite amount to cross the line, and we came gently to earth. It had only been a four minutes' ride, but it was certainly the most delightful ride that I had ever experienced. The only recollection I have that will describe the general sensation is that of exquisite motion.

The Thresherman's Question Drawer.

Continued from page 41

L. A. Q. I have been running a compound engine with an adjustable cut-off. When it is running "hooked up" it runs smoothly; but when let out to full stroke it commences to pound. What is the cause and how can it be remedied?

A. The pound is caused by the lack of compression or "cushion." By this we mean the penning up of a portion of the exhaust steam at the end of the stroke. The compression varies with the cut-off. When the cut-off is early or "hooked up," the point of compression is also early, thus penning more exhaust steam in the cylinder and making a higher compression with the result that the engine will run more smoothly. On the other hand, when the cut-off is late, the point of compression is also late and there is less steam penned in the cylinder to stop the piston, cross-

head and connecting rod and it will be readily seen that when the live steam strikes the piston the loose bearings through the engine will make a "pound."

M. W. L. Q. Does a heavy flywheel give more power to an engine than a light one, and how can one tell when it is heavy enough? Agents from two different companies do not agree on this point.

A. The flywheel does not give any power to the engine. The heavier the flywheel the more power it takes to run the engine. You can imagine a flywheel so heavy that the engine could not turn anything more than its own flywheel.

A flywheel should be heavy enough to carry the engine over the centre well in starting, and in case of sudden loads it should have sufficient weight to maintain a practically uniform speed. The theory of a heavy flywheel is that when it is in motion there is a certain amount of energy stored up in it that can be given out again.

The harder the engine has to pull to start the flywheel and the longer it runs after the steam is shut off, the more power it could give off in case of a sudden load. Very often a shock of very short duration comes on the engine, which is beyond the capacity of it and would stop it completely, were it not for the flywheel, and, if it is of sufficient weight so that the necessary power can be stored in it, the flywheel will carry the engine over so that there is no perceptible change in the speed. There is no fixed rule for the weight of a flywheel. It depends on the speed and the kind of work the engine is to do. The heavy threshing cylinders used nowadays help the engine flywheel in its work.

G. A. M. Q. What is the matter with my Moore pump? When I start it to take water in-

to boiler it will make a few strokes and then stop. It will pump if not pumping into boiler. That is, if I let the water run on the ground; but will start hard then, too.

A. If your pump takes the water and will pump it on the ground, this would indicate that there must be something wrong with the discharge pipe or the pipe between the pump and the boiler. There may be a closed valve or one out of order. Examine the check valve and see that all valves are open. It sometimes happens that the feed pipe gets entirely limed up, just where it enters the boiler. This may be your trouble.

Make Your Crops Pay

We all know that the seeding conditions in the Northwest are peculiar and trying. Sometimes the soil is so dry that it blows over into the adjoining county, while, on the other hand, when wet, it is as sticky as glue. The large acreages sown demand the use of the largest size drills, and the draft of the machine should be such that ordinary teams will be able to do the work without undue exertion. The furrow openers, whether single disk, double disk, or shoe, must be of a pattern that will work properly. Under all conditions the drill must be able to plant the seed at an even depth. This is imperative, because even sowing means even growing, uniform ripening, and high grading of the grain. This is especially vital to the Northwestern farmer, on account of the short growing season, the frost leaving the ground late in the spring and coming early in the fall. The feed must be able to handle in wide range of quantities all seeds that are sown with a grain drill, including flax, treated wheat, etc. It must be a positive force feed. The frame should be able to support its load and not sag. All of these conditions are fully met in the Light Draft Roller Bearing Kentucky Drill. This drill was made

especially for the Northwest, after years of experience in the fields. It is decidedly a Northwestern machine—nothing else. It is a drill that can and will do your work as it should be done—a drill that will stand hard usage. The double disks and single disks have bearings that will last and that are properly lubricated. These bearings are dust-proof and make the disks very lively in action. The shoe has a tool steel removable and renewable heel that readily scours and has long wear in it. The hoppers have large carrying capacity. The frame is of choicest steel, thoroughly braced and trussed. Go to your local dealer and see one. Send for a Kentucky catalogue to the American Seeding-Machine Co., Incorporated, King and James Sts., Winnipeg, and go to your local dealer and insist on seeing the Kentucky. Remember, this drill is sold under a broad guarantee and liberal warranty that means much to you.

The addition to the boiler shops of the J. I. Case Threshing Machine Co., Incorporated, Racine, Wisconsin, is just being completed. This is a building 60 ft. by 215 ft., which will be used exclusively for a stock room for the Case boiler shops. A boiler storage has been completed, 230 ft. by 60 ft. This is equipped with a travelling train for movement of boilers from one part of the building to another.

Under the supervision of the Case architect, the above work has been undertaken and completed, also the remodelling of the Garfield warehouse, which is 100 ft. by 250 ft., and two stories high. This building, when the remodelling is completed, will be used as a machine shop. Machine shop facilities have not been adequate.

As soon as the weather will permit, other buildings will be put under construction by the Case architect and completed. The heavy business for the present year has necessitated all these changes.

THE FUNNY WORLD

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

"Mary," said the farmer's wife, I want you to go and see how old Mrs. Jones is." Mary went, and after she returned she was asked: "Well, did you find out how old Mrs. Jones is?" "Yes, Ma'am; she says she'll be sixty years old next February, if it's any of your business."

"I don't very well see," said the lawyer, "how you can sue your husband for a divorce on the score of desertion when on your own account he has been living quietly at home all the time."

"You don't, eh?" retorted the indignant would-be plaintiff. "Well, if it isn't desertion for a man to take a taxi-cab to the club, and deny that he is related to her, just because his wife has been arrested on the dock for smuggling, I don't know what desertion is!"

King Edward was never at a loss for a quick, suitable answer. One day he was coming around a street corner on one of his periodical walks in London when he collided with a very stout person who, being nearsighted, did not recognize the King, took him by the lapel of his coat and gave him a tongue lashing.

"Do you know, sir," finished the irate man, "that I am a member of the London Council!"

"In that case, I beg your pardon," replied the King, "for I am only the King of Great Britain."

"I think you said, 'Rastus, that you had a brother in the mining business in the West!'"

"Yeh, boss, that's right."
"What kind of mining—gold mining, silver mining, copper mining?"
"No, sah, none o' those; kalsomining."

"It ain't ev'rybody I'd put to sleep in this room," said old Mrs. Jinks to the fastidious and extremely nervous young minister who was spending a night at her house.

"This here room is full of sacred associations to me," she went on, as she bustled around, opening shutters and arranging the curtains. "My first husband died in that bed with his head on these very pillars, and poor Mr. Jinks died settin' right in that corner. Sometimes when I come into the room in the dark I think I see him settin' there still. My son by my first man fell dead of that lounge under the winder. Poor pal! He was a Speeritualist, and he always said he'd appear in this room after he died, and sometimes I'm foolish enough to look for him. If you should see anything of him to-night you'd better not tell me, for it'd be a sign to me that there was something in Speeritualism, and I'd hate to think that."

"My son by my first man fell dead of heart disease right where you stand. He was a doctor, and there's two whole skeletons in that closet that belonged to him, and half a dozen skulls in that lower drawer."

"There, I guess things'll do now—
"Well, good-night, and pleasant dreams."

An intoxicated young man, very much battered up, went into a hotel about midnight and asked the clerk for room 23.

"Can't give you that one," replied the clerk. "It's taken."

"Who's got it?" asked the intoxicated one.

"A man named Jones."

"What Jones?"

"A. B. Jones has room 23."

The battered up young man smiled. "Zat's all right," he said. "Zat's me, I fell out za window."

An old negro man, riding on the train, fell asleep with his mouth open. A mischievous drummer came along, and having a convenient capsule of quinine in his pocket, he uncorked it and sifted the bitter dose well into the old negro's palate and the root of his tongue. Soon the darkey awoke and became much disturbed. He called for the conductor and asked:

"Boss, is dere a doctor on this here train?"

"I don't know," said the conductor.

"Are you sick?"

"Yes, sah, I sho is sick."

"What is the matter with you?"

"I dunno, sah, but it tastes like I busted my gall."

Mary had been greatly interested in watching the men in her grandfather's orchard putting bands around the fruit trees, and asked a great many questions.

Some weeks later, when in the city with her mother, she noticed a gentleman with a mourning band around his sleeve.

"Mamma," she asked, "what's to keep them from crawling up his other arm?"

"You look like a fool!" thundered the disgusted man to his swell son, just in from college. "More and more like a conceited, harebrained helpless fool every year!"

Just then an acquaintance of the old gentleman entered the office.

"Hello, Charley, back, eh!" he exclaimed genially. "Say, you're getting to look more and more like your father every year."

"Ya-as," said Charlie, "That's what the governor's just been telling me."

Mark Twain had been telling a story of a friend of his who was constantly receiving letters from a man asking for a loan of some money. One day Mark's friend was surprised to receive a letter from the impecunious one which ran as follows: "This time I have decided to reverse the usual order of things, and instead of borrowing from you I enclose herewith 25 dollars, which I am going to ask you to lay aside for me for a rainy day." But the recipient of the letter couldn't find any check. Thinking that he might have dropped it, he searched for it under the table and all over the floor, but to no purpose. Then, quite accidentally, he turned over the sheet of notepaper on which the letter was written, and discovered this postscript: "I've just looked out of the window and find that it is raining like the very dickens."

The rumbling and groaning train had been toiling along from Memphis, Tennessee, toward Bald Knob, Arkansas, all through a hot afternoon. The stops had been frequent, but at last came one of unusual duration. After a tiresome interval, the conductor walked back through the mosquito-punctuated aisles until his glance met a sympathetic face. He bent over the kindly looking passenger, and whispered:

"Stranger, have you a bit of string about you? The engine's broke."

"This necklace, madam," said the salesman newly promoted to the curio department, "was originally made for the Duke of Buckingham, who gave it to Anne of Austria. We're selling a lot of them."

"What were you and Mr. Smith talking about in the parlor?" demanded Miss Blushes' mother.

"Oh, we were discussing our kith and kin," replied the young lady.

"Yeth, you wath," interposed her little sister. "Mr. Thumth asked you for a kith, and you thaid 'You kin.'"

"Why are all those people flocking down to Hiram Hardapple's barn?" asked the old farmer on the hay wagon. "Hi's got a curiosity down thar," chuckled the village constable.

"That so? What kind of a curiosity is it?"

"Why Hi's old red and white Jersey cow. The other night the old critter had the colic, and Hi went down with his lantern to give her a dose of cow medicine. Blamed if he didn't make a mistake and give her a pint of gasoline."

"Do tell! Didn't kill her, did it?"

"No; but by heck, it had a funny effect. Now, instead of going 'Moo, moo!' like any sensible cow, she goes 'Honk, honk!'"

The young man kissed her and she screamed.

"What's the matter, Kitty?" demanded a stern voice from upstairs.

"I—I just saw a mouse," she fibbed.

Presently the young man claimed another kiss, and the scream was repeated.

"What is it this time?"

"I just saw another mouse."

Then the old man came down with the house cat, a mouse trap and a cane, and sat in a corner to watch developments.

A priest went to a barber shop conducted by one of his Irish parishioners to get a shave. He observed that the barber was suffering from a recent celebration, but decided to take a chance. In a few moments the barber's razor had nicked the father's cheek.

"There, Pat, you have cut me," said the priest, as he raised his hand and caressed the wound.

"Yis, y'r riv'rance," answered the barber.

"That shows you," continued the priest in a tone of censure, "w'nat the use of liquor will do."

"Yis, y'r riv'rance," replied the barber, humbly; "it makes the skin tinder."

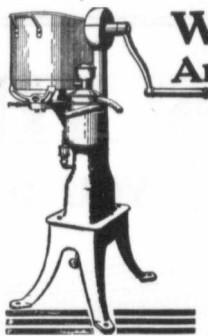
Tractive Efficiency

Continued from page 27

fuel consumption per horse power hour in brake and tractive tests. From a study of the Winnipeg Motor Contest results it will be seen that in many cases the fuel consumption per unit of time was increased considerably in the tractive tests as compared with the brake tests for economy. This would naturally indicate that these engines were developing more brake horse power in plowing or hauling than in the brake test, hence were showing more drawbar horsepower than would be shown when developing only the brake horse power of the economy test. Two objections arise at once to this: first, that the power plants might be less efficient while traveling over a more or less uneven surface; second, that, granting an increase of brake horse power, the comparison of economy and maximum brake tests shows that at the higher power nearly every engine consumed considerably more fuel per horse power hour. This being the case, it would be unfair to assume that all of the increase in fuel consumption were due to increased brake horse power. Unfortunately, we cannot regard the figures registered as economy and maximum brake horse power as representing generally the true economical and maximum points. For this reason we cannot consistently attempt to make a correction and estimate the brake horse power in the tractive tests from the data at hand. We are ignoring also the personal equation, which, however, is minimized by the usual practice of retaining the same operators throughout the contest.

The practical question still remains, however, if a traction engine can deliver a brake horse power hour for so much fuel, how much more will it consume with the same operator in delivering a drawbar horse power hour, and what is the ratio? The possible inefficiency of the motor in traveling is thus added to that of the traction mechanism. Any attempt to secure a more creditable performance at the drawbar by increasing the work of the engine and thus showing a higher percentage of the economy brake load at the drawbar, will be penalized by the increase in fuel consumption due to the overload. It goes without saying that if the fuel consumption per brake horse power hour is less at the maximum than at the figure designated as the economical load, the test showing the greater economy should be taken as the basis of comparison. Moreover, if great emphasis is to be put upon tractive efficiency in such a comparison, due precaution must be used to insure equally economical handling on the brake.

For the tractors in the last motor contest, the tractive efficiency estimated on this basis coincides in only one instance with that estimated by comparing the economical brake and the draw-



Why IHC Cream Harvesters Are The Choice of Careful Farmers

Careful farmers judge the cost of a machine by its value. They know that a cheap price means nothing if quality is lacking. And they know that it is genuine economy to pay a little more for a machine that is worth double.

A high standard of values has been set by IHC Cream Harvesters. No one without IHC facilities can ever reach that standard. Today an IHC Cream Harvester simply means the utmost for your money—the biggest value you can get at any price.

If you investigate all cream separators you will appreciate IHC features and advantages all the more.

Comparison proves IHC superiority in materials, construction, and efficiency. For instance, you will find that IHC Cream Harvesters are the only separators with gears which are dust and milk proof and at the same time easily accessible; IHC Cream Harvesters are protected against wear at all points by phosphor bronze bushings; IHC Cream Harvesters are constructed with larger spindles, shafts, and bearings than any other separator, insuring greater efficiency and durability; the IHC bowl is free from slots or minute crevices—that is why it is so remarkably easy to clean.

You will find an IHC in a style and size to meet your needs. Dairymaid is chain drive—Bluebell is gear drive. Each is made in four sizes, from 350 to 850 pounds capacity. The IHC local dealer will be glad to explain the above IHC Cream Harvester advantages and many others, all of which have much to do with your dairy profits. Ask him for catalogues and all information, or, write nearest branch house for the information desired.

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 Chicago U S A
(Incorporated)

IHC Service Bureau

The purpose of this Bureau is to furnish farmers with information on better farming. If you have any worthy question concerning soils, crops, pests, fertilizer, stock, etc., write to the IHC Service Bureau, and learn what our experts and others have found out concerning those subjects.



bar horse power output. Three tractors have better, and eleven have lower records. Both methods of estimating this efficiency undoubtedly deserve consideration. However, in the absence of absolute knowledge as to the brake horse power developed in a traction test, the more accurate and practical than a comparison of horse powers.

It is not within the scope of this paper to attempt to outline a standard test of tractive efficiency. This is work which should be taken up by a committee of practical engineers who have full access to the slender stock of information on the subject. The writer has merely brought up these points for the consideration of such a body. Such information as can be furnished by him or the organization with which he is connected will be made freely available.

Gould Balance Valve Company, Kellogg, Iowa.

Dears Sirs:—

I have the new Canadian price list. It will help a good deal in getting orders for 1911. If there is an outlook for a good crop in the spring I think I can dispose of about six or seven of your valves.

My father and brother say they would not take \$500.00 for their set of valves if they could not get another. We saved one tank of water per day in threshing and there seemed to be no wear on the reverse gear. I ran their engine and never saw an easier engine to handle.

Yours truly,
Clifford E. Wilson.
Camrose, Alta., Dec. 16, 1910.

HAVE YOU A HIDE

or Skin to be Tanned for a Coat, Robe, Gauntlets or Rug?

Send it to us, and we will make it as soft as a glove. We use no acid in our tanning, only the purest and best bark and mineral extracts.

Our total charges to tan and line an average sized hide, weighing above 50 lbs., with the best of lining and double row of felt trimming, is \$9.50

Smaller hides less in proportion and we pay freight one way.

We have been tanning hides for robes and coats for 15 years in the west, and our reputation is one of the best. Ask your neighbor.



BRANDON TANNERY

Successors to Carruthers & Co.

BRANDON

MAN.

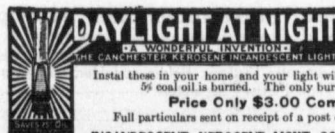
When You sow Good Seed this is what happens

Our New 1911 Catalogue

Is not merely a list of seeds and plants, but it gives the best counsel as to the conditions under which these can be propagated to the best advantage in Western Canada. It has been compiled by Western Experience for Western Conditions and is the best guide to gardening success in these Provinces.

If you have not received a copy by 15th of January—send a postcard and we will mail one free by return.

Steele Briggs Seed Co. Limited WINNIPEG



USE THE **Ganchester Incandescent Coal Oil Light Burners**

Install these in your home and your light will cost you next to nothing, as 95% air, only 5% coal oil is burned. The only burner that does not burn off the wick.

Price Only \$3.00 Complete. Will last for years.

Full particulars sent on receipt of a post card. Agents wanted everywhere.

INCANDESCENT KEROSENE LIGHT CO., 50 PRINCESS STREET, WINNIPEG

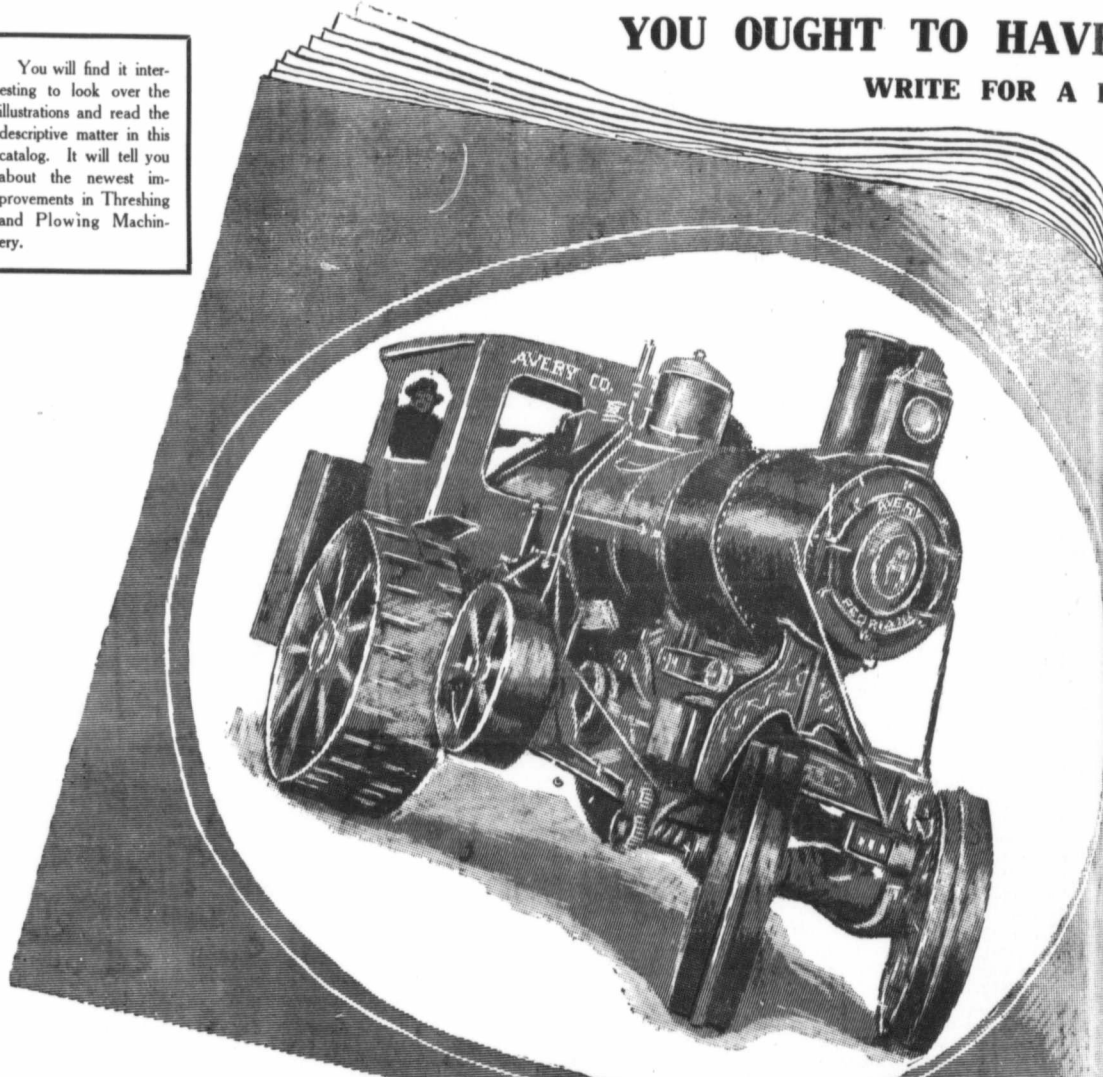
THIS SHOWS THE NEW 1911 AVERY CATALOG

YOU OUGHT TO HAVE ONE IT'S A DANDY

WRITE FOR A FREE COPY AT ONCE

You will find it interesting to look over the illustrations and read the descriptive matter in this catalog. It will tell you about the newest improvements in Threshing and Plowing Machinery.

It shows the new Avery Factory. It contains copies of the New Avery Special Warranties. It's Free. Use the coupon or write us a letter or postal and get a copy of the new Avery 1911 Catalog.



Here are Some of the Special Things About the New Avery 1911 Catalog

Larger Than Ever. 72 pages chock full of illustrations of machines—a lot of pictures of actual field scenes, showing the machines working, and brief and interesting descriptions.

Handsome Cover. Printed in two colors on a colored paper. Large cut of the famous Avery Bull Dog in colors on the front cover, and a front view of the Avery Undermounted Engine in natural colors on the back cover.

Double-Page Natural Color Illustrations of the Avery Plow Outfit and "Yellow Fellow" Separator. Shows you these machines just as they look.

More Complete Illustrations and Descriptions Than Ever Before of these machines and their many Special Features—Avery Double Undermounted Engine, Steam Shovel, Lifting Crane, Road Roller, and Winding Drum Attachments; Platform, Bolster and Dump Wagons; Single Cylinder Engines, and "Yellow Fellow" Separators.

Avery Company, 675 Iowa St., Peoria, Ill., U.S.A.
Haug Brothers and Nellerhoe Co., Ltd.
 CANADIAN JOBBERS WINNIPEG, MANITOBA

Please mail me free of charge the Catalogs marked below:

I am in the market for the goods marked below:

<input type="checkbox"/> Engine, Separator and Plow Catalog	<input type="checkbox"/> H.P. Engine	<input type="checkbox"/> Water Tank
<input type="checkbox"/> Thresher Supply Catalogue	<input type="checkbox"/> x Separator	<input type="checkbox"/> I.X.L. Separating Device
		<input type="checkbox"/> Traction Steam Shovel

Remarks: (Catalogs will be gladly sent whether you are in the market or not; but if not at present in the market

please so state here. If in the market, please state whether you have machinery which you wish to trade in; also whether you want new or second hand machinery.)

Name _____ P.O. _____
 R.F.D. No. _____ County _____ State _____

**Educate the Boy and the Man
Must be Educated.**

Continued from page 11

Under stress of twentieth century life, unless a remedy be found, degeneration will be still more rapid.

These are the needs that the failure of our schools is clearly pointing out. And this is why Interlaken was built, and why it has had such a rapid success.

The School is on Silver Lake, one of the wooded lakes of northern Indiana, and looks out over the pleasant, low, rolling corn land that the Jesuit explorers called La Porte—the Door of the Prairies. On its immediate west, beyond its grove of oaks, lies the broad band of country which skirts the southern shore of Lake Michigan, and which, with its roaring factories and foundries and spreading cities, is already called "The Industrial Centre of the United States." In its beginning, three years ago, Interlaken was but a great square brick house of the seventies, vine-covered, mansarded, and iron-trimmed. And from this comfortable old mansion, as from a centre, the school grew—grew naturally, like the thing of life it was meant to be. Boys came in companies; halls were added, each a home, framing its own habits, building its own character. And naturally, too, developed the generous democracy of its government and the widening scheme of work.

A place of hearty ways and no formality; a school free from formulas, and from catchword texts. Yet over the great door there stands the frank greeting: "A welcome to all who mean to work."

And within the hallway, on the face of the carved mail-box, below the two hemispheres and their winged Mercuries, runs the words: "See how by working together men have brought the whole world within your reach."

There you have declared, in honest introduction, the whole method of Interlaken—earnest, co-operative work and helpful fellowship. By the custom of the place, even the visitor "lends a hand," according to his talents, when he comes to stay with these 120 lads—some nine years old, some ten, some twenty, but most of them high school boys between fourteen and eighteen—most of them the sons of business and professional men. Here the moral, social, industrial sides of education become as important as the intellectual and physical. The

monthly reports to parents are not tabled marks, detailing, in percentages, only the student side of the boy's life, but candid letters telling the essential facts of his entire growth. The school is concerned with the whole boy, and not merely with a part of him. Here education is life made up of realities. It has to do with the real work of the world; and the boys have about them men, and the fine, healthy roughness of men. They are always ready for life, because they have always been a part of it.

And so at Interlaken, beginning with the simplest things, the students are soon made familiar with the primitive arts. About the farm, in the stable, they learn nature's lessons in facts that have to do with human living—the care of animals, the growing of crops. Every part of the school is open to them; the office a working department of business and commerce; and here, above all,

shaping shelves, running a fence, straight as a surveyor's line, building a windmill, fitting rubbers to chair legs, framing another beehive, or that ancient sort of manual training, that is, chores. And the boys undertake ambitious things. Here is one of many taken from the school's history.

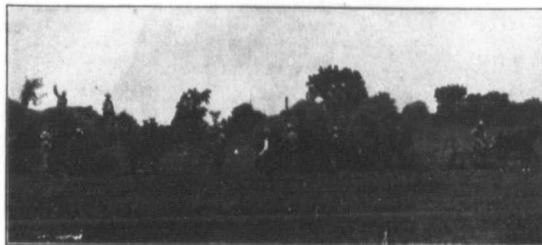
"At the end of the first year every room was taken, and new accommodations had to be provided. The boys were called together for a talk about plans to meet the growth of the school. Among other things it was then decided that they should build an extension to the dining room. In the early morning the headmaster drove two stakes. By the help of the instructor in carpentry the boys had made all their measurements and completed their sketches by noon. By night their plans were finished. The next morning active work began, and until it was done only one man

practical work is brought constantly into the school. Business men help in its direction, and visit it frequently. The daily papers and the magazines are publicly read for their vital news of progress and achievement. The responsibilities and the opportunities of American life are made for ever present. John A. Secor, the inventor, lived with the boys at Interlaken last year. They witnessed step by step the building of his new internal combustion engine which explodes kerosene as a gasoline engine explodes gasoline. They saw its first successful test, and watched its gradual perfecting.

And constantly into the world outside Interlaken the boys go for lessons in the productive processes of life, and its basic economic conditions. In small parties they make repeated trips to neighboring factories and mills and the nearby scenes of important constructive work. Noteworthy industrial feats, like the damming of a river, the building of a city like Gary, the sinking of deep tubular wells, the building of a railroad, attract them on free days. A visit to a foundry to see all the stages of the melting process is a vital experience. The lining of the ladles with clay, the charging of the cupola with iron and coke, the opening of the blast, the making of molds and cores, the pouring of the molten fluid, the dumping and rattling of the finished castings—how intently the boys observe it all. The experiences of such excursions are employed as illustrative and stimulating material in the classes of physics, chemistry, history and geography. The discussion of the underlying laws knits the fragmentary information together in an organic whole in the mind of the pupil. And in the shops of the school itself, a new interest and impetus and skill are given to work.

Here is a composition written by a ten-year old boy after a visit to the United States Steel Corporation's new plant at Gary. He has been told to write of his experiences in the wonderful new city. He chose the thing he saw that interested him most.

"First I was brown earth, buried in a mountain near Lake Superior. Then men came in great boats and called me iron ore and dug me out, and sailed away with me over the blue waves to Gary. With big shovels on wire ropes



School at Interlaken

interest must not be idle; even the kitchen, in face of the wrath of the first cook of their tradition, where time is valuably spent helping and watching a hundred things besides the making of wholesome bread.

In the shops, every article is made, not aimlessly, like the bread-boards of many schools, but to meet a definite need. Nor is there dawdling in the work, because other business is urgent, and there is only time enough to do each job well. The boys not only make chairs, tables, book-cases for their own rooms and to send home, they do craft work in wood and metal to sell. And here the spur of the practical outside world strikes the school. The product of their copper work has reached a standard of such saleable excellence that Marshall Field's, of Chicago, this past year bought all their surplus manufacture.

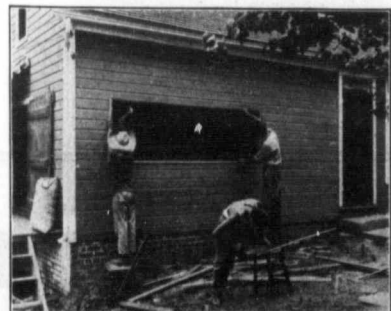
Then, too, the school always has work of its own to be done—always pressing work. It may be

shared their labors. They had never forgotten how to mix concrete, for they had to travel a mile to town to find out the proper proportions of sand and cement and broken stone. They learned the principle of reinforced concrete and they bought the rail they needed from the railroad company. They put up the frame, carefully nailed on the siding, tarred the roof, plastered the walls. They fitted the trim, did the painting, and, with the aid of the art instructor, cut the stencils and decorated the interior. They made and finished the old-fashioned double-decked tables and the benches. An eighteen by twenty-four two-story extension built by ten boys within five weeks."

Boys who are to undertake directive work must become interested early in the work of their fathers—the real work of the nation. To help them in this, the



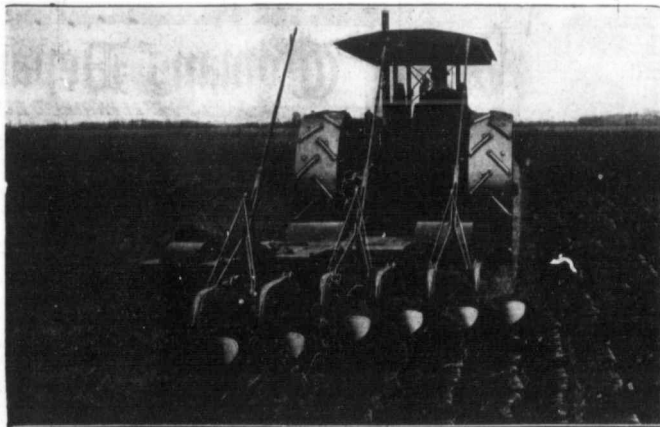
Within a Fortnight the Boys Cut and Stacked Eighty Tons of Hay



Letting Light into Old Farmhouse

RELIABLE POWER

That is what you want and what you get in IHC Gasoline Tractors
For Plowing, Threshing, and all traction purposes, they are money-makers and money-savers



International Harvester Company of America,
 Brandon, Man.

READ THIS LETTER

Justice, Man., November 10, 1910 1

Gentlemen:—As gas power is in its experimental stage, in this locality at least, and as I am frequently asked what success I had with my 20-horse power International outfit purchased from you in August last, I herewith send you results of my season's work.

We were out twenty-eight days and threshed thirty-six thousand bushels of grain, fully 80 per cent being wheat, as oats were a failure in this district. While I had not time to do a great deal of plowing, what I did was in stony ground and was greatly superior to the work done by horses in the same field.

As regards operating, I may say that I had never seen a gasoline engine working before purchasing yours, and yet we ran the whole season without a stop. For threshing I carried a gang of men, from four to five, no horses being required, and I always run the outfit alone when plowing.

Yours truly,
 (Signed) JAS. A. MITCHELL, Justice, Man.

THE IHC LINE IHC Vertical, 2, 3, 25, and 35-horse power. Horizontal (Portable and Stationary) in 4, 6, 8, 10, 12, 15, 20, and 25-horse power. Gasoline Tractors in 12, 15, 20, 25, and 45-horse power. Pumping, Spraying, and Sawing Outfits

Write to us or ask the nearest IHC local dealer to show you why these tractors make world's records, and why they will be the most profitable investment you can make in the power line.

Canadian Branches: Brandon, Calgary, Edmonton, Hamilton, Lethbridge, London, Montreal, Ottawa, North Battleford, Regina, Saskatoon, St. John, Weyburn, Winnipeg, Yorkton.

International Harvester Company of America
 (INCORPORATED)
 CHICAGO U S A

they hurried and lifted me out of the boat and dumped me in a pile on the land. They put me into towers with coke, and a hot fire changed me into iron and I flowed like water. They cast me into red hot blocks, five feet long and two feet thick, and then rolled me between iron rollers until I got thinner and thinner. At last I was long and thin, like a rail, and then they cut me into seven pieces, and ran trains over me."

The appeal of this school to practical men has brought rapid success. Three times within three years Interlaken has outgrown its accommodations, and now a greater Interlaken is being built, planned to receive eventually 400 boys. Some 640 acres of fertile and generously wooded land have been selected for this model plant, in the very heart of the country overlooking Silver Lake. And here the boys, more than seventy of them, encamped with their teachers and aided by competent architects, have been working all summer on the plans for the new school. They are making the desks, tables and chairs needed for each room. They are making door knobs and hand-wrought hinges.

And on this new farm, from their camp, thirty of the boys, directed by a Dutch gardener, have planted and cultivated the garden that furnishes the table vegetables. They have cut and stacked field after field of hay, and harvested a good crop of wheat. They have built roads, a bath house of logs, a boat house,

several piers. They have worked like slaves to bring into condition two old farms that have become a part of the school, bringing order and prosperity out of neglected fields and buildings. A fifty-acre field has been selected, which is to be sown, the first in the district, with alfalfa. And they have drawn plans for a greenhouse. Thus practical agriculture becomes a part of the school course—a thing of looming importance. For the development of farming during the coming century will surely mean, in some respects, more than the growth during the nineteenth century, of the factory system. For this present day, all boys, city boys as well as country boys, should learn of the possibilities of the soil, should see that plants are plastic like clay, to be shaped to serve our purpose. And they should have experience of tilling the earth.

The new Interlaken is building extensive shops, including a forge for the shaping of metals. There will be lathes, planers, and other basic tools of the machine shop; and work will begin, as in the past here, with the making of hammers, chisels and other tools. In the wood-working department, machines will be used to supplement hand work. And the print shop will issue all printed matter required by the school—laundry slips, letter heads, booklets, catalogues.

It has just become part of the plan to publish an educational journal, to which some of the

leading educators in this country and abroad have already promised to contribute. And business men, who are feeling keenly the dearth of skilled workers, and who know the demands of practical life, will write from their viewpoint. There is no fear at Interlaken that business and vocational training will taint the course of studies, for, they say, business and industry are the basis of our lives, and the school should prepare the boy for his life's work.

Again we come to Interlaken's ambitious program: "To shape, in theory and practise, the outline of the new school."

Can You handle our Gas Engine?

The rapid progress of machinery utilizing gasoline as a motor power in recent years forms a remarkable chapter in the history of Western development. The number of engines for farm use and automobiles now in operation has exceeded all expectations, and the great demand is for men with a knowledge of the machines, so that time and money may be saved by preventing breakages, and making small repairs without being held up while the expert is sent for. There has been a keen demand for instruction in many parts of the West and in order that owners may receive practical instruction as to handling all machinery

operated by gasoline, and to meet this demand a short course school of instruction opens in Brown's Stock Exchange block, Portage la Prairie, on January 9th, 1911. Alex. McLarty will be the expert in charge and special instruction will be given in engines and autos by competent men, and there will also be practical demonstrations. Address Alex. McLarty, Portage la Prairie, Gas Engine Dept. or Automobile Dept., Drawer 433.

The Magnet Calendars.

The beautiful "Magnet Cream Separator" calendar is now ready for distribution, and we are pleased to say a copy of this calendar has been received by our paper, and we can assure our readers that the same is somewhat more elaborate than the preceding ones. No expense has been spared to make this calendar what it is well known to be, namely, useful and ornamental, and those who are fortunate enough to receive one will appreciate the company's courtesy in sending one to their homes.

This calendar has the usual large figures, which can be easily and besides, the holidays are plainly marked as well as the change of the moon.

A calendar will be mailed to anyone who sends 10 cents to defray postage and wrapping.

In writing, send your request to their office at Winnipeg, Regina, Calgary or Vancouver.



Womans' Department

Conducted by PEARL RICHMOND HAMILTON

A HOUSEHOLD FORUM FOR THE DISCUSSION OF EVERYTHING THAT PERTAINS TO THE HOME



The Girl Who Smiled.

The wind was east and the chimney smoked,
And the old brown house seemed dreary,
For nobody smiled and nobody joked,
The young folks grumbled, the old folks croaked,
They had come home chilled and weary.

Then opened the door and a girl came in.
Oh, she was homely—very!
Her nose was pug and her cheek was thin,
There wasn't a dimple from brow to chin,
But her smile was bright and cheery.
She spoke not a word of the cold and damp,
Nor yet of the gloom about her;
But she mended the fire and lighted the lamp,
And she put on the place a different stamp
From what it had had without her.

Her dress, which was something in sober brown,
And with dampness nearly dripping,
She changed for a bright, warm, crimson gown;
And she looked so gay when she so came down,
They forgot that the air was nipping.
They forgot that the house was a dull old place,
And smoky from base to rafter;
And gloom departed from every face,
As they felt the charm of her mirthful grace
And the cheer of her happy laughter.

Oh, give me the girl who will smile and sing,
And make all glad together!
To be plain or fair is a lesser thing,
But a kind, unselfish heart can bring
Good cheer in the darkest weather.

—Selected.

Magnify Your Advantages.

(By P. R. H.)

The beginning of a new year prompts us to make resolutions, but I do not like them, because they are soon broken, and every time one breaks a resolution it weakens her will.

We are all busy, and work will get ahead of us at times, but we must not let it exercise tyranny over us.

The work on the farm is full of perplexities, and its magnitude often dazes the housekeeper; she feels helpless before so much to do. Women cannot expect to do all of their work, therefore it is important to separate the important from that which really is not necessary.

In order to prevent chaos in our work, we must get hold of some every-day plan which will help us to keep our balance.

The woman who grapples vaguely at a hundred things at once will never accomplish anything. Every big problem can be separated into smaller problems and solved one at a time.

There is great advantage in being definite.

Women are accomplishing great things these days, and it is because they see a definite plan of work and then carry it out.

The same idea is necessary in the home.

The housewife should ask herself this question:—

In what way will my work influence to best advantage my husband and my

children? A few less ruffles on the dresses might be sacrificed in order that the mother could spend a little more time in companionship with her children. No matter how much work a woman has to do, she should adjust her work so that there will be room for growth and happiness.

We cannot, of course, all be handsome, And it's hard for us all to be good; We are sure now and then to be lonely, And we don't always do as we should. To be patient is not always easy, To be cheerful is much harder still, But at least we can always be pleasant, If we make up our minds that we will.

And it pays every time to be kindly, Although you feel worried and blue; If you smile at the world and look cheerful The world will soon smile back at you. So try to brace up and look pleasant, No matter how low you are down, Good humor is always contagious, But you banish your friends when you frown.

Some women waste so much of their strength in worry that they cannot work well. They keep going, but they make drudgery of what they do.

I know women who get up cross in the morning; they scold their children and fret so much that they are always in a state of exhaustion. In a few years they wonder why their children leave home.

Anger and hate weaken one. Yielding to one's emotions is a serious form of self-indulgence. Emotions can be made to accomplish wonders if they are directed intelligently. The small worries of daily life are the things that disturb our emotional balance.

"Smile a while;
While you smile
Another smiles.
And soon there are miles
And miles
Of smiles
And life's worth-while
Because you smile."

Make the atmosphere of your soul right, and you are ready for the new year.

Learn to magnify your advantages. We magnify our disadvantages too much.

If your heart and conscience are at peace, in loving, trustful relation with God, you will be happy.

When Christians are burdened and worried, and apparently get no help from the God whom they profess to trust, is it strange that outsiders are not attracted to Him?

Gloomy Christians are profaning God by their actions, just as seriously as if they would take His name in vain in words.

There are two ways of overcoming this evil; one is by fighting it, the other is by looking away from it, and, with all our hearts, cultivating the opposite virtues.

If we cultivate good impulses our faults will drop away from us.

"Oh, what a little thing can turn
A heavy heart from sighs to song!
A smile can make the world less stern,
A word can cause the soul to burn
With glow of heaven all night long."

We may make tragedies of trifles. The little things that render daily life uncomfortable and home a place of friction and ill humor are the avoidable

trifles that make for the ignoble tragedies of existence.

Now, in taking up our work for the New Year let us see our ideal clearly, as the artist sees his picture before he paints it. Let us see the work accomplished, and it will be. "Ideals are the visions the soul sees when it comes into close communion with the Divine mind." Are we near enough to the Divine mind to see our ideals clear enough to make it practical? The following verses have helped me; they may help you:—

"Give us the comprehensive sight
That sees another's need;
And let our aim to set things right
Prove God inspired our creed.

"Give us the soul to know our kin,
That dwell in flock and herd,
The love to fight man's shameful sin
Against the beast and bird.

"Give us a heart with love so fraught
For all created things
That even our unspoken thought
Bears healing on its wings.

"Give us religion that will cope
With life's colossal woes,
And turn a radiant face of hope
On troops of pigmy foes.

"Give us the mastery of our fate
In thoughts so warm and white,
They stamp upon the brows of hate
Love's glorious seal of light.

"Give us the strong, courageous faith
That makes of pain a friend,
And calls the secret word of death
'Beginning' and not 'end.'"

Local Patriotism.

Whenever I hear a woman speak unkindly of her husband or find fault with her children I am sorry for the family; when I hear pupils criticise their teacher I have a bad opinion of the school; when I hear men and women ridicule their pastor I think the church is not very helpful to the community; when I hear citizens run their town down I am satisfied that theirs is not a prosperous place; when I hear people complain of conditions in this great, wonderful country, and say "Back in the old country they do this and they do that," or, "On the other side of the line conditions are so-and-so," I feel that these people will never be much credit to this new country. I always feel like asking, "Why did you not stay in the land of your birth?" We want people who will respect our ways and honor our flag.

I visited a home once where the wife was always saying mean things about her husband. I did not enjoy my visit. That home is liable to be broken up any time. I once knew a town whose citizens entertained every stranger that came in their midst by saying, "This is the worst town you can find. The people here will not encourage any good enterprise. It is simply dead, and nothing can thrive here. It is of no use to try to interest the people here, because they do not take an interest in anything save whittle on a dry-goods box in the corner grocery." That town never did amount to anything. Business men began to fail, and the place was known all around by the reputation its own citizens had given it. By this time some of the men discovered their mistake, and the women too. The merchant and banker built new buildings, the property owners voted for improve-

ments, side-walks were taken up and new ones put down; the women started culture clubs and lecture courses; the school board arranged a good course of study and provided competent teachers; the church members themselves created interest in their work, and now the town is one of the most progressive places you will find according to its population. As soon as the citizens developed local patriotism their town began to prosper. You cannot afford to run your town down. It decreases the value of your property. The spirit of local patriotism among its citizens is the best advertisement a town can have. Encourage organizations that stand for intellectual and social improvement. Tell others that your town has the very best people and the very best advantages for its size that one can find. Cultivate the spirit of local patriotism, and lend your support to anything helpful to the community that comes your way.

In regard to the person who is always lauding the old home at the expense of the new, let me say it is unjust to your neighbors and insult to the flag of your adoption. I was born and raised in another country. When I lived there I loved it; but now I think Canada is the very best country on earth, and I am glad my home is here. I like the people; I know that the advantages and environment of this great West cannot be equalled anywhere. When I visit my old home I am always glad to come back. The old home land is full of pleasant associations, but Canada—Western Canada—is far better, and I feel that I am greatly blessed in having my home here. In the beginning of this New Year let us cultivate patriotism, patriotism in every way; let us do our share in creating respect for our community and loyalty to our country's flag.

MOTHER'S CORNER

The Mother's Letter.

By Margaret E. Sangster.

Oh, postman, on your weary road, what have you in your bag?
The tale of death, the tale of birth? It is not strange you lag
That last slow mile, as, one by one, you hand the letters in—
Sweet messengers of love and faith, 'mid strife and woe and sin.

In yonder dingy boarding-house there stands a tempted boy;
The devil whispers in his ear, "Come, taste my brimming joy;
Come, sell your soul, what matters it about another world?
This world is here. Come, drink my wine, with sparkling zest impermeal."

Oh, postman ringing at the door, you're haply just in time;
You hand his mother's letter to; its sweetness cannot chime
With siren pleadings from the pit; let's look upon the page,
And see how mothers meet the foe, when souls are thrown for gage

"Dear Ned," she writes, "old Ponto fails, the dog is growing gray,
I think he misses you, my dear; you've been so long away.
What rambles o'er the hill you two in other days have had!
I pet old Ponto for your sake, my precious, precious lad."

"The little sister grows apace, you'd hardly know her now, She gets to have a look of you about the open brow. I tell her: 'Polly, study hard, be just like brother Ned, Wherever others stood, my dear, he always stood up head.'

"I go to meeting every week, of course, but in the pew You wouldn't think, dear boy, how much your mother misses you. They've got new singers in the choir, a tenor and a bass, And little Susy Spalding, with a voice to match her face.

"She, Susy, is a darling, and she often sits with me, And puss, though growing wheezy, climbs purring to her knee. The bird is dead—I'm sorry—but he was ten in May, One cannot keep canary birds for ever and a day.

"Lame Willie always asks for Ned—'When did you hear, and what?' I wish you could write often, dear; but, mind, I say this not To blame you; men must work in town, and mothers understand. I always trust the golden heart behind the good right hand!

"God bless you, Ned. Vacation time is speeding on so fast, I'll have you when the daisies bloom, ere strawberries are past. I love you, love you, darling Ned; this stupid letter take, And pardon any errors for your own dear mother's sake."

Oh, postman, trudging in the dark, an angel went before, And left a blessing on the note you handed in that door. And, skulking onward on the blast, the devil left his prey, Apollyon put to flight before a mother's love to-day.

And, mother, with your boy away and so much out of sight, Do more than love, and more than pray, to shield him in the fight; Write often of the simple things that hold him to the farm, And let his childhood round his life weave fast its mystic charm.

Ladies' Home Journal.

"The Hand that Rocks the Cradle."
(The Last Verse of an Old Song.)
"In every humble dwelling where a mother's name is known You'll find that she is raising up a hero of her own; And when her hair is turning gray and she has older grown, He'll prove to be a noble loving son. But when the call "To arms!" is heard she bravely gives her all, And freely sends him forth in answer to his country's call. If in defence of hearth and home in battle he should fall, She'll only say, 'Our Father's will be done.' On sea and shore amid the battle's roar, Wherever England's flag has been unfurled, Though far from home their noble sons may roam, The hand that rocks the cradle rules the world."

Some Old-Fashioned Remedies.

I sometimes wonder if the readers of the Mothers' Corner think this material is practical. Very often the articles written about children are theory only, and are written by men and women who are not parents. At present I take a magazine filled with material on the care of children, and most of it is theory, and cannot possibly be used. I feel that it must be written by women and men, too, who know nothing about children. Our magazine, on the other hand, goes into homes that are many miles from town. The mothers in these homes cannot procure medical advice or aid, and they have families of small children. This department aims to help them, and the editor would like to have these mothers write to her about any problem that concerns the care of her

children. Being a mother, I will gladly give my own experiences, and if I cannot answer the questions the mother asks I will ask a competent physician to help me. I want every mother who is puzzled concerning any problem about her children to write to me and I will gladly do my best to help her. Let this be a real Mothers' Corner this year.

Every mother should have a supply of medicine on hand. I will give a few that I use:—

Camphorated oil, for rubbing on the chest and shoulders for a cold. Be sure to warm it, and put a flannel over the chest after rubbing. This is excellent for preventing pneumonia if used when the cold is first noticed.

Every mother should have castor oil in the house. A spoonful given to the child when the stomach is out of order, or when the child has fever from teeth-

ing, will clean the system of fever. I always gave two doses—one at night and one the next morning.

If the child has cramps in the stomach a mustard plaster is helpful. This is made by mixing equal parts of mustard and flour with water until it is a thin paste. Put this mixture between two layers of cloth and place on the aching place. This is sometimes used on the chest, though I like an onion poultice better for the chest.

An onion poultice is made of cooked onions chopped fine, sometimes mixed with vinegar.

Boric acid powder should be kept on hand to use for washing sores and scratches, and also for cleaning out the baby's mouth. I put a spoonful of powder in a glass and pour boiling water over it and let it dissolve.

A bottle of carbolated vaseline is a good salve for healing sores and scratches.

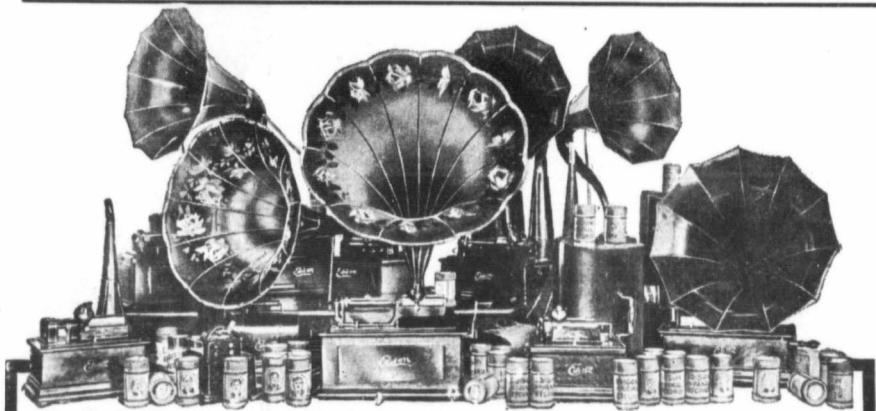
There is nothing so good for croup as the old remedy—Hive's Syrup. I know of children that have been cured of whooping cough in two weeks by the use of an old English remedy—Roach's Em-bro-cation. It is excellent to rub on the chest for a cold as well.

Scorched flour sprinkled on the sore places of a baby is almost as good as baby powder.

If a baby's feet are always kept warm it will seldom have colic.

Goose oil is nearly as good as cam-phorated oil for rubbing on the chest in case of cold.

It is unfortunate that so many mothers cannot nurse their babies. Many could if they would urge them-



Your Choice of Any of These
Yes, FREE. Shipped posi- **EDISONS**
tively and absolutely free. You do **FREE**
not have to pay us a single penny either now or later. We don't ask you to keep the phonograph—we just ask you to accept it as a free loan. We do not even ask you for any deposit or any guarantee, not even any C. O. D. payment to us. All we ask is that you tell us which of the magnificent Edison outfits you prefer so that we can send that one to you on this free loan offer.

Just Take Your Choice You Don't Have
to Buy Anything

Get any of the outfits shown above—your choice of records too. Simply get the phonograph and the records and use them free just as though they were your own. Entertain yourself, your family and your friends too, if you wish, with everything, from the catchiest, newest popular songs, side-splitting minstrels and vaudeville monologues to the famous grand operas, *Amberola* and other records sung by the world's greatest artists. Hear all this to perfection on the Edison Phonograph. After you have had all this entertainment absolutely free, then you may simply send the outfit right back to us at our expense. Now, if one of your friends wishes to buy such an outfit tell him that he can get the rock-bottom price, and, if he wishes, on payments as low as \$2 a month without interest. But that's not what we ask of you. We just want to send you your choice of the latest style Edison Phonograph free—your choice of records too, all free—then we will convince you of the magnificent superiority of the new style Edison. It will cost us a little in express charges to get the phonograph back from you—that is true—but we'll feel amply repaid for that, knowing that we have made you a friend and a walking advertisement of the new style Edison Phonograph.

Send Coupon for the New  **FREE**
Edison Books FREE Today **COUPON**

Get our handsome Free Edison Catalog and list of over 1500 records so you can select just the machine and the songs, recitations, etc., you want to hear on this ultra generous offer. Remember, there is absolutely no obligation on your part. All you need to do is to return the outfit at our expense when you are through with it. If you enjoy good music, and the finest and most varied entertainment that it is possible to imagine, or if you want to give your family and friends a treat such as they could not possibly get through any other means, then you should certainly send the Free coupon today. Don't wait—your name and address on a postal will do but the coupon is handier. No letter necessary. Be certain to write while the offer lasts. Better write today.

F. K. Babson, EDISON PHONOGRAPH DISTRIBUTERS
Dept. 5201, 355 Portage Avenue, WINNIPEG, CANADA. U. S. Office: Edison Block, Chicago, Illinois.

Without obligations on me, please send me your great Edison Catalogs, and also full explanations of your Free Offer on my choice of a new style Edison Phonograph.

Name _____

Address _____

No letter necessary. Just sign and mail Free Coupon NOW

selves on by drinking hot cocoa and plenty of tea. Worry and fatigue both drive the milk away. The baby needs the mother's milk.

I never like to see a mother take the wax from the ear.

A little drop of camphorated oil on cotton is good to clean the baby's nose out when it is stopped up.

I do not like to see a three-months-old baby bound up in flannels so it cannot kick. It needs to kick to strengthen its muscles.

I have given these few hints from my own experience. I wish you would ask me for more. I love babies and children and mothers too, especially those in the far-away home on the prairie, and I want to help them if possible.

I wish one and all a very prosperous and happy New Year. P. R. H.

Artificial Food.

The best artificial food for a baby is a mixture of pure fresh milk, barley water and sugar. These are mixed in different amounts, according to the age of the child.

Mother's Influence Over Her Child.

Some valuable advice on the expectant mother's duty is given by an exchange. It declares that during the first six months of gestation the mother may impart to her child the mental and the spiritual, and during the last three months she may impress upon him what she desires him to be physically. For a long period the Greeks were physically the most perfect race in the world. This was because they paid special attention to the development of the physical. The mother's strongest desire was to bring forth fine physical forms. Models were constantly about her. The most glorious marble statues filled the houses of the Greeks, and that people became a race of god-like appearance.

Physical attractiveness in the offspring is a perfectly laudable desire. As a lady entered the dining-room of a friend whom she was visiting her eyes fell upon a beautiful golden-haired child whom she had never seen, and she remarked:—"This is your little daughter! What a perfect likeness of her that is in the room where I slept last night!"

The mother replied:—"It is not a portrait of the child, but it would be strange if she did not resemble it. I occupied that room before my child was born, and that picture was before my eyes constantly. I loved it, and I wished that my child might look like it."

If mothers but knew the divine law there would be only beautiful children, which is both laudable and right. There is nothing so gratifying to one's self and to others as physical attractiveness united with a lofty personality, for although "handsome is that handsome does," the balance of power is always on the side of beauty and grace.

The expectant mother who wishes to endow her child with superior mental power or with talent for some of the particular arts should concentrate her thoughts on those subjects. She has the power to increase any faculty in her child by dwelling on the things which she wishes to be manifest in him, and by seeking the companionship of people who possess those desirable qualities.

An Italian woman who had been a mother for many years greatly admired the young son of a woman friend. This boy, when a mere child, had been forced to assume the support of his widowed mother, and his devotion to her amounted to adoration. The Italian woman had sons of her own, but she had never seen such devotion as this young boy bestowed upon his mother.

At an early age he was sent on a long cruise on the Mediterranean, leaving his mother with her trusted friend. Upon his return after two years he found an addition to his friend's family—a baby boy only a few months old. As this boy grew there was a striking resemblance to the young officer. At eight years of age the likeness was so strong that every one supposed the two were brothers. Even the mannerisms of the boy were like those of the officer. The truth was, the mother's admiration for the young man had been so intense that she unconsciously impressed it upon her child, whose devotion to her excelled that of her other children.

ABOUT WOMEN

Miss Belle Honan, a rich Irishwoman, has just given \$50,000 to establish free scholarships in the University of Cork.

Madame Curie.

Madame Curie announces that she is a candidate for membership in the French Academy of Sciences. If she should succeed in being elected she will be the first woman to receive that honor. She is now chief professor of the faculty of science in the Paris University, and not only shared with her husband the honor of discovering radium, but since his death she has produced polonium, and has succeeded in obtaining pure radium, which before only existed in the form of salts.

Mrs. Humphrey Ward's Place.

Mrs. Humphrey Ward has attained such fame from her novels that she has completely overshadowed her husband. Mr. Ward is a critic and writer of standing among the literary set in England, and he said to a friend recently, with a sarcastic smile, "When a girl wants to retire from the world and be lost in oblivion she has to enter a nunnery; but a man, to achieve the same end, need only marry a famous woman." In a class at the Drexel Institute in Philadelphia, when the professor announced a lecture by Mr. Humphrey Ward, he found it necessary to explain that, besides being the husband of Mrs. Ward, he was a man of intellectual ability.

Women Conductors in Chile.

While the women of the United States are boasting of their entrance into business and trade circles, it might be mentioned that in Santiago, Chile, women serve as conductors on the street cars.

Mrs. Belmont to Get New Flag.

Mrs. O. H. P. Belmont, a well-known suffragist, is getting out some new suffrage flags. Those she has bear but four stars, and now, since Washington has become a suffragists' state, a fifth must be added. Mrs. Belmont's blue flags, bearing the words "Votes for Women," are conspicuous at all the New York suffrage meetings. With Mrs. Belmont in this country working for votes for women, and her daughter, the Duchess of Marlborough, in England working for the betterment of the poor classes of women, both mother and daughter are adding very materially to the good of the world.

Queens in Exile.

The arrival of ex-Queen Amelie of Portugal in England has called attention to the number of royal women who are in exile. Among the exiled queens are the Empress Eugenie, who lives at Farnborough Hill in Hampshire, England; Carlotta, ex-Empress of Mexico, in a Belgian chateau—the poor queen lost her reason years ago as a result of the Mexican revolution. A deposed queen of whom we hear little is Hanavalona, who lost her throne in Madagascar in 1897, and was transported first to Algeria and then sent to France, where she now lives in a secluded village. Liliuokalani, while not an exiled queen, is a deposed monarch, and spends her time between the United States and Hawaii. She is now in her seventy-second year.

On Stage Sixty-five Years.

Mrs. Annie Yeamans has been on the stage for sixty-five years, having made her first appearance when she was ten years old. She celebrated her seventy-fifth birthday recently, and the company with which she is now playing made her a present of a bouquet, in whose depths were hidden seventy-five one dollar bills. She was born in the late of Man and came to America in 1865. She says she is going to remain on the stage ten more years, and will retire from active life on her eighty-fifth birthday.

Bride a Master Marine.

Miss Jane Morgan, who was recently married in Philadelphia to the Hon. Cecil Fisher, son of Lord Fisher, a British admiral, is one of the few women who hold a master marine license.

PURITY FLOUR

If that name is on the sack you can buy with confidence

"More bread and better bread"

Extraordinary COAT SALE

500 PURE WOOL GARMENTS

L.C. 101

We have secured 500 magnificent coats, style like sketch shown here. Every one is a quality garment, being productions of Canada's best coat-makers. Lengths range from 50 to 54 inches. Colors include Navy, Green, Grey, Mixtures, Diagonals, Stripes and Black. All sizes are represented, but not in every style and color. If you can use a fine pure wool coat for an almost trifling price, send in your order at once. Let us know the color you prefer, also second choice. When you receive your coat, you will be more than pleased, as these models are regularly worth from \$12.00 to \$18.00. We cannot send samples of these garments.

Just imagine, the finest winter coats produced.

M. O. D. **\$6.98**
PRICE

W. H. Scroggie Ltd.
MAIL ORDER DEPARTMENT
MONTREAL CANADA

Don't Fail to Renew Your Subscription Before it is Too Late.

Seeds That Grow

If you want the best it is possible to grow, such as you can rely upon to produce the choicest vegetables and the most beautiful flowers, you should try our seeds. We will be pleased to mail you our catalogue, which is comprehensive, and includes the choicest and hardest of seeds, trees, shrubs and plants.

World-Famed Choice Seeds

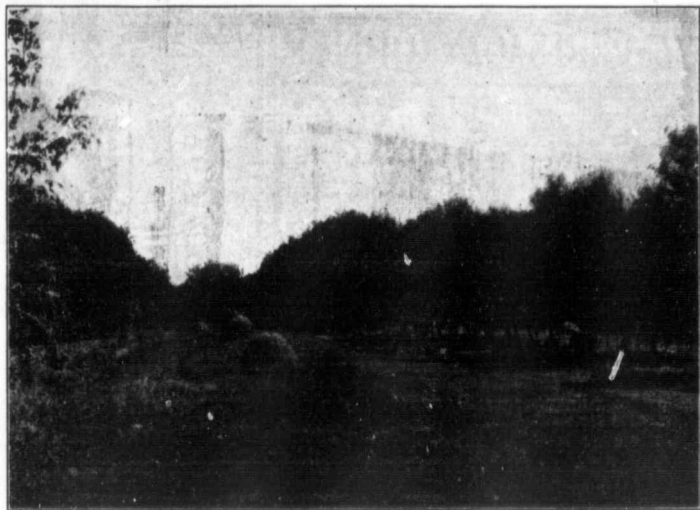
In this catalogue Messrs. Sutton & Sons offer some of their varieties best adapted for use in this climate. Our catalogues are good and expensive. We do not wish to throw them away, but send them to careful buyers. Send us your name and address before placing your order elsewhere. Your enquiry will have our personal attention.

We have to offer this spring 5,000 Maples. Just what you want to plant in Avenue or Wind break, Russian and Laurel Willows, Poplars, Shrubs and Hardy Fruit Trees.

Patmore Nursery Company

BRANDON

MANITOBA



RECIPES

Puddings.

In making puddings, one should have a teakettle of boiling water at hand constantly while the pudding is cooking. This is to replenish the kettle in which the pudding is boiling and not stop the boiling process while doing so. The water must come one-third to the top of the covered mold, so that it will boil over the top and cook the top of the pudding, which will be doughy when the other part is all right. A cover that fits over and not in the dish should be used. Bag puddings must be kept under water by placing on them a plate or cover that will set down in the kettle and allow the water to come over it. The kettle cover should be on top.

Have the water boiling when the bag is placed in the kettle. Boiled puddings must have the cloth in which they are tied or covered dipped in hot water and then covered with flour, which will prevent the water or the moisture from the steam from getting in.

Where suet is called for, use the beef suet that clings about the kidneys. It should be easily crumbled. Remove all the thin skin that holds the fat together. When boiled puddings are ready to take from the water, lift the bag with a strong fork and at the tie end. Pierce the cloth, then plunge in cold water for a moment, and the pudding will be free of the cloth. Never let the water about the pudding stop boiling.

A pudding can be made in a bowl by placing an inverted saucer in the bottom of the kettle, then place the bowl on the saucer, covering the top of the pudding with a cloth. Then surround the bowl with boiling water and place a cover on the kettle. The water should be boiling.

Batter Pudding.—One quart of milk, one and a half cupful of flour, a quarter teaspoonful of baking soda, half a teaspoonful of salt. Mix the flour with just enough of the milk to make a thin, smooth paste; then to it add the beaten yolks of four eggs, then the salt, soda, and cold milk. Beat the whites until frothy, but not stiff, then add to the

mixture, stirring thoroughly. Pour into a buttered dish and bake twenty minutes in a brisk oven. Serve a hard sauce with this pudding.

Spanish Pudding.—Chop half a pound of suet until fine, adding a quarter cupful of flour to keep it from adhering to the knife. When fine, add six level cupfuls of stale breadcrumbs, three-fourths cupful of brown sugar, sixteen level tablespoonfuls of bread flour, two eggs, one-half cupful of orange juice, the grated rind of one orange, and a quarter teaspoonful each of salt and grated nutmeg. Mix the suet, flour, breadcrumbs, nutmeg, sugar and salt together thoroughly, then beat the eggs separately and mix into the dry ingredients, adding the orange juice and rind last. Boil in a buttered dish for four hours and serve with orange sauce.

Indian Pudding (Baked).—Stir one and one-half cupful of yellow Indian meal (also called corn meal) into two quarts of scalding milk, containing half a teaspoonful each of salt and pulverized ginger. Remove from the fire and let stand until lukewarm, then add one cupful of molasses, two eggs beaten together and one level tablespoonful of butter. Bake in a moderate oven for two hours. When the mixture begins to thicken, stir in half a cupful of raisins. This pudding may be made without eggs, adding a quarter teaspoonful of soda.

Indian Pudding (Boiled).—Warm one pint of molasses and one pint of milk, stirring well together, then add two beaten eggs, one pound beef suet chopped fine, four cupfuls yellow corn meal and two cupfuls of flour, sifted with two teaspoonfuls of soda and two teaspoonfuls of salt. Turn into a floured bag, tie, leaving a good space at the top of the pudding to swell. Boil four hours, and serve with a lemon liquid sauce.

Golden Pudding.—Half-pound suet chopped fine, half-pound (or four cupfuls) stale fine breadcrumbs, one cupful orange marmalade, four beaten eggs, half-cupful seeded raisins. Boil in a buttered mold four hours, and serve with lemon hard sauce.

Lemon Pudding.—Half a pint flour, half-pint treacle or very light syrup, half-pound beef suet, the juice and grated rind of one lemon, one tablespoonful candied lemon peel cut fine, three tablespoonfuls of cream, a level teaspoonful of baking powder, two eggs. Chop the suet, fine, add the flour, treacle, peel, cream, lemon juice and two eggs, beaten thoroughly together, a dash of salt. Sift baking powder with flour; pour into a buttered dish and boil three and one-half hours. Serve with a hard sauce.

Apricot Pudding.—Cut a loaf of wheat bread into thin slices, then crumble coarsely and mix with half-cupful of melted butter. Butter a bread-pan and

lay in an inch layer of the crumbs, then on top place a layer of dried apricots, soaked for six hours; dust with cinnamon, then cover with more crumbs and fruit until all are used, having the final layer crumbs; turn on half-cupful of cold water; cover with a pan, and bake half an hour in a moderate oven; then remove the pan and brown the top. Serve with egg sauce.

Black Pudding.—One teacupful of stale fine breadcrumbs, two teaspoonfuls of baking powder, half a cupful of chopped suet, one cupful of molasses, one teaspoonful of cinnamon, half-teaspoonful of pulverized cloves, quarter teaspoonful salt, one egg, half-cupful flour, one-half cupful milk. Sift spices, salt, flour together, then add the suet and crumbs; beat together well, add the molasses and milk and egg; stir in half a cupful of dried cherries, pour into a pudding mold well buttered, cover and steam for four hours. Serve with a liquid or hard sauce.

Sauces for the Above Puddings.

Egg Sauce.—Beat a cupful of pulverized sugar and half a cupful of butter to a cream, then beat in one egg yolk and cook over hot water till the butter melts; now fold in the stiffly beaten white of the egg and cook a few moments more. Serve in a dish, dusting a little grated nutmeg over the top.

Orange Sauce.—Heat one pint of thin cream over a dish of hot water, then add two tablespoonfuls of sugar and the grated rind of half a medium sized orange and cook until the cream is scalding hot; at this point add the juice of the orange, and fold in the stiffly beaten white of one large egg and turn into a warm dish for serving. To fold the egg in, take the white by tablespoonfuls and lay on the sauce; then carefully cut it into the sauce; at the same time fold the sauce over it, continuing this folding motion until the white is well mixed with the sauce. This method keeps the cells of the white unbroken during the cooking, and the sauce will be light and feathery, instead of thick, as when the white is beaten or stirred in.

Lemon Sauce.—Mix one cupful of granulated sugar, the juice and rind of one medium-sized lemon, with two cupfuls of cold water; set on the fire to come to the boiling point, then stir in one tablespoonful of corn-starch dissolved in a tablespoonful of cold water. When pouring the starch into the hot liquid stir constantly to prevent lumping; let it boil for ten minutes, then strain, and just before sending to the table stir in a teaspoonful of butter. This makes a good hard sauce.

Foamy Sauce.—Make the sauce as for a lemon sauce, and after cooking pour in a thin stream on the stiffly beaten white of one large egg, beating constantly during the pouring process.

EXPERIENCE EXTRACTS

Pretty aprons can be made of a man's shirt that has passed its usefulness as a shirt; colored or figured makes no difference. Take the back of the shirt and gore for the front of the apron, cutting as long as possible. Cut the front of the shirt down the middle, thus making the apron, goring if desired. It makes the apron wider around the bottom to gore the sides. Strings can be made of the sleeves, also a four-inch ruffle if cut with care.

Dip pork chops in eggs, then in bread crumbs, and fry. Place on platter, have ready two or three sliced apples; fry in fat from chops and garnish platter with them.

Cake flour should always be sifted twice—first when it comes from the barrel and before it is measured, next when the baking powder or soda has been added. If it is measured before the first sifting you will surely get too much of it for your cake's welfare.

To disinfect and at the same time whiten the kitchen sink, sift a handful of chloride of lime into it. Add just enough water to moisten, and spread over surface of sink with an old whisk or brush. Leave overnight if possible, then wash thoroughly with hot suds. Will remove all discolorations.

Never bake the oven door when baking a sponge-cake or any other light variety. If you do, the cake will sink in the middle.

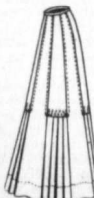
Never leave stock or soup in the saucepan overnight. Empty it into a pan, or it will soon turn sour.

Never leave fish, onions or anything with a strong smell near milk, as it absorbs any flavor.

Never let stews boil. "A stew boiled is a stew spoiled." They should only gently simmer.

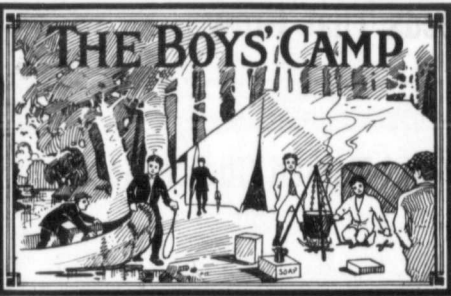
SEND US \$1.95

Receive postpaid this late style skirt. It is cut in seven gores with pleated sides, made just as pictured; trimmed with satin buttons. Skirt closed in back with an inverted pleat. The material is a smooth finished Vienna cloth; a splendid wearing material for skirts in black, navy, dark green and dark red. This is the best and lowest priced skirt sold and we want you to order one to-day at only \$1.95. Give inches inches around waist and hips; also length in front. Add 25c. for postage. Order skirt No. 12. Order to-day. STANDARD GARMENT CO. 11 COOTE BLOCK, LONDON, CANADA



Send us only \$1.50

Receive by return mail this beautiful child's dress, made from fancy dress goods, in black and white shepherd plaid pattern; in blue and white, and guaranteed to give the best of satisfaction. The dress is made with a pleated skirt and waist, joined with belt; trimmings consist of fancy strappings designs and brass buttons. It comes in ages 12 14 and 15. Give bust waist and length of skirt in front. We want you to have this, the best and lowest priced dress sold today, and from the best and lowest priced mail order house under the British Flag. ORDER DRESS \$1.50. Add 25c for postage. STANDARD GARMENT CO. 11 COOTE BLOCK, LONDON, CANADA.



THE Girls' Cozy Corner

THE NEW BABY IN OUR HOME

There comes a baby to our house; Its nose is just a dot. It would be pretty, but it keeps Its face tied in a knot. I think it has a stomach ache, Because, poor little-thing! It looks just like I felt when I Ate too much corn last spring.

It hasn't any teeth at all; But, then, I don't suppose We could afford so many things. Yet, goodness only knows What they were thinking of to get A baby that can't talk! The very best that it can do Is just a gurgly squawk.

It's such a weeny little one. But maybe it will grow. Still, if 'twas me, I could have bought A bigger one, I know. Yes, times are very hard, I s'pose, And yet it seems to me They might have bought a Number 8 'Stead of a Number 3!

—Lowell Otus Reese, in Leslie's.

Dear Girls of the Cozy Corner:—You have sent in splendid letters this month and I think you are ahead of the boys this time. I am pleased to see the interest you are taking in our Cozy Corner. Some of the girls know how to cook and sew. Will they write us about their experiences? I am always interested in what you are doing and I hope you will tell us about what happens in your part of the country. The description that Josie Muzzy gave of the bear hunt is interesting to all of us. I hope we may have more letters of like description.

Do my girl readers know that "Cousin Doris" has a little girl? She is just one of the dearest little girls in the whole world. Her name is Monona, and sometimes I read your letters to her and she likes to hear about your pets. My own little daughter makes me love all other girls. I think that is one reason why I love this Cozy Corner so much.

I trust that every girl reader will write to our Corner and we shall have a good time this year. I know. Wishing you all a very Happy New Year, I am,

Sincerely,
Cousin Doris.

GIRL'S PRIZE LETTER

Gwynne, Alta.
Dear Cousin Doris:—This is my first letter to the Girls' Cozy Corner. I go to the Roseland school; my age is thirteen; I am in the fourth reader; my studies are: Reading, Writing, Spelling, Arithmetic, Book-keeping, Canadian and English History, Grammar, Geography, Agriculture, and my teacher's name Mr. A. P. M.

I am going to tell you about an accident that happened last summer in July. One afternoon our neighbor's little boy and his hired man were hauling stones on a little drag sleigh. The stones were for a foundation of a new barn which they were going to build. The boy and the man were quite a ways down in the pasture, and where there was an old dwelling place where an old well was left just covered only with a few sticks. It was about

thirty-five feet deep. They were driving with George a big bay horse and Sola a smaller black mare; her colt was along too. They just had a little drag sleigh.

The hired man did not know it was a well, so he drove the drag and pretty soon the big horse stumbled in the hole but he could get his front feet on the edge, so the hind legs went in first. The hired man tried to jump, but he became stiff and could not jump till both horses were almost down. (It happened that Mr. H. was not at home; he had gone for a load of sand and they did not have any other horse to pull them out). So Mrs. H. came to our place for a team. It was good that there was not much water in the well and that the smallest one was on top. The water just came to the neck of the big horse but not more than half ways on the other. The harness was all broken and split up.

When they had our team over to the well, and had gotten the pulley and a long rope, a carpenter went down and tied the rope around the neck and behind the front legs of Sola. Pretty soon they made the horse pull, they pulled Sola about half ways up, but they let her down again to get a new start. Then they pulled her right up, and held her till the carpenter put some logs under so she would not go in again when the team let her down. When they got her on the ground, she got up and ran for home calling her colt. She had now been in the well three hours. When she came to the houses, Mrs. H. put a blanket on her and led her around so she should not get chilled. Now it was harder to get George out for he was large, and our team could not pull him but just then Mr. H. came home with a bigger team. It was not hard for them to pull him when they got started, but it took quite a while. When he got up, he had been in there six hours, so he wanted to lie down; the men got a whip and made him go home. Then they blanketed him too, and Mr. H. rode them around awhile. In a week they began to use them again and they are all right. Well now I must close my letter for it is too long already. It might take up too much room for you might not get any more in. I wish the Club every success and wish to see my letter in print. I remain, your cousin.—Hildur Carlson.

HONORABLE MENTION

Quill Lake, Sask.
Dear Cousin Doris:—This is my first letter to you. I live on a homestead ten miles from the town of Quill Lake, on the C.N.R. and fifteen miles from Wynyard on the C.P.R.

I am eleven years old.
We have three horses and one cow and a calf and five pigs.

I would like to see my letter in print. A neighbor killed a bear this summer about a half mile from our house and I will tell you about it.

We live right on the bank of the lake and we saw the bear on the opposite side of the lake. We thought it was a man because it was standing on its hind legs. And then it waded across the lake and crossed the field and on the lake shore. The wife of the neighbor who killed the bear happened to see it and the man just unhitched from a load of hay and hitched into a buggy and started out after it. He came up to our place and we had his rifle and there was only one shell so he told us to get the shot gun and so we did and he started off and when the bear saw him he started off as hard as he could go for the woods. But the fellow got to the

woods and shot the rifle shell but didn't hit it so he shot with the shot gun and wounded it and it started right for him and he shot it right in the face and put its eyes out and then he killed it.

Well I guess this will be all for this time. I don't want to crowd the rest out. Well Goodbye. Your cousin.—Josie Muzzy.

I wish more of our Cousins would write about things that happen in Western Canada. They are very interesting.—C. D.

Oakland, Man.

Dear Cousin Doris:—I wrote you a letter some time ago. I was glad to see it in print. I live near a small village. It consists of a blacksmith shop, a store and post office, two elevators, a church and manse.

We are not going to school just now because the roads are drifted and it is too cold. For a pet I have a cat. She is white with two or three grey spots on her. I am in the eleventh winter.

We have had two horses die this fall. One died her self and the other was killed. My brother has a foxterrier pup and he calls it Caesar. Another of my brothers caught an ermine yesterday. Its fur is nice and white. He skinned it and is drying its skin. There is a black tip on the end of its tail. It chewed off its leg but on the wrong side of the trap. It wore down its teeth on the trap. For a long time our hens did not lay any eggs but we got one today. I read the book my brother got so I will try to get one myself. Wishing the Club every success. I remain, your friendly cousin.—Eva Blair.

This is a nice letter Eva. You may win the prize next time.—C. D.

Carberry, Man.

Dear Cousin Doris:—As I was doing nothing today, I thought I might just as well write a line or two to your Club. My brother takes the Canadian Thresherman and Farmer. I go to school and I like going. We have a month or a month and a half holidays. I am in grade four. My lessons are Arithmetic, Spelling, Writing, Drawing, Grammar, Canadian History, English History, Geography, Reading and Music. There are about sixteen going to this school.

This is my first letter to this Club. I like reading the letters in the Girls' Cozy Corner of the Canadian Thresherman and Farmer. I hope I may see my letter in print.

I think I will close for this time as my letter is getting rather long. Yours sincerely.—Veletta Elliott.

I hope you will write again Veletta.—C. D.

Black Spring Ridge, Alta.

Dear Cousin Doris:—This is my first letter to your Club. I saw in your paper that you would send a book to a boy or girl writing the best letter and I will try. I am nine years old and go to school.

I get the cows every evening and morning. One evening I went to get them and it was quite dark. I took little Ring (a puppy) along with me and at the other end of our quarter, he ran away to chase a gopher. After I was returning with the cows I missed him. After looking for him I found him tangled in some loose wire and clothed in blood, because he tore himself in the bars. After I got him loose, he was unable to walk, so I carried him. It was late when we got home because it was

half a mile from home. Ring is well and happy again.—Nannie Untinen.

I like your letter, Nannie. It was very nice for you to be so kind to Ring. I like to see boys and girls kind to their pets.—C. D.

Elkhorn, Man.

Dear Cousin Doris:—This is my third letter to the Girls' and Boys' page. My brother has taken the Canadian Thresherman for several years and thinks it is a very good paper.

I am thirteen years old and I am taking up the first part of the third class.

I live about five miles from the town of Elkhorn. It has eight hundred inhabitants.

I am very fond of riding horseback and all outdoor sports. I like cooking pretty well but I think it's rather hard to get the oven the right temperature. I have read quite a few books but I would like to read books all the time if I had a chance.

My father and brother have a Sawyer-Massey threshing machine and a gasoline engine and chopper. They also have a circular to saw our wood with.

I was at the Brandon fair this summer for a day and had a good time. I was at the circus and saw Arabian ponies, brown bears, lions, tigers, elephants, camels, a zebra and a monkey and a sealion. The tigers were on a teeter-totter with a girl and then she played ball with the sealion. One of the elephants shaved the other, and one washed clothes on a wash board. The sealion rode on the ponies' back and so did the monkey. They had dogs and bears performing also. Wishing your paper every success. I remain—Wild Rose.

You write a very nice letter, Wild Rose; yes it is hard to get the oven just right. I am glad you are learning to cook. Will you send us some of your recipes?—C. D.

Tring P. O., Alta.

Dear Cousin Doris:—I thought I would write a letter to your Club. My father takes the Canadian Thresherman and Farmer. I always read the Girls' Cozy Corner.

We live about twenty miles from the nearest town, in which are two grocery stores, hardware store, blacksmith shop, hotel, school house, butcher shop, drug store, elevator, railway station, three churches, a restaurant and two livery stables, and quite a few dwelling houses.

This is one of the games I like best. The name is "I bring back my borrowings." I will try to tell you how it is played. The people all sit around the room while one goes around and gives the other names, for example; mow, flies, cross-eyed cat, or a left handle pitch fork or any kind of animal. Then another person gives all the girls a boy's name and gives the boys a girl's name and they get up one at a time. Then one girl takes the boy which she has the name of to any other person in the room and she says "I bring back my borrowings," then the person that you speak to says, "What is it?" Then you tell them the name of the object you have for example cross-eyed cat. It is best to get funny names which is more amusing. It causes more laughter. Go on this way till every one in the room has a try. There can be more than one have the same person name, if needed.

Wishing Cousin Doris success. I remain your Cousin.—Maggie Parker.

I am pleased that you gave us such a nice game, Maggie. I am sure the cousins will like to play it.—C. D.

THE Canadian Boy's Camp

SIR WALTER'S FRIEND

(This favorite dog died about January, 1800, and was buried on a fine moonlight night, in the little garden behind the house in Castle Street, immediately opposite to the window at which Scott usually sat writing. My wife told me that she remembered the whole family standing in tears about the grave as her father himself smoothed down the turf above Camp with the saddest expression of face she had ever seen in him. He had been engaged to dine abroad that day, but apologized on account of "the death of a dear old friend."—Lockhart's "Life of Sir Walter Scott.")

'Twas full a century ago,
In quaint old Edinboro town;
From out the clear and wintry sky
The moon effulgently shone down.

Upon a little garden close
Where stood a group with lashes wet
Around a new-made grave that held
Old Camp, the household friend and pet.

The hand that held the magic pen
That gave us matchless Waverley,
And on a breathless world bestowed
Its wealth of Border Minstrelsy.

With tender touch smoothed down the turf
Where slept in death a favorite hound
While tears and sobs bore witness to
The grief of all assembled round.

"I never saw his face so sad
Before," his loving daughter said;
And grief most genuine it was
That bowed that noble, kingly head.

That selfsame night, around the board
With candles lit and banquet spread,
A sudden gloom fell like a pall
When the kind host a message read

From one whose absence all deplored,
For ne'er at table sat a friend
More genial and beloved than he—
Sir Walter—who this missive penned,

Expressing his sincere regret
That he this pleasure was denied,
Begging to be excused because
That day a dear old friend had died.

A wizard he, who yet delights
The generations with his art,
Yet could his brain alone have wrought,
Unwarmed by his great human heart,

That splendid pageantry of life,
In pulsing vigor unsurpassed,
That shall enchant and thrill mankind
So long as time and earth shall last?

We love those tales of mighty deeds,
Of course high, endeavor bold,
When knighthood was in fairest flower,
And men held honor more than gold;
But as we've turned those pages o'er,

No sweeter story have we found
Than this true tale related of
Sir Walter and old Camp, the hound.
LOUELLA C. POOLE.

Dear Campers:—The girls have sent in more letters to the Cory Corner than the boys have to the Camp, during the past month. They are trying hard to beat you and you must not let them. Write us telling about your winter experiences. You know Cousin Doris sends a book for the best letter. Tell us about how you spend your evenings and holidays and your Sundays. Do you like to work on the farm? Do you like mechanical work? Write us about anything that interests you. Wishing you a very Happy New Year, I am,
Sincerely,
Cousin Doris.

BOYS' PRIZE LETTER

Dinton, Alta.
Dear Cousin Doris:—This is my first letter to the Boys' Camp. My brother takes the Canadian Thresherman and Farmer. I go two and a half miles to school. I am in the fourth class. Our nearest station from here is called Blackie; it is ten miles away.

Many people about here have not had good crops this last two years; some were hailed out last year and this year crops were not very good anywhere but most of what there was the range cattle ate.

I and my brother stop here alone, batching as it is commonly called.

Last evening it commenced to snow and snowed all night; there is about an inch on the ground now. The wind has risen and the snow is drifting now.

My father and mother each have a scrip north of the Red Deer River; my two brothers each have a homestead there too. Last fall papa and one of my brothers went up and built a barn. When they were coming back they had to ford the Red Deer River; my brother got nearly drowned in so doing.

This spring papa and another brother went up with a carload to Castor. They hauled down lumber and built a shack and dug a shallow well.

When they got back here we all had the measles so they had to stay the month. Then they took a load and went back again. He has been back three times since.

I have a pony which I ride to school. He ran away with my brother on him. The first day I rode him he ran away with me and he tripped and I went on the back of my head with my feet in the air. I caught him again and jumped on; he has not run away since. I would like to get a book. Your Cousin.—Raymond Lowrey, age 12.

Rouleau, Sask.

Dear Cousin Doris:—This is my first letter to the Boys' Camp. My father has been taking the Canadian Thresherman and Farmer over one year and likes it very well.

I am twelve years of age and in the third reader and going to try for the fourth reader.

I have twenty pigeons and one pair of pigs.

I hope to see my letter in print. Wishing the Camp every success. Your friend.—Russell Irvin.

Will you write us about your pets, Russell.—C.D.

"PULL" AND "PUSH"

A fruitfulness of anxiety, not to say discouragement, to boys who are choosing their life work, especially in the newer branches of industry is thus discussed in the Electrical Review and may bring hope to the boy whose desire is to become an electrician.

On all sides the statement is made, time and time again, that a young man has no chance in the electrical field without what is ordinarily denoted by the term "pull". A little analysis of this subject may be of interest. Biographies of great men in all lines of human endeavor who have risen from extremely humble positions in life to those of world-wide eminence are familiar to all of us. These men, for the most part, had no influence, but only their own ability, coupled with habits of great industry, to aid them on their path of ascent.

To be sure, the ranks of all our professions and different lines of business are overcrowded, but there is always room for another man who possesses ability and is willing to work. On the other hand, there is no room for him who comes to his place of business with the intention of doing as little as possible and expects to rise in this manner.

Time was—and but a few years ago—when the opportunities for success in the electrical professions were immensely greater than those in almost any other field. It was a new subject and there were very few people who knew anything about it. Consequently, the opportunities for those who had even a very limited knowledge of electricity were correspondingly great. But this is all changed today. The hundreds of young men which our numerous scientific and technical schools are annually turning out have made competition as sharp in this field as in any other. Still, the expansion of this business, which is the most rapid that the world has ever seen, presents untold opportunities for whomsoever is prepared to grasp them. In preparation for this he must not forget that it is absolutely essential for him to secure as much preliminary training as lies within his means. Much of it may seem a waste of time, but it will all be useful and make him better off than many of his competitors when he begins his real life work.

THE HORSE THAT KNOWS HOW

September and October days in the Keuka Lake grape district are crowded with activity. The great industry of the

section is grape growing, and the harvesting and marketing of the thousands of tons of Concord and Catawbas extends over a period of two or three months. In the height of the season the buying centres are crowded with vine yardists hauling their fruit to the buying depots.

One late September morning a long line of grape wagons was drawn up on the approach to the fruit house of Gale & Serry, waiting and slowly moving ahead as load after load was counted out. The drivers were almost all well known to each other, and passed the time exchanging current news and bantering each other good naturedly.

In the middle of the long line sat a young man high on the top of an unusually heavy load. His wagon was drawn by a splendidly built black horse which tossed his head as if impatient at the long delay. Every few minutes he would turn his head squarely about, as if casting inquiring looks at the driver. At such times the young man would speak in a very quiet voice to the horse, and sometimes smile a little as though amused at the animal's apparent chafing.

The man spoke little to any of his neighbors in the line, and the low inquiries that sprang up from time to time among the others showed that he had not been long enough in the neighborhood to know the others very well.

It was remarked that when the line moved up "a peg," as the men said, he did not unwind the reins from the stake in the front of the wagon, but let the horse move along as he would, which seemed to be with some intelligence for he never crowded the team in front or hindered the one behind, but leaned to his load, starting and stopping it slowly in just the right place.

At last the wagon they had been following for almost an hour discharged its load and moved on. The approach to the unloading platform was on an up grade to a projecting platform, and was badly cut by the many wheels that daily passed over it. To leave the platform a very sharp turn to the right was necessary; in fact the approach was a common cause for complaint on the part of the haulers. The young man, however, seemed to think nothing of it, and again did not touch the reins. The horse again looked at his master, who nodded to him and said "Come on, boy." The black leaned to his load on the curve to the door.

He seemed to measure the distance to the platform and try to get it just right, but the heavy load and the heavy footing swung him a little to the left as he pulled and he was in danger of striking the ledge. "Gee," said the man in a conversational tone, and the horse paused in his pull, gathered his strength by a visible effort and swung abruptly to the right.

"That'll do," said the driver, "come on," and the horse moved the load to the door so accurately that there was hardly an inch between the wheels and the platform. It was a beautiful exhibition, and every man in the line had had a good view of it. There was a buzz of comment, and the men nearest called out to the young fellow all sorts of complimentary remarks, many of them disguised in the half joking dress of farmer's talk, but all of them springing from genuine admiration for what was very evidently an unusual horse. Many of the drivers who saw it had had their own troubles with that approach. It was not unusual for a man to back and start two or three times before he got into position.

"What is that, a circus horse?" said one. "Who broke him for you?" asked another.

"What will you take to break my horse that way?" inquired a third, when the driver had said that the horse was "just a horse" and that he had broken him himself.

He had little time for conversation while he was handling out the grapes, but after he had received his check, and had turned out of the crooked pathway, still without touching the lines, he seemed inclined to discuss the matter. He drove first out to the middle of the line where he could be seen by all, and then turned around, backed, and twisted at will, guiding the horse entirely by word.

Then he stopped, half embarrassed by this "showing off," but looking as if he was determined to say what he had in mind.

"How would you like to have such a horse to plow grapes with?" he asked with a smile.

"No good," cried one man, "wouldn't be anything for the man to do."

This was taken as it was meant, as a high compliment. Then a former speaker repeated,

"Say, what'll you take to train one of my horses that way?"

"I can't do it," said the young fellow, standing up in his wagon as if to make a speech. "Your horse is spoiled." The owner of the horse in question looked not well pleased and the driver of the black went on in a pleasant voice:

"I mean that he is spoiled for any such work as my horse can do. Your horse has never been to school, and he is ignorant. If a man had no chance when he was a boy there are many things that he never can learn, no matter how much he goes to school. All you men spoil your horses, and let them grow up in ignorance. There is not a horse in this line that can do the things that mine can do, but there is hardly one which could not have been trained to do the same things, and would have been worth to his owner many times what he is now. All you do is to break, as you call it, a colt to endure a harness and not to run away when he sees a wagon coming behind him, and you all ruin a good horse. He is a good horse for the chance he has had, which is none at all.

"You make it impossible for him to know how to do his work, for you talk to him and direct him in a way that even a human being would not understand. You say 'Whoa' when you want him to stop, but you use the same word when you want him to go steadily over a rough place, and there is no possible way for him to know what you mean, so he takes the only way out of it and disregards all of the meanings entirely. How many horses in this line can be made to go slowly and carefully with a heavy load by the use of the word alone? Many of them cannot even with word and rein. You say 'Gee' and 'Haw' with about every breath when you are plowing and never notice whether the horse understands and obeys immediately, in fact you were all surprised to see my horse do just what every horse should do—simply mind the thousands of horses twenty years old will never stir a hairs' breadth when you say 'Gee' to them; they have learned to ignore it, learned it from their drivers.

"You send a boy to school for years to learn not much more than to read and write, or to a shop for three or four years to learn a trade that is not much more difficult to learn than the work that a horse really should do, and then you think that you can teach a colt in a few weeks to be real work-horse. And even a horse like mine which is pretty well broken, could be spoiled in a year by the average driver, for a horse to stay good must be worked by a man who means every word that he says to his horse, and who will see that the horse obeys every time."

No one seemed to feel hurt at this talk, as the speaker drove off with his proud black horse that seemed to show that he knew himself to be educated.

D. V. HOPE.

BIG FUR SCARF and LOVELY WATCH FREE



Just send us your name and address, and we will mail you, postpaid, 30 packets of our quick-drying Picture Post Cards, to sell at 6 for 10c. Our assortment consists of Season's Greetings, Floral Cards in Nature's own coloring. Views, and provokingly funny High-Grade Comics. Each set is done up in a valuable coupon envelope, which will make a neat little gift in an hour. Send us the money you get for these and we will send you, by Return Mail, this beautiful, warm Fur Scarf, over 30 inches long, made from selected skins of fine, soft, fluffy fur, with 6 full length tails, and a secure chain fastener at neck. This dainty Lady's Watch has warranted Swiss Works, is stem wind, and stem set, has solid silver nickel case, fancy dial and gold hands. The case is beautifully enamelled with roses, buds and leaves, in natural colors, and we will give it to you for selling only 30 packets of our beautiful cards. Take your choice and write-to-day. Address COLONIAL ART CO., Office 82, TORONTO, ONT.

Dave Stanton was a big, full-faced man with a heavy nose and a general Bull-of-Bashan aspect. His purplish complexion presented evidence of steady and methodical indulgence in strong waters, though no one ever saw him beyond perfect control of himself. Life for him was a game, and like other games he played it fairly, asking only a square deal of the cards, willing to trust to his luck and his ability for the rest.

He had been in the Klondike rush and had come back richer only in experience, but with his genial good nature not in the least soured. After this he tried the sedentary life for a time, but found it irksome, and it being part of his philosophy to live while he lived, he presently discarded tweeds for corduroy and hit the trail with a pack-burro and a saddle-horse seeking adventure and immense wealth.

Now faith in himself is the one necessary article in the prospector's creed. He may believe anything else or nothing, but he must have an ineradicable confidence in his own abilities. Stanton was amply equipped on this particular. It counted as nothing to him that he had hitherto failed. He knew that ultimately he should "win out."

The desert opened its arms to receive him and he passed cheerfully into its dusty embraces, he and his horse and his burro. His objective was somewhat vague, his object was not at all so. Every one has heard of the Dutchman's Mine, that lost El Dorado of the desert, whence years ago a son of the Fatherland fetched pocketfuls of raw gold and whose whereabouts he died without revealing.

Hundreds have searched for it and returned emptier than they went out, while not a few have succumbed to the thirsty desert and left their bones as monuments to their faith in themselves. Stanton had long had a theory of his own on the subject, which only the pressure of more seductive ventures had kept him from putting to the proof. Now, his other veins having played out, he turned with undiminished hope and confidence to the problem of the Dutchman's Mine.

A month later he was skirting the eastern edge of the desert, gaunt of eye, tanned of skin, and with a furious red beard bursting like volcanic fires from cheek to chin. His flour was gone and he was living principally upon jack-rabbit and bacon—the latter as steady diet, the former when a side excursion up some valley of the foot-hills brought him within reach of it.

At last he had decided that he must give up the search and return to civilization for supplies. This vexed him sorely, owing partly to his rooted aversion to quitting a thing till thoroughly beaten, partly to the fact that conditions were now for the first time promising. Yesterday he had panned as high as seven colors, but failed to find the par-

DUTCHMAN'S MINE

By Frederick Walworth Brown.

ent vein. Even seven colors is a gratifying result after a month of monotonous nothing. He would take one more day "for luck."

He camped that night in a valley of the foot-hills where a brook came down from the mountains, to be swallowed bodily a little farther on by the dry dust of the desert. Here he boiled a pot of coffee, and made a meal; after which he filled and lighted his pipe and stretched himself out luxuriously.

"Cordin' to me," he mused, "it ought to be right about here some'ers. The Dutchman came in the way I come, and he must

wash a pan of gravel in the hope of seeing yellow gleams. At noon he had a meal of bacon and coffee and again proceeded up the valley, whose walls were narrowing steadily toward the foot-hills.

About two-o'clock that afternoon he began to get colors in his pan, at first few and scattered, gradually increasing as he pushed ahead, till dusk overtook him gazing into the bottom of the pan where a thin bright streak of yellow particles lay trapped. He transferred them to a bottle which he corked with care.

"I bet that'll run fifty dollars to the ton," he said. "It's worth

breakfast started up the canon. He carried his pick, shovel, and pan, but he did not prospect. Desire was too strong in him. He meant to push to the head of the narrowing valley and see what awaited him. That the stream had washed down the golden particles and deposited them in the alluvium of its bed was beyond question. The mother vein must therefore be above and along the stream.

Before him the low walls of the valley drew together and he could detect no gap. Half a mile from the end of the valley, where they seemed to meet, he suddenly halted and an oath escaped him. In it was all the bitterness of defeat. What he saw was a wisp of blue vapor streaming up straight in the calm bright air of the canon.

"Beat to it," was the comment. "Somebody's beat me to it."

He stood for minutes, his brow knitted, his eyes fixed on the thin line of smoke as though hypnotized by the sight. His first impulse was to go on and try conclusions with this interloper in his chosen vineyard. His second was to turn and retrace his way out of the valley into the desert. For a long time he hesitated over this second impulse, but in the end he went forward.

"Perhaps it ain't a prospector at all," he said to himself. "Perhaps he ain't found it. Anyway, I got as much right in this canon as anybody else, I reckon."

Presently a clump of cottonwoods close to the stream obscured his view of the rising smoke and he quickened his pace, eager to know the worst as soon as might be. Up the valley he hastened, following the slight windings of the stream, growing more and more sure, despite his hopeful suppositions, of what he should find at the end.

Finally he rounded the clump of obscuring trees, and instantly pulled up short. In an open spot beside the stream burned a little fire and near it sat a man crissing a bit of bacon on the end of a stick. His back was turned to Stanton and he sat hunched up and apparently oblivious of all save the work in hand. The smoke from the fire rose straight in the still air.

Beyond the picture reared the wall of the canon and Stanton's eye was instantly caught and riveted by a pile of detritus and a huge ragged scar on the cliff face.

"He's found the vein all right," was his mental comment. "I might as well back out, I reckon."

Nevertheless, after an interval in which the man by the fire finished cooking his bacon and began eating it, the prospector went forward. The soft grasses on the margin of the brook gave no sound of his tread and he came up unnoticed.

"Howdy," he said suddenly.

The man by the fire whirled from the waist up and showed a startled face. It was a rough dissipated countenance, with a thin-lipped, ugly mouth, and eyes set



"That Was What it Came to—Stealing."

'a' followed pretty much my line or he'd 'a' died o' thirst. He was out five weeks, they say. I been out four, and by hustlin' I could get back in one. It sure ought to be right about here. I'll take tomorrow to it, and then it's me to a hash-house and a square meal."

His reasoning may have been inadequate, but anything will do to prop up a hope that really needs no propping, and he knocked out his pipe, rolled himself into a blanket, and slept very peacefully. Dawn found him prospecting methodically, smashing the rock of the canon with his pick or resorting to the stream to

workin' by itself. But some'ers up there," he waved his hand toward the head of the valley, "there's a streak o' rotten quartz that'll pay a little bit better, I'm thinkin'. A little bit better," and he grinned avariciously through his red flame of hair, with his teeth tight locked.

"I can't leave it now," he soliloquized as he smoked that evening. "I'll take one more day to it and I'll bet I find it. It's the Dutchman's Mine all right and I'll find it sure in the mornin'."

With the first flush of morning he was up, and after a hastily prepared and more hastily eaten

BOOKS THAT REALLY TEACH

You the things you want to know, and in a simple, practical way that you can understand. No matter what your ambition or desire for knowledge may be, we publish books written by authorities in their different lines that will give you just the training and information you want and need.



This is the Large DESCRIPTIVE CATALOGUE which fully describes them.

Sent free to any address. Write for it to-day.

Modern Locomotive Engineering. By Calvin F. Swingle, M.E. New Revised Edition with questions and answers. Size 5 x 8 1/2. 325 pages, 350 illustrations, including a number of folding charts. Pocketbook style, full seal grain leather, with gold stamping and gold edges. \$3.50
Locomotive Fireman's Boiler Instructor. By Calvin F. Swingle, M.E. 420 pages, 160 illustrations, one folding chart, pocket size, full leather binding, round corners, red edges. \$1.50
Locomotive Engine Breakdowns and How to Repair Them, With Questions and Answers. By W. G. Wallace. Pocket size, full leather limp, round corners, red edges, 285 pages, 56 illustrations and 3 folding plates. \$1.50
First, Second and Third Year Standard Examination Questions and Answers For Locomotive Firemen. By W. G. Wallace. Pocket size, full leather limp, round corners, red edges, 346 pages, 90 illustrations and 3 folding plates. \$1.50
Waichert Valve Gear Breakdowns and How to Adjust Them. By Calvin F. Swingle, M.E. Containing 210 pages, 100 illustrations. Bound in red silk cloth, round corners, red edges, pocket size. \$1.75
Modern Air Brake Practice. Its Use and Abuse. With Questions and Answers. By Frank H. Dukeminster and Calvin F. Swingle, M.E. 400 pages, 140 illustrations, including seven folding plates. \$1.50
Construction and Maintenance of Railway Roadbed and Track. By Frederick J. Prior, Associate member Traveling Engineers' Association. 570 pages, 300 illustrations, 7 folding plates, pocket size, full Persian Morocco leather, limp, round corners, red edges. \$2.00
Operation of Trains and Station Work. By F. J. Prior. Pocket size, full leather limp, round corners, red edges, 380 pages, 50 illustrations, 2 folding plates. \$1.50
Pattern Making and Foundry Practice. By L. H. Hand. 140 pages, 100 illustrations, pocket size, full leather binding, round corners, red edges. \$1.50
Practical Mechanical Drawing and Machine Design Self-Taught. By C. H. Stanghouse. 100 double pages, 250 illustrations, large quarto cloth binding. \$2.00
Twentieth Century Machine Shop Practice. By L. Elliott Brooks. 12mo, cloth, 650 pages, 400 illustrations. \$2.00
The 20th Century Toolsmith and Steel-Worker. By H. Hottel. 240 pages, 120 illustrations, 12mo, cloth binding. \$1.50
Electric Railway Troubles and How to Find Them. By Paul E. Lowe, M.E. 12mo, cloth, over 375 pages fully illustrated. \$1.50
How to Become a Successful Motorman. By Sidney Aymer-Small, M.A.I.E.E. 12mo, full leather limp, 200 pages, 250 illustrations and 7 folding plates. \$1.50
Motorman's Practical Air Brake Instructor. By George H. Deshaie, Master Mechanic Terre Haute, Indianapolis and Eastern Traction Company. 16mo, 268 pages, 100 illustrations, 10 folding charts, 5 in color, full limp leather binding. \$1.50
Complete Examination Questions and Answers for Marine and Stationary Engineers. A Complete Engine Operator's Catechism. By Calvin F. Swingle, M.E. 360 pages, 212 illustrations, pocket size, full leather, round corners, red edges. \$1.50
The Twentieth Century Hand-Book For Steam Engineers and Electricians. By Calvin F. Swingle, M.E. 1,000 pages, over 700 illustrations, handsomely bound in full seal-grain leather, pocket-book style, stamped in gold, gold edges. \$2.00
Steam Boilers, Their Construction, Care and Operations. With questions and answers. By Calvin F. Swingle, M.E. 190 pages, 126 illustrations, pocket size, full leather limp binding, round corners, red edges \$1.50

Farm Engines and How to Run Them. The young engineer's guide. By James H. Stephenson and other expert Engineers. 12mo, cloth. \$1.00
Practical Hand-Book For Millwrights. By Calvin F. Swingle, M.E. Large 12mo, cloth, decorative cover, in gold and ink, fully illustrated. \$2.00
The Steam Turbine, Its Care, Management and Operation. By Calvin F. Swingle, M.E. Fully illustrated, 16mo, cloth. \$1.00
Swingle's Catechism of Steam, Gas and Electrical Engineering. By Calvin F. Swingle M. E. 190 pages, full leather limp binding, stamped in gold, round corners, red edges. \$1.50
The Automobile Hand-Book. By L. Elliott Brooks. New revised and enlarged edition, 16mo, 700 pages and over 350 illustrations, full leather limp, round corners, red edges. \$2.00
Home Furniture Making. By G. A. Raeburn. Over 100 pages, fully illustrated, 16mo, cloth. \$1.00
Elevators—Hydraulic and Electric. By Calvin F. Swingle, M.E. 100 pages, 40 illustrations, 16mo, cloth. \$1.75
Practical Steel Construction. By Fred T. Hodgson, F.A.I.C. 12mo, cloth, 120 pages, fully illustrated. \$1.50
Five Orders of Architecture. Compiled and edited by Fred T. Hodgson, from the works of Sir William Chambers, Palladio, Vitruvius, Gwilt, and others. With illustrations, notes and essays on the various phases of Classical Architecture. 236 pages, 39 plates, 12mo, cloth. \$1.50
The Automobile Mechanic's Catechism. Over 400 Questions and Answers. Illustrated with a large folding chart, with all parts fully and correctly numbered. By Calvin F. Swingle, M.E. Pocket edition, 16mo, full leather, round corners, red edges, stamped in gold, over 100 pages. \$1.25
The Up-To-Date Electro-Plating Hand-Book. By James H. Weston. 192 pages and over 50 illustrations, with numerous tables and useful formulae, pocket size, cloth. \$1.00
Full leather. \$1.50
The Practical Gas and Oil Engine Hand-Book. By L. Elliott Brooks. 192 pages, 60 illustrations, pocket edition, cloth. \$1.00
Full leather. \$1.50
The Calculation of Horse Power Made Easy. By L. Elliott Brooks. Size 6 x 7 1/2. 90 pages, illustrated, cloth. \$1.75
Modern Wiring Diagrams and Descriptions. By Henry C. Horstmann and Victor H. Tousey. Full leather binding, round corners, red edges, size 4 x 6, pocket edition. New revised and enlarged edition. \$1.50
Electrical Wiring and Construction Tables. By Henry C. Horstmann and Victor H. Tousey. Bound in full Persian Morocco, pocket size, round corners, red edges. Net. \$1.50
Modern Electrical Construction. By Horstmann and Tousey. New revised and enlarged edition, 16mo, 340 pages, 175 diagrams, pocket size, full leather limp. \$1.50
Practical Armature and Magnet Winding. By Henry C. Horstmann and Victor H. Tousey. 16mo, pocket size, full leather, round corners, red edges. \$1.50
Electrician's Operating and Testing Manual by Henry C. Horstmann and Victor H. Tousey. Illustrated, 16mo, full leather, round corners, red edges. \$1.50
Elementary Electricity Up To Date. By Sidney Aymer-Small, M. A. I. E. E. 12mo, cloth, 640 pages, 206 illustrations. \$1.25
Electricity Made Simple. By Clark Cary Haskins, 253 pages, 108 illustrations, 12mo, cloth binding. 108 illustrations. \$1.00

Dynamo Tending For Engineers, Or Electricity For Steam Engineers. By Henry C. Horstmann and Victor H. Tousey. 210 pages, 100 illustrations, 12mo, cloth binding. \$1.50
Easy Electrical Experiments and How to Make Them. By L. P. Dickinson. 220 pages, 110 illustrations, 12mo, cloth binding. \$1.00
First Steps in Electricity, or Electricity For Beginners. By W. Jerome Harrison. 253 pages, 114 illustrations, 12mo, cloth binding. \$1.00
The Handy Vest Pocket Electrical Dictionary. By Wm. L. Weber, M. E. Cloth, red edges, illustrative cover. \$1.25
Full leather, gold edges, indexed. \$1.50
Practical Telephone Hand-Book and Guide to Telephone Exchange. How to Construct and Maintain Telephone Lines. By T. S. Baldwin, M. E. 12mo, cloth binding, 180 pages, 75 illustrations. \$1.00
Operators' Wireless Telegraph and Telephone. By Victor H. Laughton. 12mo, cloth, 210 pages, fully illustrated and with six additional full-page halitone illustrations showing the installation of 'Wireless' in the U. S. warships and ocean liners \$1.00
Telegraphy Self-Taught. A complete manual of instruction by Theodore A. Edison, M. A. 12mo, cloth binding, 170 pages, fully illustrated. \$1.00
Hot Water Heating, Steam and Gas Fitting. By Wm. Donaldson. Large 12mo, 260 pages, over 100 illustrations, cloth binding. \$1.50
Practical Up-To-Date Plumbing. By George B. Clow. 310 pages, over 250 illustrations, large 12mo, cloth. \$1.50
Modern Blacksmithing, Rational Horseshoeing and Wagon Making. By J. G. Holmstrom. 200 pages, 75 illustrations, 12mo, cloth binding. \$1.50
Sheet Metal Workers' Instructor. By Joseph H. Rose. Large 12mo, 310 pages, 200 illustrations, cloth. \$2.00
Boiler Building For Amateurs. By Adrian Nelson, C. E. 136 pages, 70 illustrations, 12mo, cloth binding. \$1.00
Elementary Chemistry Self-Taught. By H. E. Roscoe and L. Elliott Brooks. Revised and enlarged, 280 pages, 50 illustrations, 12mo, cloth, stamped in gold and ink \$1.00
Picture Making, For Pleasure and Profit. The work is a treatise on the modern Processes of photography by T. Stith Baldwin. 284 pages, 78 illustrations, 12mo, cloth, decorative cover. \$1.25
Modern Carpentry and Joinery—Vol. I. By Fred T. Hodgson, F.A.I.C. 300 pages, 318 illustrations, 12mo, cloth binding \$1.00
Modern Carpentry and Joinery—Vol. II. Adapted from the work of Fred T. Hodgson, F.A.I.C. 400 pages, 390 illustrations, 12mo, cloth binding. \$1.00
The Steel Square—Two Volumes. A Practical Treatise on the Use of the Steel Square. By Fred T. Hodgson. 600 pages, 600 illustrations. 2 Vols. cloth binding. \$2.00
Single Vols., Part I, cloth. 1.00
Single Vols., Part II, cloth. 1.00
The A. B. C. of the Steel Square and Its Practical Uses. By Fred T. Hodgson. 16mo, 120 pages, fully illustrated, cloth. \$1.50

Heavy and Light Timber Framing Made Easy. By Fred T. Hodgson, F. A. I. C. Over 300 pages, fully illustrated, large 12mo, cloth binding. \$2.00
Modern Estimator and Contractor's Guide, For Pricing all Builders' Work—With Many Tables, Rules and Useful Memoranda. By Fred T. Hodgson, F. A. I. C. 818 pages, 100 illustrations, 12mo, cloth. \$1.50
Common Sense Stair Building and Hand-Railing. By Fred T. Hodgson, F. A. I. C. 300 pages, 300 illustrations, 12mo, cloth binding. \$1.00
Easy Steps to Architecture. Particularly Designed For Home Study. By Fred T. Hodgson, F. A. I. C. 350 pages, 230 illustrations, 12mo, cloth binding. \$1.50
Builders' Architectural Drawing Self-Taught. By Fred T. Hodgson, F. A. I. C. 436 pages, 250 illustrations, and 18 folding plates, 12mo, cloth binding. \$2.00
Practical Banglows and Cottages For Towns and Country. Arranged and edited by Fred T. Hodgson, assisted by E. N. Braucher, architect. 12mo, cloth, 420 pages, 400 illustrations. \$1.00
Easy Lessons in the Art of Wood Carving. By Fred T. Hodgson, F. A. I. C. 284 pages, 200 illustrations, 12mo, cloth binding. \$1.50
The Practical Cabinet Maker and Furniture Designer. By Fred T. Hodgson, F. A. I. C. Large 12mo, cloth binding. \$2.00
Concrete, Cements, Mortars, Plasters and Stuccos. How to Make and How to Use Them. By Fred T. Hodgson, F. A. I. C. 520 pages, 150 illustrations, large 12mo, cloth binding. \$1.50
Practical Stonemasonry Self-Taught. By Fred T. Hodgson, F. A. I. C. 300 pages, 600 illustrations, 12mo, cloth binding. \$1.00
Practical Bricklaying Self-Taught. By Fred T. Hodgson, F. A. I. C. 277 pages, 300 illustrations, 12mo, cloth binding. \$1.00
The Up-To-Date Hardwood Finisher. (Two Parts in One.) By Fred T. Hodgson, F. A. I. C. 320 pages, 117 illustrations, 12mo, cloth binding. \$1.00
The Modern Painter's Cyclopedia. By F. Mair, Head Instructor at the Chicago School of Painting, Decorating and Paper-hanging. Illustrated, 12mo, cloth, decorative cover in gold and ink. \$1.50
The Signifier's Book of Modern Alphabets. Collected and engraved by F. Delanotte. Large oblong octavo, 208 pages, 100 designs. \$1.50
The Amateur Artist in Oil and Water Color. Painting Without the Aid of a Teacher. By F. Delanotte. Large 12mo, cloth, 160 pages, fully illustrated. \$1.00
The Art of Sign Painting. By Frank H. Atkinson. Large quarto, 332 pages, cloth binding, with special decorated cover design in red live colors, ink. \$1.50
The Red Book Series of Trade School Manuals. By F. Mair, Director of the Chicago School of Painting, Decorating and Paper-hanging. 6 volumes, 16mo, full cloth, illustrated, each. \$1.00
(1) Exterior Painting, Wood, Iron and Brick.
(2) Interior Painting, Water and Oil Colors.
(3) Colors, What They Are and What to Expect From Them.
(4) Graining and Marbling.
(5) Carriage Painting.
(6) The Wood Finisher.

These are the reputable and responsible Canadian dealers who can supply our books at all times. Or, you can send your order direct to us. These books are not subject to any duty charges.

Table listing various Canadian dealers and their locations, including Toronto, Vancouver, Montreal, and other cities.

Don't forget to send for this new illustrated catalogue just from the press

FREDERICK D. DRAKE & COMPANY, Publishers, 1330 Michigan Ave., Chicago, U.S.A.

Synopsis of the Report of the Saskatchewan Elevator Commission

Issued by the Government of Saskatchewan

The report of the Elevator Commission of Saskatchewan has been handed in. It embraces 188 pages. The commission is unanimous in all findings. Public interest largely centres in the matter of ownership and operation of initial elevators and on this point the commission favor none of the schemes outlined before them in their entirety but have evolved a solution embodying what appears to them to be the best features of several. Government ownership and operation, municipal ownership and operation, state aided farmers' elevators, and all modifications are discarded but the existing system received unqualified commendation.

The solution recommended is a co-operative joint stock company, owned entirely by the agriculturists in which the government shall have no representation whatever. It is suggested that a minimum of 15 per cent. shall be paid up on 250 shares subscribed for, that the maximum number of shares held by one party shall be ten, and that 25 elevators be the minimum number proposed to be operated by the company before the central body can be organized and governmental assistance called for, this assistance to take the form of a loan for each elevator, secured by mortgages repayable in twenty equal annual instalments. The executive of the Saskatchewan Grain Growers' Association are named as provisional directors until a permanent directorate be elected.

To secure the maximum amount of local control consistent with ownership by the whole body of shareholders, the Commission recommended that each elevator be a separate unit or "local," with a board elected by the local shareholders. Each such "local" shall contribute one representative to the organization and subsequent annual meetings, at which the board of directors of the whole company would be elected. The stock subscribed at each "local" should be equal to the cost of the proposed elevator, and the aggregate annual crop acreage of the shareholders should not be less than two thousand acres for each ten thousand bushels elevator capacity, or one acre for every dollar expenditure.

It will be generally remembered that the Saskatchewan Elevator Commission was composed of three members, these being Professor Robt. Magill, of Dalhousie University, Nova Scotia; George Langley, M.L.A., of Redberry, Sask., and F. W. Green, of Moose Jaw, Sec'y-Treas. Saskatchewan. This body sits at centres throughout the province and receives evidence from farmers

generally. The executive of the S. G. G. A. submitted their views, outlining what they considered an adequate solution.

At Winnipeg the commission took evidence from the Chief Grain Inspector, the Warehouse Commissioner and the Grain Exchange. Minneapolis, Chicago, and Kansas City were visited in order that the sample markets, exchanges and inspection systems might be investigated.

The report based upon above information contains eleven chapters and an appendix of tables and documents. It is the most complete analysis of the grain trade of Western Canada yet presented to the public.

Chapter "one" says: "Agriculture is pre-eminently the industry of Saskatchewan, and grain growing is pre-eminently the form that industry takes. A more diversified agriculture would give a stronger basis for the prosperity of the country, but for the present, and probably for many years to come, the growing of grain must be regarded as the source of the wealth of the province," and: "The point of view, therefore, from which this commission started was that in Saskatchewan the interests of agriculture are supreme. The commission may err in its views about any particular scheme of government aid, but its sympathy from the beginning to the end of its work was entirely and without qualification for the growers of grain."

In chapter two the charges against the present system, seven in number, are summarized. (1) the initial elevator companies and operators, (2) the banks, (3) the railway companies, (4) the terminal elevators, (5) the grading system, (6) the milling companies, (7) the Winnipeg Grain Exchange.

In chapter three various schemes of Provincial Ownership and Operation presented are analysed. The proposals of the S. G. G. A. are discussed.

The first conclusion is that there is no widespread demand for a monopoly of storage facilities.

The "Grain Growers" call for a competitive system which would drive competitors from the province. On this scheme the report says: The scheme outlined is at all events comprehensive, and it is not surprising that they did not draft a bill to be submitted to the provincial legislature. In regard to initial elevators the provisions include features which have no connection with public ownership, but are additions. Methods of sampling, of grading before shipment, of giving certificates, of securing

loans from banks, of government loans, of direct shipment from initial elevators, and of dealing with loss in transit are examples. It is essential to note that the arguments adduced to show that public ownership would pay, are founded mainly upon these extra features. These are the features that give the facilities which will attract the patronage of the farmers; and the inference would appear to be that without them a public system would be a financial success. In analysis the Commission regard the proposal to permit sampling being done by operators at initial points as being a very weak feature. It would lead to a lack of confidence all round as to the correctness and honesty of samples. After pointing out that sampling is most carefully done by groups of men under supervision and not by individuals, and at terminal rather than initial points, the Report says: "The method of sampling proposed by the Executive would prove satisfactory both to the Inspection Department and to the buyers of the sample market. The Inspector could grade the sample, but he would know nothing about how the sample had been taken, and he could not have any positive assurance that it was a fair sample. The buyer on the sample market would have no positive assurance that the grade marked on the ticket was the real grade of the grain in the bin."

An important feature of the Executive's proposal which the Commission could not endorse was thus dealt with: "The proposal raises questions which are distinct from that of the provincial ownership of elevators. It raises the general question whether and how far the government should go into the banking business. It raises such questions as whether in case the government decided to give loans, it should confine these to small farmers, or to the farming class, or whether there are no other people who carry on a business indispensable to the welfare of the province, and who find it difficult to borrow money from the banks, or who consider the rate of interest too high. And in regard to loans to farmers, it raises such questions as whether grain should be the only security, and whether loans should be limited to such as would enable the farmer to pay his bills pending the sale of his grain, or whether upon other security and for other purposes also, such loans should not be advanced."

"These are important questions, too important to be dealt with as side issues or additions to a scheme of public elevators. Before making such loans a

feature of such a scheme, the whole matter of government advances should be considered as an independent matter, and upon its merits. If it were regarded as impracticable upon its merits, it could not be tacked on to a system of provincial elevators; and if it were found to be necessary and practicable, it might demand a wider scope than could be provided for in such a system. Hail, smut, drought and frost often leave farmers without grain, or with a small quantity, or with some of a bad quality. In such cases the farmers would have little grain to offer as security for a loan, and yet in such cases are to be found perhaps the men who most need loans."

The establishment of provincial owned terminals and the creation of a sample market at Winnipeg or elsewhere, are questions that the Commission consider cannot be passed upon by them. It is pointed out: "The question of the terminals is now engaging the attention of the federal authorities, and it would be very doubtful policy for the provincial legislature to relieve the federal government, from its acknowledged responsibility in the matter." Respecting a sample market they say after pointing out that the difficulties in the way are not insuperable: "The difficulty in the way of a sample market in Winnipeg is not merely one of sampling, nor one of transportation. It involves the mixing of grain. In asking for a sample market and for special binning facilities in the terminals, the Executive are asking for mixing by implication. Some of the exporters are opposed to mixing, some of the grain dealers favor a sample market, and mixing in private, if not in public terminals. And this view is held by the President of the G. G. G. C." Further "It is clear that the question of mixing is a serious one for a country the price of whose grain depends upon the export price to such an extent. It is also clear that the question of a sample market, raising issues so important, depends upon the policy of the federal government in regard to the terminals."

Of the effect of the Executive's scheme upon the Winnipeg Grain Exchange the Commission are skeptical as to its having any influence upon that organization. To effect any radical reform there (assuming that reform is needed) the whole system of selling must be changed."

In respect to the management of a provincially owned system the Commission do not think that the privilege of appointing a majority or any other number of the operating commission should be

claimed by, or given to, the Grain Growers' Association or any other body than the government of the day. As to the financing of the G. G. Executive's scheme two facts are noted. One is that the Executive declined to submit any figures but "contented themselves with a few general paragraphs in their memorandum." The other is the admission that "It would, therefore, be desirable that the Government should undertake an energetic campaign of education with the object of convincing the farming public of the general advantage that would flow from a government system, thus hastening the securing of guarantees necessary to the establishment of a wide-spread system." The conclusions of the Commission concerning the Executive's scheme are as follows: "The commission cannot recommend the adoption of the scheme of the Executive by the provincial government. Their objections to it are not founded upon any opposition to the principle of provincially-owned storage. Even though that principle were accepted, this particular scheme of provincial ownership is objectionable."

"The question is relevant—how many of the things demanded in the scheme are within the power of the provincial legislature to grant? And is there anything to be gained by demanding from a provincial legislature things which, whatever its influence with the federal government might or might not be, it could not of itself give or secure? Why should the question of initial storage be further complicated by mixing it with questions of banking, of exchanges and of terminal elevators? And the scheme is in regard to initial storage objectionable because some of the things it demands are unworkable."

"Lastly, although the Executive do not ask for provincial grading, it appears to the commission that if the sampling is to be done by the elevator operators, who would be provincial appointees, and if there took place disputes about the quality of the grain delivered upon the certificates issued at the provincial elevators, the province would be almost inevitably led to create a grading system of its own. And while some would regard this as an advantage, it might have a serious effect upon export business. The federal system of grading in Canada compares favorably with the state systems of the United States."

A scheme of provincial ownership and operation proposed by Mr. Dorrell, President of the Moose Jaw Agricultural Society is analysed and disposed of in the following sentence: "It appears to the commission that while this scheme contains a serious attempt to meet the financial difficulty, its financial clauses would be found to be impracticable."

The Manitoba Elevator Act is the final scheme analysed in chapter three. Its points of diver-

gence from the memorandum of the S. G. G. Executive are enumerated thus: "The scheme provided for in this Act is very different from that demanded by the Executive of the Saskatchewan Association. The Act does not include terminal elevators. The Act does not touch the matter of responsibility for loss of grain in transit. It does not provide for a new grain exchange, or for the removal in any way of those dangerous evils which are said to arise from manipulation, speculation and monopoly in the market. It does not create the conditions which are necessary for the establishment of an effective sample market. In a word, it is an Act about initial elevators only; and the initial elevators which it provides for offer none of the special features demanded by the Saskatchewan Association. Official certificates of weight and grade cannot be given before shipment. There is no provision for government loans on the security of the stored grain either to attract patronage, or to enable the farmer to hold his grain and market it leisurely. Space is to be leased to dealers for the purchase of street grain." The Commission say that most of those giving evidence would not be satisfied with the Manitoba Act because of the possibilities of political management contained in it, and because of the grave financial risk involved in the absence of a statutory monopoly. The Commission's own criticism of and judgment upon the Manitoba Act will be cited further on in this summary.

Chapter four considers the advisability of conducting an experiment in government ownership under an independent commission embracing say fifty elevators for a period of two years. "By such an experiment little could be lost, and much would be gained. Even if the province adopted an Act similar to the Manitoba Act, it could hardly hope to establish elevators at every shipping point within a year, or two years either. If the alternatives are a deliberate and bona fide experiment on the one hand, and the provision of a general provincial system, on the other hand, this commission believes that the method of an experiment is preferable. But the commission consider that there is another alternative."

In chapter four the financial side of provincial ownership is discussed. Data covering actual operation of farmers' and milling companies' elevators, and estimates by various people and bodies are presented, and the general conclusion is that, if run as handling, cleaning, and storage concerns alone, elevators would require to be filled at least three and probably four times before paying their own expenses, their fixed charges, and their share of central management and inspection charges. Says the Report: "There is the question whether it would be profitable investment for the province to purchase a large number of elevators, and to

find itself still confronted with the competition of the most successful companies. If, after the expenditure of a large amount of capital, a monopoly was not secured, the public system would be saddled with a heavy debt and would still be subjected to vigorous competition. It might serve the interest of some elevator owners to sell their houses to the province, but it would not serve the interests of the growers of grain, who would have to pay the bill, unless the new system actually secured a monopoly."

In concluding this very important chapter the Commission summarize the means by which the advocates of provincial ownership propose to make the system a financial success. They say:

(1) Mr. Walter Simpson argues for a provincial monopoly, on the ground that some farmers, and perhaps a considerable number, will take their grain to whatever elevator appears to offer the best terms and this might be the company owned elevator.

(2) Mr. Dorrell proposes that the farmers should give a guarantee and that the charges in each elevator should be readjusted annually to meet or avoid deficits.

(3) Mr. Gates personally considers that the farmers should bind themselves under a penalty of five cents a bushel to use the provincial elevator.

(4) The Executive propose that the government should buy out competitors as far as possible, that the provincially owned elevators should offer very special facilities in order to draw business, and that the government should conduct energetic campaigns of education, and offer loans at low rates of interest on grain stored in their elevators, in order to attract patronage.

These proposals are significant of the financial risk which the province would run in establishing a competing line of elevators. And when the area of the province and the probable increase in the quantity of grain grown within a few years are considered, the capital expenditure would not be one or two, but several millions of dollars. It is a wealthy country that can afford to embark lightly upon such a course."

"There is admittedly one incalculable factor in the problem. The elevators would pay if they handled enough grain. And the incalculable factor is whether the farmers would take the grain in sufficient quantities to the provincial elevators, if they believed they could do better elsewhere. Some have faith that the farmers would patronize the provincial elevators even at an apparent sacrifice, others have not that faith. And these consider that the farmers should not be called upon to bear the sacrifice."

"It appears to this Commission that the question is not one of the general principle of public versus private ownership. If it were only that, there would be little difficulty. It is a question of provincial competition under very

special conditions. It involves a grave financial risk, a risk grave enough to justify even the advocates of public ownership in general in hesitating to recommend it, and an endeavoring to find a solution that will find a place for a direct personal interest on the part of the grain growers in the new elevators."

Schemes of Municipal and District elevators form the subject of Chapter 5. One essential difference between such elevators and those state-owned is that the element of local loyalty and local pride enters in and the advocates of these schemes lay stress upon this feature. The Commission points out, however, that the experience of the municipally-owned and operated elevators at Qu'Appelle and McLean which were conducted for five years at a total net loss of \$8648.73 would seem to indicate that too much reliance should not be placed upon local loyalty and pride when personal responsibility is absent. The Commission commends and criticises the scheme of district elevators evolved by the Cory Grain Growers' Association. The Commission agrees with the view of the value of local feeling and local responsibility. They consider that, while this scheme provides for possible taxation in the case of a deficit, the real aim is at a direct personal interest and responsibility on the part of the growers of grain. And the question with the Commission is whether there is not a more direct, less artificial and more efficient way of securing that interest.

Chapter 6 is a long one dealing with other phases of the inquiry and in it and succeeding ones the Commission present the results of their investigation at points outside the province.

The matters treated are: The World Market, Trading in futures, Who is the Speculator, Liverpool Prices, Prices at the Boundary line, Spreading false reports about the supply, the Exporters' view of Speculation, Competition in the Exchange, A substitute for the Exchange, An Exchange within the Province and Provincial selling. Some extracts from this chapter will be of interest: "This commission do not say that there are no monopolistic tendencies in the grain business, either in regard to storage or in regard to selling. The present is an age of monopolistic tendencies. Consolidation is at work in every important industry, and it would be remarkable if there were no consolidating tendencies in the grain business. And these may, and probably will, develop more rapidly in the future. But at present the farmers, by direct shipment of the grain to the independent commission men, or to their own company, can secure competitive prices and can retain the competitive market."

Another extract follows: "The speculating class is often referred to as though speculation was carried on only by a limited number

of grain dealers. The fact is, however, that the speculator belongs to every class in the community. Orders to buy or sell with the intent not of receiving or delivering the actual grain, but of closing out at a profit, flow into the Exchange from farmers, business men, lawyers, doctors, teachers and (it is said) parsons, from all parts of the Dominion, and from other countries as well. These orders are executed in the pit by members of the Exchange, who are paid for their services. Many who probably can ill afford a loss, and who certainly can have little knowledge of the conditions affecting the price of grain, rush to speculation in grain as a way of getting rich."

Regarding the establishment of an exchange within the province of Saskatchewan, the report says in part:

"It has been suggested that the legislature should seek to create an Exchange at some point, say Regina, within the province. But Exchanges are not created by legislature, they are created by traders. It would be difficult for the Provincial legislature to compel traders to become members in a new Exchange, if they did not wish to do so."

And later, "The conditions which favor Winnipeg as a place for an Exchange are obvious. The railway systems of the grain areas of the west meet there. It is the spout through which the grain must go if it goes East. It is the headquarters of the Inspection Department, and of the Warehouse Commissioner's Department. It is the headquarters of the financial institutions that operate in the West. These conditions make Winnipeg the natural place for the Exchange, in spite of its distance from the lakes and terminals, and these conditions give Winnipeg advantages over all other western towns in regard to the selling of grain."

"As the country develops the commanding position now held by Winnipeg may be modified. If, for example, a new northern route be found over which grain can be shipped cheaply, or if the United States lowered or removed the duty on grain, or if at any point, say Regina, Moose Jaw, Prince Albert or Saskatoon, a large milling industry developed, or a large number of railways met, there would naturally spring up one or more new exchanges."

"Saskatchewan is not the only grain-growing province that has no Exchange. There are several important grain-growing states in the United States that have none either. But if an Exchange were established within the province it would probably rest largely upon the Winnipeg Exchange for some years, do its hedging in Winnipeg, and use all the devices of the speculative market. A new Exchange on the old methods would not remove the evils charged against the Winnipeg Exchange—it would only bring

them within this province. If, on the other hand, the provincial legislature forbade (if that were possible) speculation in it, the new Exchange would be still-born."

"As to provincial selling, the Commission conclude: "The advocate of provincial selling has at all events the merit of aiming at the removal of the dangerous evils which are put forward as the main reason on behalf of public ownership; the advocate of provincial storage does not even aim at these evils upon which he yet rests his case. But this scheme of provincial or collective selling involves such far-reaching changes that it is needless to discuss it further. It is more relevant to end this chapter by pointing out how the farmers protect themselves in the present market. They do it by shipping large quantities of grain to the independent commission men, including their own company. This is the best way of preventing a monopoly and of retaining competition in the existing market, and it is a better way than any that could be devised by the provincial legislature short of provincial selling."

After discussing in chapter 7 some phases of the question that concerns terminals, banks, and especially the larger milling concerns, the report says: "It appears to the Commission that the question of the initial elevators must be distinguished from these other questions, if provincial legislation is to be attempted."

Chapter 8 discusses with thoroughness and insight four classes of causes that have operated during the past ten years to materially modify conditions in the grain trade of Western Canada. Of the importance of transportation facilities and their extension the Commission says:

"The question of transportation is a vital one for the growers of grain in Sask. And it is an open question whether the money that would be required to purchase or construct a system of provincially-owned elevators, would not bring the farmers a larger return if it were devoted to the further development of railway facilities."

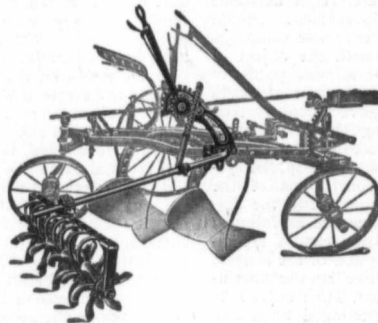
The loading platform as the real competitor of the elevator is given a paragraph and the following said concerning co-operation among farmers during the period in question:

"Co-operation among the farmers has proceeded along the following lines:

1. The Grain Growers Association.—This association, organized in 1901, has done good service in promoting legislation affecting the grain growers, as for example, in securing amendments to the Manitoba Grain Act, and the Grain Inspection Act. It has also done good service in making provisions of these Acts better known among the farmers, and in assisting to have them enforced. Its education work has in many other ways helped to secure the square deal for the farmer. It

Best Tillage Tool

ever made for the farm is the
Kramer Rotary Harrow
FOR PLOW ATTACHMENT



If you want to make money, and in doing so save enormously in time and labor, then you will never run a farm without a Kramer Rotary Harrow.

For plow attachment it is the only implement for the job and this is confirmed by the fact that nearly 100,000 farmers are using it in preference to any other harrow that has ever been introduced. Highly recommended by the Manitoba Agricultural College. Price and terms will fit the purse of any settler.

THE KRAMER MANFG. CO., Paxton, Ill.

John Deere Plow Co. Ltd.

WINNIPEG, REGINA, CALGARY, EDMONTON, SASKATOON
Exclusive Selling Agents for Western Canada



Mr. Farmer We wish you a happy and prosperous New Year, and want to say our lines will increase your profits and lessen your labor for 1911. These are two things you want to do, and we want to help you accomplish, this year.

Windmills
for Pumping or Driving Machinery
The Famous Stickney Gasoline Engines

"have them all beat." Sizes 14 to 20 h.p. Stationary and Portable.
"Flour City" Gasoline Tractors
The "Gold Medal" winners—for Plowing, Threshing, or general farm work.
Armstrong-Quam, Howell or Dempster Well Drilling and Boring Machinery. An up-to-date line of splendid rigs.

AYLMER PUMPS AND STARDARD SCALES. ALSO THE NEW **AYLMER PITLESS SCALES.** A GREAT LINE Toronto Grain Grinders and Saw Frames in all sizes; Toronto Iron and Wood Pumps, Brass and Iron Cylinders; Steel Tanks and Troughs; Wood Tanks; Cow Basins and Stanchions; Belting; Well Casting, Pipe and Fittings.

Get our catalogue and quotations, or see our Local Agent, before you buy.

ONTARIO WIND ENGINE and PUMP CO. LTD., TORONTO WINNIPEG CALGARY

Barth
REG. TRADE MARK
THAT NAME

The U. S. Government has registered as our trade mark. It is our means of protecting you—the dealer and ourselves. When you buy a Jack with that name on it, our 18 years of Jack building stands back of it.

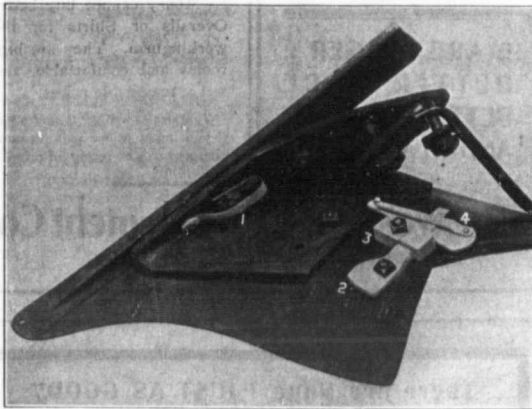
Ask your dealer or write us. **Barth Mfg. Co.** 69 L Street, MILWAUKEE

THE Parks-Coughlin Plowshare Fastener

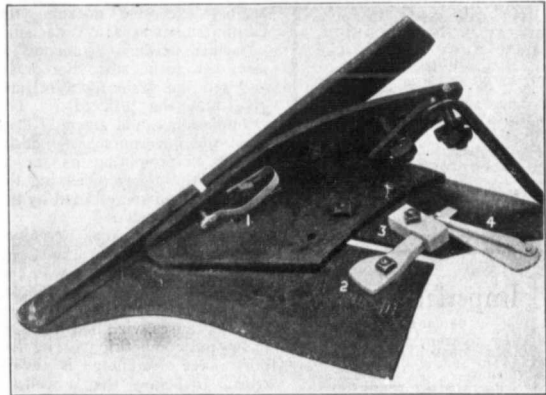
Eliminates Plowshare Troubles

1. Spring Bolt 2. Coupler 3. Lock Bar 4. Wedge Key

Your Greatest Plow Trouble is Share Trouble



You can eliminate this by using our fastener. You will then have—
Need for tipping plow over in order to get at shares
Troubles with damaged or rusted burrs.
NO MORE Trouble with turning bolts.
Use for hammer and punch to force holes in share into line with those in the frog of the plow.
Cheaper than bolts; so strong; has stood every test in every soil.
The fastener is easily attached and need not be removed until the plow is worn out. Too
valuable of time and bolts saved, not to speak of shares and the better grade of work done by changing
shares often, will more than pay for a set in a year. One set lasts a lifetime.
The coupler draws back and up. It holds the share firmly against the landside of the plow and
the whole length of the mould-board. The holding force is wedge power. This alone makes
it solid enough, but we have re-inforced it with a spring bolt in the landside. Properly attached
it is impossible for the share to come off.



Change Shares in Forty Seconds

That is what we did in the field trial, and a boy, old enough to plow, can do it as easily as a man.

Not a burr to loosen and not a bolt to remove.

Simply lift the plow out of the ground, loosen the wedge key by tapping it at the tip with your wrench, remove it, unsnap the spring bolt and lift the share off. Place the new share into position, secure the spring bolt, insert the wedge key and drive it in with your wrench. Easy, is it not? Every part is well made. Every set sold under a responsible guarantee.

You have perhaps wished for a device like this on many a cold autumn day, while you were wrestling with a turning bolt or a sprung share, without your regular blacksmith's tools. This is, therefore, of special interest to you, and you should find out more about it. You should, before you turn from this page, write us, giving the name and address of your implement man, and your name and address, and you will receive full information. You will not place yourself under any obligation. DO IT NOW.

Implement Specialties Company, 304 McIntyre Building, Winnipeg, Man.

numbers about ten per cent. of the farmers of the province, but its influence is not confined to its membership. The farmer who believes that he has been wronged in an elevator does not need to fight alone; he has behind him an organization strong in numbers, strong in resources, and little disinclined to fight with any elevator man or company."

"2. The Grain Growers' Grain Company.—The Grain Growers' Association aims at organizing the farmers, at promoting and enforcing legislation, and at educating them along certain lines. The Grain Growers' Grain Company aims at becoming their selling agency in Winnipeg. The right of farmers to co-operate in selling is unquestionable and the wisdom of it can only be tested by experience. The Company enables them to gain first-hand information about the Exchange and about existing methods of dealing in grain. It enables them to ascertain whether or not inordinate profits are made by selling on commission, by exporting, or by speculating. It enables them to obtain a share of such profits as are made, and to test the seriousness of such risks as are run. Further, it enables other members of the Exchange to learn from the lessening volume of their business, that there is nothing to be gained by losing the confidence of the farmers. It adds another competitor to the market, and a competitor which handled last year sixteen million

bushels of grain. It is a competitor, too, which is not likely to join any "combine" detrimental to the farmers, or to survive the moment that it ceases to have the confidence of the farmer."

The importance and value of public weight scales at initial points is alluded to and the Manitoba Grain Act is warmly commended as a protective measure whose provisions are insufficiently known and used by the shipper. This chapter contains a long letter from Warehouse Commissioner C. C. Castle, in which he points out that very many of the alleged abuses are already amply provided for in the Manitoba Grain Act. The findings of the Commission with regard to the changes of a decade are as follows:

"It is utterly misleading to ignore the operation of those factors, and to say or imply that conditions in the initial elevators are what they once were. Whatever may have been these conditions in earlier years, and they appear to have been bad, they have been materially changed."

"This change was freely recognized by nearly every farmer who gave evidence before the commission. In one place after another, and in practically every place visited, farmers assured the commission that during the last few years there has been a great change. They stated that they personally had little to complain of in regard to weights, grades or prices, and that they

advocated provincial ownership not so much on their own behalf as on behalf of the settlers in the newer districts. True, there were complaints here and there, as there will always be in any business of size and difficulty by whomsoever conducted. In the newer districts again practically the same story was told. The conclusion is irresistible that however powerless farmers were in the earlier years against the initial elevators, they are now in a position to largely protect themselves."

Further conclusions along the same line are given elsewhere in the report:

"The Commission cannot believe that the increased railway facilities, the extended use of the loading platform, the work of the G. G. Association and of the G. G. Co., the competition of the farmers' elevators, the introduction of public weigh scales, and the provisions of the Manitoba Grain Act has no effect upon the initial elevators. They cannot believe that the excessive storage capacity has had no effect in stimulating competition. They cannot believe that companies would sell out elevators cheaply if they had in these sources of large profits. They are constrained to accept the testimony of many farmers to the effect that the conditions have been improved, and that the man who knows can protect himself so far as the initial elevators are concerned."

"The Commission do not say that the conditions are always what they should be, that there are no cases of sharp practice, and that there are no grounds for such dissatisfaction as exists. They are impressed by the existence of a very strong feeling of its satisfaction on the part of some farmers who cannot be regarded as incompetent in their business or as mischief makers or agitators. The Commission believe that behind such feeling there are experiences of rank injustice, recollections of times when the elevator operators had the farmers in their power, and when they took full advantage of their opportunity. The Commission believe that the elevator companies brought the trouble upon themselves in the earlier days. But they believe also that the situation has been materially improved by the factors referred to. It appears to this Commission that these factors can be so strengthened by the province that the result would be to give the farmer complete control in the matter of initial storage of grain."

Chapter 9 contains practical suggestions as to what further provisions might advisably be made in the matter of insuring better weight, more cleaning and fairer dockage. Farmers are urged to clean the grain at the proper place, namely, on the farm while threshing, and the arguments against such a proper course are disposed of in short

DOMINION EXPRESS CO.

MONEY ORDERS, FOREIGN DRAFTS and TRAVELLERS' CHEQUES

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

PAYABLE ALL OVER THE WORLD
Money Transferred by Telegraph and Cable

Hundreds of Offices throughout Canada	FOREIGN MONEY BOUGHT AND SOLD	Winipeg Office 212-214 Bannatyne Avenue
---------------------------------------	-------------------------------	---

Imperial Bank
OF CANADA

CAPITAL AUTHORIZED \$10,000,000.00
CAPITAL SUBSCRIBED 5,905,000.00
CAPITAL PAID UP 5,575,000.00
RESERVE FUND 5,575,000.00

HEAD OFFICE, TORONTO

Directors:
D. R. Wilkie, President and General Manager.
Hon. Robt. Jeffrey, Vice-President.
Wm. Ramsay, Elias Rogers.
Cawhra Mulock, J. K. Osborne.
Charles Cockshutt, Peleg Howland.
Wm. Whyte, Wm. Hamilton Merritt.
Hon. Richard Turner.

List of Branches of Imperial Bank of Canada

MANITOBA
Winnipeg
Winnipeg (North End)
Brandon
Portage la Prairie

SASKATCHEWAN
Balgonie
Broadview
Fort Qu'Appelle
Hague
Moore Jaw
North Battleford
Prince Albert
Rosthern
Saskatoon
Wilkie
Wynyard

ALBERTA
Athabasca Landing
Banff
Calgary
Calgary (East End)
Edmonton
Edmonton (West End)
Lethbridge
Red Deer
Strathcona
Wetaskiwin

Winnipeg Branch: N. C. Leslie, Manager

DO YOU WANT
\$5.00 WORTH **\$1.50**
FOR

Use the HANDY PENCIL SHARPENER in the HOME, the OFFICE, the SCHOOL—wherever lead pencils are used. It is most economical, never breaks the lead, convenient, simple and everlasting. The publishers of this magazine use and recommend it. Mailed anywhere for \$1.50. You couldn't give a more acceptable Xmas gift to child or adult. Our illustrated folder free for the asking.

KILGOUR APPLIANCE CO.
Box 1021, WINNIPEG, MAN.

Principles of Ventilation Applied to Farm Buildings.

Continued from page 17

are sheeted with galvanized iron and therefore impervious to air except through leaks about windows and doors, when the outside temperatures were 2 degrees, 18 degrees, 16 degrees and 11 degrees, the average stable temperature was 47, 43, 44 and 44 degrees respectively, and the mean air movement through the stable was 2,775 cubic feet per hour per cow, but this is 767 cubic feet below the standard we have assumed. Had the standard amount of air passed through the stable, entering at the outside temperature, or 11.75 degrees, its temperature would have been raised to a little above 32 degrees. It is generally desirable, at least for dairy stables that the temperature should not drop below freezing point. There can, however, be no doubt when it becomes a question of choosing between low temperature and pure air, that the pure air should be taken.

order. Referring to the man who thus fails to protect himself against excessive dockage the Commissioner says: "What such a farmer needs is someone to farm the grain, store the grain, and sell the grain for him, and give him the proceeds." The Commission would strongly urge upon the government the desirability of promoting as far as possible the policy of having the grain weighed and cleaned by the farmers themselves.

Farmers' elevators received much attention from the Commission and an auditor was employed to examine their books. Failures are ascribed to two general causes, viz., bad management and competition. The Report says: "There is every reason to believe that a well-established and well-managed farmers' elevator will hold its own against all competition. If it has the farmers' interest on a fairly large scale, and if it has an able and trusted manager, it will get the grain. There are several cases in both Saskatchewan and Manitoba that confirm this belief, cases where they succeed beyond the average. And if there were a system of such elevators throughout the province there would be no elevator problem." And later "It is a mistake to say that as a class farmers' elevators have been a failure. They have not been a failure, in spite of all their difficulties."

The solution of the elevator problem along the line of government-aided farmers' elevators is discussed pro and con in this chapter and the example of Minnesota with its 204 farmers' elevators is referred to. These are not state-aided, however, but run in successful competition with the line elevators. Local management is the feature emphasized by the advocates of this solution. The Commission does not endorse it but passes in its Report to outline and analyse Mr. Levi Thompson's scheme which provides for the operation of a system of state-aided elevators by a joint stock company having central management directed by a commission of three—one appointed by the Government, one by the shareholders in the south and the other by those in the north. While this scheme is endorsed but not adopted by the Commission, many of its features are incorporated, together with some of those of the state-aided farmers' elevator advocates, in the Commission's own solution, which is outlined in chapter eleven.

Chapter eleven is a summary of the unanimous conclusions of the Commission and is therefore the most important portion of the report. It follows in its entirety: The Commission are unanimous in holding that while initial storage, transportation, a system of selling and terminal storage, all form one general system of trading in grain, yet from the point of view of action by the Provincial Legislature the mat-

Continued in next issue

WESTERN KING OVERALLS AND SHIRTS

**:: ARE BIGGER ::
BETTER MADE
BETTER FINISHED
AND WEAR BETTER**

These Garments

cost more to make than most others, but we put this extra expense into them in order to have the best.

Money cannot buy better Overalls or Shirts for the workingman. They are big, roomy and comfortable, and sell at reasonable prices.

Your dealer will get them for you if you insist, or we will forward, charges paid, on receipt of price.

The Western King Garment Co.
McDERMOT AVE - WINNIPEG

There are None "JUST AS GOOD" AS

King of the Road Overalls

"The Better Kind"

Look for the Label

It stands as a guarantee of PERFECT MATERIAL, TESTED PATTERNS, SUPERB CUTTING and that every garment must make good or it will be replaced. Ask your dealer for them.

R. J. Whitla & Co. Limited, Winnipeg

Kill All Gophers Quick and Save Big Profits—

Get a box of Mickelson's Kill-Em-Quick Gopher Poison from your dealer at once. Try it according to the simple directions. If it isn't satisfactory—if it doesn't rid your fields of gophers—get every cent of your money back promptly.

But you'll find, like other progressive farmers, that there's no bigger money-saver than Kill-Em-Quick. Each gopher costs you 10 cents. There are 500 to 1000 in a 40-acre field. And a \$1.25 box of Kill-Em-Quick actually kills 4,000 gophers. Let us send you proof.

Mickelson's Kill-Em-Quick Gopher Poison

has a peculiar odor that attracts gophers. Every atom kills a gopher. That is the reason for the wonderful effectiveness of Kill-Em-Quick. The damage done by 12 gophers will pay for a \$1.25 box of Kill-Em-Quick. Spend \$1.25 and save \$400 in crops. I'll prove it. And I'll also give you many reasons why other progressive farmers use Mickelson's Kill-Em-Quick Gopher Poison—

Better Than Strychnine in Every Way

Strychnine needs lots of water to dissolve it and lots of grain to absorb it. So it is weak and ineffective. And it is excessively bitter. Being bitter and weak, gophers don't eat enough of it to kill them. Kill-Em-Quick is pleasing to the taste of gophers. And it is full strength on each grain. Two poisoned kernels mean death to a gopher. And Kill-Em-Quick is much safer, easier and cleaner for you to handle. No more is used at a time than is actually needed.

Let me send you folders of facts for farmers. Simply drop me a postal at once. But ask your dealer for Kill-Em-Quick the next time you're in town. You can't lose—my guarantee protects you.

Anton Mickelson, President

Mickelson Kill-Em-Quick Company
1452 Washington Avenue, St. Paul, Minnesota

Patronize Those Who Patronize This Paper

Attend the New School.

Strict and particular attention will be devoted to the handling, repairing and operating of gasoline engines of all descriptions used on the farm at the school of instruction to be opened in Brown's Stock Exchange building at Portage la Prairie, by Alex. McLarty on January 9th, 1911.

Factory Employees' Xmas

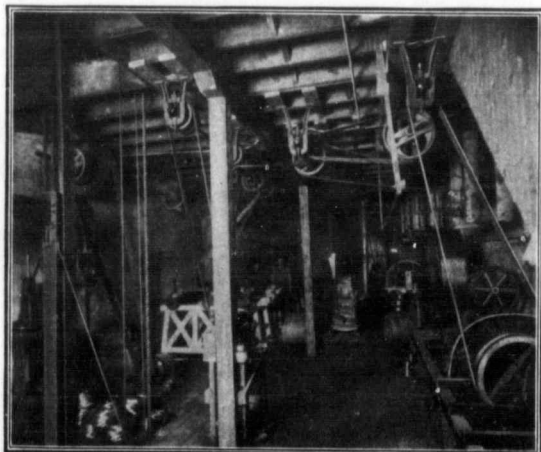
The employees of the Western King Garment Co., to the number of two hundred, sat down on Thursday, 22nd ult., to what is now to be an annual Christmas dinner. Delicacies in keeping with the season were served in the large dining room of the factory, specially set apart and kept for the use of the employees. The dining room was tastefully decorated for the occasion.

The chair was taken by the president, who was supported by the vice-president, who, in turn, was supported by the factory management. In his remarks the chairman complimented the employees on their loyalty to the company, and pointed out how the factory had grown in the course of a few short years from such a small beginning to the position it now holds.

The afternoon was given over to a programme of music and dancing interspersed with short speeches in which Mr. Emery, the popular manager of the factory,

Mr. Leon, Mr. Edwards and Mr. Gunn took part, while the music, both vocal and instrumental, was supplied by various members of the factory staff.

During the course of the afternoon, a very pleasant presentation was made to Miss Sheraton on behalf of the employees, the occasion being her approaching marriage. The gift took the shape of a very handsome silver tea service, and showed the esteem in which she is held by her fellow workers.



Portion of Factory of Canadian Lightning Arrester Co.

FINE
Elmira
FELT SHOES

To fit every foot from baby to Grandmother, add to the pleasures of evenings at home.

"Elmira" Felts combine the styles that please, the quality that produces durability, and the comfort that insures satisfaction.

The "Elmira" Trademark, on Felt Shoes and Slippers, is a sure protection against the "just as good" argument.
Sold by all Dealers throughout Canada.

No TRAIL too LONG

for the Horse that
Always Gives Satisfaction

OGILVIE'S ROYAL HOUSEHOLD FLOUR

MAKES JUST AS FINE PASTRY AS IT DOES BREAD AND THE BEST OF BOTH. HOUSEKEEPERS FIND IT

ALWAYS GIVES SATISFACTION

THE OGILVIE FLOUR MILLS COMPANY, LIMITED
WINNIPEG FORT WILLIAM MONTREAL

Coming East This Winter?

Let your trip include a Term in our School and secure transportation at 50 per cent. of single fare. It will pay you in every way. Write us for catalogue, enrollment form and certificate.

CENTRAL BUSINESS COLLEGE
W. H. SHAW, Prin., TORONTO

Just One Tubular Cream Separator THE SHARPLES TUBULAR



Later than, different from, vastly superior to all others. Built on the only known principle of correct separator construction. Free from troubles of common separators. Patented. Has no imitators. Put common separators out of date years ago. In world wide use. Probably replacing more common separators than any one maker of such machines sells.

Sharples Dairy Tubular Cream Separator contains neither disks nor other contraptions, yet produce twice the skimming force, skim faster and twice as clean as others. Make extra profit by saving what others lose. Much easiest to clean. Wear a lifetime.

Waste No Time on common separators, for they will not satisfy you. You will always remember you might have had a later and a better one, and regret that you did not get a Tubular in the first place.

GUARANTEED FOREVER by the oldest separator concern on this continent. The manufacture of Tubulars is one of Canada's leading industries. The World's Best. Write for catalog No. 333.

30 yrs

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

Farmers, Attention!

Few people realize what a tremendous revolution is taking place in the production of power. Until recent years water and steam were the only means of power production. Later, water and steam power was converted into electricity because of the convenience with which electricity may be transmitted and used.

Within the last few years a new generator of power has been rapidly gaining ground, namely, the gas and gasoline engine. The gas and gasoline engine has come into favor so quickly that it has largely superseded the steam engine for stationary work on account of its extraordinary economy and convenience. The field of usefulness of the gasoline engine is practically unlimited. It is used in the workshop, on the farm, and for almost all industrial purposes.

The greatest field for the use of the gasoline engine is just opening up. The farmer realizes that he must have cheaper power, and that the gasoline engine meets his requirements perfectly. Thus it has come to pass that there are now many kinds of gasoline engines made.

A unique line of engines, known in the North-West by the unique slogan "Goes Like Sixty" is being placed on the market through the Empire Cream Separator Co., of Winnipeg, which has the exclusive sale of the Gilson engines in Western Canada. The Gilson Manufacturing Co., with plants at Port Washington, Wis., and Guelph, Ont., is, and has been, a leader in the gasoline field. The firm was established in 1850. Its motto ever since its inception has been "We better serve ourselves by serving others best." The highest ideals predominated. It has always been the aim of the company to build the best, for it is well known that "The recollection of quality remains long after the price is forgotten." As a consequence, the Gilson engines have attained a reputation all over the world. They are known in every country and every clime. The Gilson "Goes Like Sixty" engines have secured the highest approval of the United States government experts, professors and mechanical engineers of all the leading colleges in the United States and Canada, and by experts and authorities everywhere. For the sixty years that this concern has been in business it has widened its scope, and naturally its engines are known in every civilized country, and its name stands for progress, quality and honest dealing. The Canadian Plant was established in Guelph, Ont., about three years ago. They have just built a new machine shop, equipped with the most modern machinery for making engines, and have doubled their capacity to supply the demand which has arisen for the "Goes Like Sixty," and the demand has been so great that the production has increased

We Are Still Waiting To Refund Someone's Money



Blue Ribbon Tea up-to-date has so satisfied every user that we have not asked for a refund in a single case. Buy a packet and see how good it is.

Lunkenheimer Pop-Safety Valves

Do not waste steam as they relieve the overpressure only

They can be regulated to reduce the pressure only one pound, if such close regulation is desired. The improved construction of the valves prevents chattering and sticking and adjustment of the pop and pressure can be made from the outside of the valve.

Lunkenheimer Pop-Safety Valves have full relieving capacity and are positive in operation.

Either brass or iron body valves can be had, and they are made in all standard sizes for working pressures up to 250 pounds.

Write for Catalogue J. Your Local Dealer can furnish them, if not, write us.



THE LUNKENHEIMER COMPANY

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

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

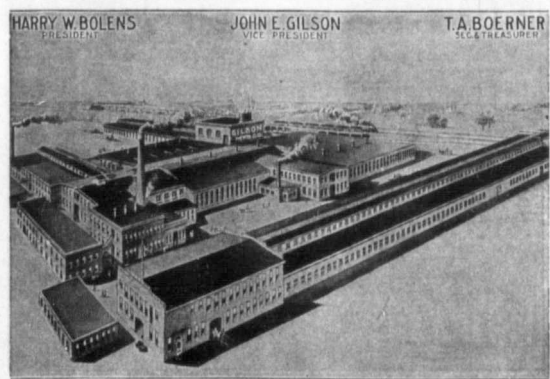
BRANCHES:
NEW YORK—64-66 Fulton Street
CHICAGO—32 Dearborn St., cor. Lake
LONDON, S.E., 35 Gt. Dover St.

CALVES Raise Them Without MILK. Steele, Briggs Seed Co. Winnipeg

DON'T FAIL TO RENEW YOUR SUBSCRIPTION Before it is too late.



by leaps and bounds, keeping the of constant increase in machinery plant rushed to the limit in spite and working force.



Where the Gilson Machines are Made

STAY INSIDE WHILE YOU ARE OUTSIDE



With a Dysthe Face Protector you can look into the snow storm as through a window. Travelers and all who have country driving during the winter months should have one of these Protectors. Read below what a Doctor from Clansville says:

To My Mind there is Nothing can Take Its Place in a Blizzard.
Clansville, Man., June 22, '10.
Martinus Dysthe, Esq., Winnipeg.

Dear Sir—Replying to your favor of 22nd inst. may say: that I can gladly recommend your face protector.

To my mind there is nothing can take its place in a blizzard and I often used it also on a clear day when there was a cold wind to face.

They are well worth the money.

Sincerely yours, L. E. MYLKS, M.D.

Agents wanted Everywhere. Write for free Booklet.

MARTINIUS DYSTHE
WINNIPEG MAN.

Dutchman's Mine.

Continued from page 66

narrowly. Once his surprise had passed, the look he returned was neither prepossessing nor reassuring, and the six-shooter he pulled instantly from his belt but added to the general disagreeable impression.

"Howdy," repeated Stanton, making no motion toward his own weapon.

"What the hell you want in here?" demanded the stranger belligerently. It was the blustering tone of a weakling and Stanton interpreted it at its proper value.

"It's anybody's country, ain't it?" he asked easily.

"Not on your picture," answered he of the ready gun. "This here is mine."

"All right," said Stanton, still good-natured. "Nobody's goin' to run away with it. Gold, ain't it? How does she run?"

The stranger eyed him suspiciously.

"Moderate," he answered, a bit less bellicose. "Nothin' wonderful."

Stanton's eyes returned to the cliff, and directly they seemed to bulge from their sockets.

"Good God, man!" he cried, "I can see it from here! Chunks of it! The rock's rotten with it."

He took a step forward.

"Here," cried the fellow by the fire, "none o' that now. It's mine, I tell you. I found it."

He started to rise, but sank back and Stanton, turning reluctantly from the scarred cliff, saw a deathly pallor go over the man's face. Then the eyes drooped shut and he collapsed limply, all but rolling into his own fire.

"Heavenly home!" said Stanton, "what ails him?"

He noticed that the six-shooter had slipped from the man's fingers as he collapsed. Plainly, therefore, there was no deception about the matter. Satisfied of this, he hurried to the stranger and turned him over on his back. As he did so he remarked the fact that the man's right foot was wrapped in dirty bandages showing signs of blood, and that, as he straightened the body out, his foot bent back and under in a puzzling fashion.

Stanton dipped up a hatful of water from the brook and dashed it in the stranger's face. He pulled his whisky flask from his pocket and poured the last precious drops between the slack jaws. Even while he did these things his mind was on the cliff beyond, where the sunlight striking on the rock was met and returned by glinting bits of its own bright color.

"The Dutchman's Mine," he repeated to himself over and over. "The Dutchman's Mine, and he's beat me to it."

Presently the man before him groaned and half turned on his side. Then his eyes opened between brows drawn tight.

"My foot!" he gasped. "My foot!"

Stanton straightened out the injured member while its owner

THE CANADIAN BANK OF COMMERCE

HEAD OFFICE: TORONTO

CAPITAL, \$10,000,000 REST, \$6,000,000

SIR EDMUND WALKER, C.V.O., LL.D., D.C.L., President
ALEXANDER LAIRD, General Manager A. H. IRELAND, Superintendent of Branches

BRANCHES IN EVERY PROVINCE OF CANADA AND IN THE UNITED STATES, MEXICO AND GREAT BRITAIN

BRANCHES IN SASKATCHEWAN

BRODERICK	LASHBURN	REGINA
CANORA	LLOYDMINSTER	SASKATOON
DELISLE	MELFORT	SHELLBROOK
DRINKWATER	MELVILLE	SWIFT CURRENT
ELBOW	MILESTONE	TUGASKE
ELFROS	MOOSE JAW	VONDA
HAWARDEN	MOOSSOMIN	WADENA
HERBERT	MORSE	WATROUS
HUMBOLDT	NOKOMIS	WATSON
KAMSACK	NORTH BATTLEFORD	WEYBURN
KINDERSLEY	OUTLOOK	WILCOX
LANGHAM	PRINCE ALBERT	YELLOWGRASS
LANIGAN	RADISSON	YORKTON

FARMERS' BANKING

Every facility afforded Farmers and Ranchers for the transaction of their banking business. Notes discounted and sales notes collected.

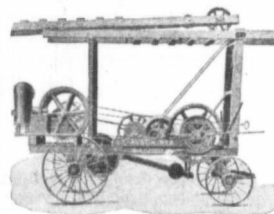
ACCOUNTS MAY BE OPENED AND CONDUCTED BY MAIL

Hillcrest Steam Coal

The Best Coal from the Rocky Mountain Mines, free from Slate and Rock. It Will Plow More Acres Per Ton Than Any Other Coal.

Hillcrest Collieries Limited
Hillcrest, Alberta.

Austin Well Drilling and Prospecting Machinery



Rock Drilling Hydraulic Jetting or Hydraulic Rotary Machines to drill any depth in any formation. Operated by Steam or Gasoline Engines or Horse Power.

WRITE FOR ILLUSTRATED CATALOGUE NO. 15
Our Line Includes Steam and Gasoline Traction Engines, Sieves and Separators and Supplies
Burridge Cooper Co. Ltd., 156 Lombard Street, Winnipeg

WE ARE OPEN TO BUY

HIDES AND FURS

OF ALL KINDS

AT HIGHEST MARKET PRICES. SHIPMENTS SOLICITED
Write for our Fall Circular containing full list of prices.

Successors to
PIONEER HIDES & FUR CO. LIGHTCAP HIDE & FUR CO.
172 to 176 KING ST., WINNIPEG P.O. BOX 1092

FIRE INSURANCE

The MANITOBA ASSURANCE CO.

(Re-Organized)

All Policies Guaranteed by

THE LIVERPOOL AND LONDON AND GLOBE INSURANCE COMPANY, LTD.

Northwest Branch

WINNIPEG, Canada

Agents wanted in unrepresented districts.

FRED. W. PACE, Local Manager

DON'T be without fruit. You can grow these hardy bush cherries. Excellent for canning. Large fruit. Recommended by the agricultural papers. As easy to grow as currants and quite as hardy. We will send you one dozen of these cherries on receipt of \$2.00. BUCHANAN NURSERY CO., Winnipeg, St. Charles, P.O., Man.



CORRUGATED IRON

**Galvanized, Rust Proof
Made from very finest
sheets, absolutely free
from defects.**

Each sheet is pressed, not rolled, corrugations therefore fit accurately without waste. Any desired size or gauge, straight or curved.

LOW PRICES—PROMPT SHIPMENT

Metallic Roofing Co.,
LIMITED
Manufacturers
TORONTO & WINNIPEG

Western Canada Factory:
797, Notre Dame Ave., Winnipeg.

SHIP YOUR
**FURS
AND
HIDES**
TO
McMILLAN FUR & WOOL CO.
277 BURET STREET
WINNIPEG - MANITOBA
WRITE FOR CIRCULAR
TRAPPERS GUIDE FREE TO THOSE WHO
SHIP TO US.

.. THE ..

Best of All

summer drinks
for general use

**DREWRY'S
Redwood
Lager**

The beer that is always pure
and wholesome.

It refreshes, stimulates and
strengthens the system.

ASK FOR IT

E. L. DREWRY
Manufacturer
WINNIPEG

shrieked at the touch of his fingers. Once it was straight, however, he seemed to rest easier.

"What's matter with it?" asked Stanton, with rough sympathy.

"Shot myself in the ankle," answered the stranger. All the hostility had suddenly gone out of him. He seemed to look upon Stanton as a benefactor rather than an enemy.

"How long ago?" asked Stanton.

"Week ago yesterday," answered the stranger.

Stanton glanced at the injured foot with as near a shudder as his nerveless body was capable of.

"Why didn't you hike for a doctor?" he demanded.

"Didn't dare leave my mine," said the man. "Fraid somebody'd come along and jump it. You'd 'a' done it, too, if I'd gone. But you can't take it away from me now. It's mine. It's the Dutchman's Mine. I found it and it's mine."

Stanton's eye went again to the scarred cliff, his mind working rapidly. Plainly the man had not yet filed his claim. Suppose he should die? The yellow gleams in the face of the rock made the question of fierce importance. Suppose he should die? There was avarice hot in his eyes as he turned again to the stranger.

"Yes," he said slowly, "I reckon it's yourn all right. It'll make you rich if you live to work it."

"Sure I'll live to work it," cried the stranger. "Why wouldn't I?" Stanton looked at him amazedly.

"You fool!" he burst out. "Ain't your foot most shot off? And you waitin' a week 'fore startin' for a doctor! You'll have blood-poison. Likely you've got it in now."

"Oh, no, I ain't," cried the wounded man. "It's stiff and awful sore; that's all. It'll be all right, I reckon. Look at it and see, will you?"

He was like a child now, eager for sympathy and help, and ready to accept advice.

"What good'll that do?" asked Stanton. "I ain't a doctor."

The man's eyes narrowed cunningly.

"I see your game," he cried, with a sharp return to animosity. "Your're goin' to keep me out here till I die o' blood poison, and then grab my mine."

He made as if to rise and Stanton laid a hand on his chest and forced him back.

"Lay still," he said. "I'll look at it. Maybe it ain't so bad after all."

He spoke as one would to a child and the stranger sank back, seemingly content. Stanton proceeded to unwrap the bloody bandage, though the slightest movement of the injured foot brought groans from the stranger. It was a loathsome sight that was disclosed. The bullet from the big .44 fired at close range had shattered the bones of the ankle as though they had been struck by a sledge. The foot was already

WINCHESTER CARTRIDGES



For Rifles, Revolvers and Pistols
Winchester cartridges in all calibers from .22 to .50, shoot where you aim when the trigger is pulled. They are always accurate, reliable and uniform. Shoot them and You'll Shoot Well.

Always Buy Winchester Make.

THE RED W BRAND

The Vulcan Iron Works

Winnipeg LIMITED Canada

MANUFACTURERS OF

Boilers and Engines, Elevator and Milling Machinery,
Iron and Brass Castings

JOBBER'S OF

Steam Fitting Supplies, Architectural and Bridge Material, Steam Pumps,
Rubber Belting, Packing and Hose, Pipe and Supplies, Boiler Plate
and Sheet Iron Boiler Tubes, Etc., Etc.

AGENTS FOR

FAIRBANKS, MORSE & CO., Gasoline Engines, Pumps and Scales
HUNTLY MANUFACTURING CO., Monitor Grain Cleaning Machinery
TAYLOR FORBES CO., Sovereign Radiators and Boilers

Family Group Photos a Specialty

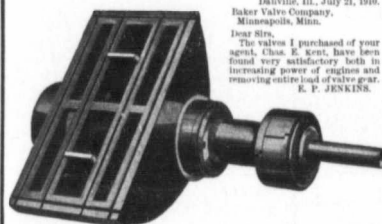
AT

STEELE & CO., LTD.

MAIN ST. AND BANNATYNE AVE.

WINNIPEG

AND STILL THEY COME



Danville, 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.

R. P. JENKINS.

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 slide valve engine. Yours truly,
WEST SIDE QUARRIES CO.

Otto Lundell, Town Clerk of
Dahlgren, Carver County, Minn.
Carver, Minn., Nov. 4, 1910.
Baker Valve Company,
Minneapolis, Minn.

Gentlemen,
My valve gives good results; it does all you claim for it, and I would not be without one as long as I handle an engine even if the price was twice as much. I did not see any
Waiting answer to you, I am,
O. LUDLOFF.

How do you like them? What we have done for others, we can do for you. Send us your order to-day.

BAKER VALVE CO.

404 8th Ave. South, Minneapolis, Minnesota

Dist. OFFICE, WASHINGTON, OREGON, IDAHO AND CALIFORNIA, 14 MAYNARD BLDG., SEATTLE, WASH.

CUT THIS AD. OUT AND MAIL IT



All Sizes
\$1.75
Delivered Free

With the cost of a pair of Lumbersoles and never have cold feet again. Guaranteed to keep feet warm at 50 degrees below zero. Special wooden soles do it. Non-conductors of cold. Retaining your foot's natural heat. Thousands wear them in Canada. Every weary delighted. Don't this winter have the gnawing agony of cold feet. Get a pair of Lumbersoles. Be comfortable. They only cost you \$1.75. Send to-day. Sizes 3-12 (for all ages) \$1.75. Children's sizes 6-2 (fit ages 3-10) \$1.35. Post or express paid by us. Send for catalogue of British Footwear and Woolen Goods. Sent by return. Money refunded if boots not satisfactory. Dealers wanted. Ask for catalogue and special proposition.

SCOTTISH WHOLESALE SPECIALTY CO.

121D
Princes
Street,
Winnipeg,
Man.

**LUMBERSOLE
BOOTS**

Stop That Limp



Change that limping, useless horse into a sound, healthy horse, willing and eager to do a good day's work. Don't let a Spavin, Curb, Splint, Sprain, Ringbone or any other Lameness keep your horse in the stable. Cure it with

Kendall's Spavin Cure

It cures without leaving a scar, blemish or white hairs—because it does not blister.

Port Fills, B.C., June 14th 1900
"Have been using your Liniment for years and find it all that you represent. Have not been without it for 10 years."
GEORGE GORDON.

\$1. a bottle—6 for \$5. Excellent for household use. Sold by all dealers. Ask for free book "A Treatise On The Horse" or write us for copy. 55

DR. R. J. KENDALL CO. Emsbury Falls, Vt.

SHIP YOUR

WEASEL RED FOX
WOLF LYNX
MINK

and all other furs to us.

Special prices for January Shipments. Hides are low and down to 6½ cents.

Northwest Hide and Fur Co.
278 Rupert St., WINNIPEG

INVENTIONS

Thoroughly Protected in all Countries

EGERTON R. CASE

F. M. Chart, Inst. F. A. London. Registered U.S. Patent Attorney.

Specialist in procuring Canadian and Foreign Patents

Dept. H., Temple Bldg., TORONTO

BOOKLET AND DRAWING SHEET ON APPLICATION

Well Drilling Machines

Over 200 styles for drilling either deep or shallow wells in any kind of soil or rock. Mounted on wheels or on horse powers. Strong, simple, durable. Any mechanic can operate them. Send for catalog.

WILLIAMS BROS., ITHACA, N. Y.

PATENTS TRADE MARKS AND DESIGNS

PROCURED IN ALL COUNTRIES
Special Attention Given to Patent Litigation.
PAMPHLET SENT FREE ON APPLICATION
RIDOUT & MAYBEE 305 BAY ST. TORONTO

gangrenous, with the signs of the dread disorder spreading up the leg. The stranger sat up.

"Good God!" he cried. "What ails it?"

"Blood-poison," answered Stanton shortly. "You got to get to a doctor. What's your name?"

"Billy Morgan," answered the man in a tone cowed by sudden horror. "It's pretty bad, ain't it? It'll kill me, likely, if I don't get it fixed?"

"It will kill you sure as shootin'," answered Stanton bluntly.

"But suppose somebody jumps my mine while I'm gone?" queried Morgan plaintively.

"What good'll your mine do you after you're dead?" demanded Stanton.

"I ain't goin' to die," cried Morgan. "I got to work this mine. I'm rich. There's tons of it there. I can't die, now."

As Stanton rebandaged the foot, thoughts came swarming to his mind. Why should he hold himself accountable for a fool who shot off his foot and waited in the desert for it to heal? Besides, it was a week's ride to a doctor and a hard ride all the way. Surely the fellow could not stand the trip in his present condition.

And if he were going to die, why not here instead of somewhere else? If they left the mine some one might come in on their trail and jump the claim. It had been done repeatedly. Why then must he take this fellow in where he could boast of his luck and put others on the track? He was going to die anyway. There was no help for that. He had waited too long, watching his gold. Why not let him die out here? What was there wrong about it?

Morgan was suddenly seized with panic.

"Take me out o' this, pardner," he cried. "I can't make it alone. I can't even catch my pony. For God's safe, take me out. Don't let me die here like a dog."

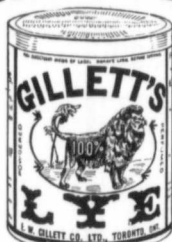
Stanton rose, and kicking Morgan's pistol out of his reach walked over toward the wall of the canon. He would see what he was playing for, at least. As he approached, the gold-bearing vein laid bare by Morgan's pick tempted him almost beyond endurance. It was wealth surpassing anything he had dreamed of in his wildest air-castles. Slanting across the face of the canon the vein dipped down out of sight and he found himself speculating hotly as to how deep it ran.

Presently he scrambled to the top of the canon, pulling himself up by roots and grass and precarious finger-holds in the rock. Almost immediately he picked up the vein in outcroppings on the surface above and followed it for rods before he lost it.

Wherever discovered it showed the same formation, quartz rotten to the crumbling point and literally sparkling with its load of precious metal. He slid and scrambled down the face of the canon, his breath coming thick and hard and his eyes glittering.

GILLETT'S

THE Standard Article



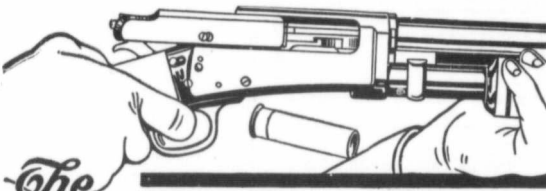
GILLETT'S
LYE

SOLD EVERYWHERE

For Making Soap.
For Softening Water.
For Removing Paint.
For Disinfecting Sinks, Closets, Drains, etc.

Ready for use in any quantity.
Useful for five hundred purposes.
A can equals 20 lbs. SAL SODA.
Use only the Best.

LYE



The Marlin Repeating Shotgun

Made famous by its dependability. The solid top and side ejection keep gases and powder away from your eyes; help quick, effective repeat shots. Rain, sleet, snow and foreign matter can't get into the action. The mechanism is strong, simple, wear-resisting. The double-extractor pull any shell instantly; two special safety devices prevent accidental discharge while action is unlocked, and an automatic recoil block makes bang fires harmless. All Marlins are strongly made, finely balanced, accurate, hard hitting guns, and are the quietest and easiest to take down and clean. Illustration shows Model 24 grade "A" 12 gauge; it has all the features that make for a perfect gun. Send three stamps postage today for our 136 page catalog describing the full Marlin line.

The Marlin Firearms Co.
105 Willow Street New Haven, Conn.

The Liverpool and London and Globe Insurance Co., Ltd.

"THE STRONGEST FIRE COMPANY IN THE WORLD"

Northwest Branch, WINNIPEG, Manitoba


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

SPORTSMEN

YOU CAN GET YOUR HEADS MOUNTED FREE

Diplomas of Merit 1909 and 1910 Silver Medal 1909 and 1910

By "Ambrose" if you can show me a single head mounted in Winnipeg by the most modern scientific methods other than my own work which I make a specialty to guarantee, I will mount your head free of charge. The most modern and scientific method claimed by others was practiced a quarter of a century ago and is now out of date. I am now remounting work mounted on this system only two years ago.



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

Press given on Big Game, Hoods, Elk, Turkeys, Raw Furs, Hides and Rare Birds.

JOHN AMBROSE, Taxidermist 175 FORT STREET, WINNIPEG PHONE MAIN 5185

Patronize those who patronize this Magazine

THE BEST LINIMENT
OR PAIN KILLER FOR THE HUMAN BODY

**Gombault's
Caustic Balsam**
IT HAS NO EQUAL

For the Human Body—It is preeminent for healing and for all Old Sores, Bruises, Wounds, Felons, Interior Cancers, Boils, Corns and Bunions. CAUSTIC BALSAM has no equal as a Liniment.

A Perfectly Safe and Reliable Remedy for Sore Throat, Chest Cold, Backache, Neuralgia, Sprains, Strains, Lumbago, Diphtheria, Sore Lungs, Rheumatism and all Stiff Joints.

We would say to all who buy it that it does not contain a particle of poisonous substance and therefore no harm can result from its external use. Persistent, thorough use will cure many old or chronic ailments and it can be used on any case that requires an outward application with perfect safety.

REMOVED THE SORENESS—STRENGTHENS MUSCLES
O'Donnell, Tex.—"One bottle Caustic Balsam did my rheumatism more good than \$100.00 paid in doctor bills."
OTTO A. BEYER.
Price \$1.00 per bottle. Sold by Druggists, or sent by us express prepaid. Write for Booklet B.
The LAWRENCE-WILLIAMS COMPANY, Toronto, Can.

PARKER'S JUMPING HORSE CARRY US ALL
THE ONLY JUMPING HORSE CARRY US ALL ON THE HORSE.
FOR THE QUALITY OF WORK MADE IN THE AMERICAN LINE.



One machine earned \$15,850.00 in 28 weeks in 1904.
One machine earned \$19,943.00 in 29 weeks in 1905.
One machine earned \$16,692.00 in 25 weeks in 1906.
One machine earned \$16,017.00 in 27 weeks in 1907.
One machine earned \$12,862.00 in 27 weeks in 1908.
One machine earned \$16,842.00 in 25 weeks in 1909.
One machine earned \$18,521.00 in 28 weeks in 1910.

Above figures will be verified to prospective customers. Write for catalogue and prices to C. W. PARKER, Abilene and Leavenworth, Kan. Main Office and Factory, Leavenworth, Kan.

Send only 10 cents

For this beautiful 18 inch tray cloth on Fine Art Linen your choice of Wallpapers, Ezyel, Mt. Melick, Violet or Holly design, and we will include FREE OF CHARGE one year's subscription to "Art Needlework" Magazine.

The tray cloth regularly sells for 25 cents, and one year's subscription to our embroidery Magazine would ordinarily cost you 20 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. AVALLONE & CO., Inc., 207-E Addison Ave., Chicago, Ill.

ERZINGER'S No. 2 CUT PLUG

Leads them all. It's the Best Dollar Tobacco sold anywhere. JOHN ERZINGER, McIntyre Bldg. - 293 Portage Ave., Phone 69 Phone 2677

PATENTS TRADE MARKS AND DESIGNS

Write for Booklet, Circulars, Terms, Etc. FETHERSTONHAUGH & CO. GERALD S. ROXBURGH, B. A. Sc Resident Portage Avenue WINNIPEG 209-210 Bank of Nova Scotia.

It was too much. No man could be asked to risk its sacrifice. He would wait here till Morgan died. Then he would post his notices and get to the nearest land-office to file his claim.

The question of provisions then came to him, and glancing about the camp his eye lighted on a sack of flour and almost a whole side of bacon. These were fuel to the flames. It was as though Providence approved.

Suddenly came a thought that sent a shiver over him. He returned to the fire.

"Got any family?" he asked shortly, looking into the coals.

Cunning deepened the shallow eyes of the injured man.

"A wife, pardner," he said. "A wife and—and a kid. Take me out o' this, will you?"

Stanton turned sharply away. "A wife and a kid." That made it all the worse. The man would die, but the mine would belong to the "wife and kid." The yellow gleams in the open vein drew him like a magnet and again he walked to the cliff. His fingers were working in the rock before he knew it. Bits of the rotten stone broke out at his touch, heavy with raw gold, and he filled his pockets, not realizing what he did. The "wife and kid" would never know what they had missed. And besides it was not theirs. Morgan had not filed on the claim.

He picked at the yellow bits of metal with his nails and the lust of it burned his very soul. He would not give it up.

"Pardner," came Morgan's whine, "you ain't aimin' to cheat me out of it, are you? You ain't aimin' to let me die, and steal my claim?"

Stanton had wheeled on him angrily. Now he turned hot. That was what it came to—stealing. Stealing from a widow and an orphan. And his honesty had ever been the baserock of his self-respect. Till now he had played the game fairly, but he had never met temptation such as this.

The thing was so easy. Knowledge gathered in the wilderness assured him that Morgan was even now beyond help. He might live to reach a doctor and babble out his secret. More likely he would die on the trail. It depended on his vitality, but in the end this thing would kill him. All Stanton need do was to stay and nurse him till he died. Then the mine would be his.

"You wouldn't serve me that-away, pardner," came the voice of Morgan.

Stanton turned without answering, and followed by the babbling whine of Morgan's walked down the little brook fighting with himself. It would not be his fault if the man died without filing on his claim. He was a fool, that was all. But there, as always, were the "wife and kid."

He tried to put them out of his mind, knowing all the time that they had to be considered. Could he steal from a woman and a child? Was he ready to despise

SUN FIRE

The oldest Insurance Office in the world
FOUNDED A.D. 1710 BI-CENTENARY 1910
HOME OFFICE: LONDON, ENGLAND
Canadian Branch, Sun Building, Toronto, H. M. Blackburn, Manager.
AGENTS WANTED IN UNREPRESENTED DISTRICTS

Wall Plaster

If you intend building this year, see that you get a good Plaster Job.

The Sackett Plaster Board AND The Empire Brands of Wall Plaster are what you will need.

THE MANITOBA GYPSUM COMPANY, LIMITED
Office and Mill, - - WINNIPEG, MAN.

MONEY TO LOAN
on IMPROVED FARM LANDS at LOWEST RATES
APPLY TO NATIONAL TRUST COMPANY, LIMITED
WINNIPEG SASKATOON EDMONTON

Mackenzie, Brown, Thom & McMorran
Mackenzie, Brown, MacDonald & Anderson
Barristers, Solicitors, &c.
Regina, Saskatchewan, Canada
Norman Mackenzie, K.C., Official Administrator. George W. Brown
Douglas J. Thom, T. Sydney McMorran, Hector Y. MacDonald
Percy M. Anderson.
General Solicitors in Saskatchewan for Fifteen Canadian and American Thresher and Implement Companies.

A REVOLUTION COUNTER THAT'S RIGHT
Discount to DEALERS \$1.00 By Mail
Do not guess at your speed Buy a Tabor Stop Motion Counter
THE GRANT MANUFACTURING AND MACHINE CO.
110 SILLIMAN AVENUE BRIDGEPORT, Conn.

ADJUSTABLE BRACELET GIVEN FREE
This beautiful heavy gold filled adjustable Bracelet, the very latest style, fancy engraved band with large plain finish openwork silver top, warranted to stand engraving, guaranteed from 5 to 10 years to wear and keep color, given FREE for selling only \$4.00 worth of our beautiful LITHO-ART Postcards at 3 for 5c. These comprise VIEWS of WESTERN CANADA, LOVE SCENES, BEST WISHES, COMICS, BIRTHDAYS, VALENTINES, EASTER, Etc. Send your order to-day for postcards, sell them, return money, and we will send Bracelet to you postpaid, same day.
Western Premium Co. WINNIPEG MAN.

FRAZER AXLE GREASE



Not affected by Heat or Cold.
Highest Awards at Centennial, Paris, and World's Fair.
MANUFACTURED BY
FRAZER LUBRICATOR COMPANY
Factories: ST. LOUIS, NEW YORK.
NICHOLSON & BAIN, Agents
WINNIPEG, MAN.

WELL DRILLING

GUS PECH
FOUNDRY AND
MANUFACTURING
COMPANY

Manufacturers of the
Celebrated
**MONITOR WELL
AUGERS AND
DRILLS**

Write for prices
and Illustrated
Catalogue.

LE MARS, IOWA
U.S.A.
Branch House:
REGINA, SASK.

Seldom See

a big knee like this, but your horse
may have a bunch or bruise on his
Ankle, Hoof, Stifle, Knee or Throat.

ABSORBINE

will clean them off without laying the
horse up. No blister, no hair gone.
\$2.50 per bottle, delivered. Book \$1.00 free.
A. H. BARKER, J. K., for mankind, \$1.
Removes Painful Swellings, Enlarged Glands,
Gout, Wens, Bruises, Varicose Veins, Various
Ulcers, Old Sores, Ailays Pain. Book free.
W. F. YOUNG, P. O. B. 112 Temple St., Springfield, Mass.
LYONS Ltd., Montreal, Canadian Agents.
Also furnished by Martin Sole & Wynne Co., Winnipeg;
The National Drug & Chemical Co., Winnipeg and Calgary;
and Henderson Bros. Co. Ltd., Vancouver.

The Most For Your Money in a Harrow

The ACME

BOOK
FREE

This is
**The Harrow
That Will Conserve Moisture
in Your Soil**

The only Harrow that cuts through and compacts
the under soil, leaving the top soil unworked,
which conditions attract and conserve the greatest
amount of moisture, keeping it where it will do the
growing crop the most good. The "ACME" should
be used on all farms, whether irrigated or dry,
and for summer fallow will keep down and kill
weeds, while conserving moisture.

**ACME PULVERIZING HARROW
CLOD CRUSHER
AND LEVELER**

breaks up and pulverizes plowed and or stubble and
gives you the most for your money, because it does
the best work, in the least time, with the least strain
on your horses—in the lightest weight and draft
and the lowest priced harrow made. The construction
is entirely of steel and iron. In sizes to suit YOU
—3 to 171-2 feet wide. Let us send you our combined
catalog and booklet.

"PREPARATION OF THE SOIL"
The study of this book means better crops and
better profits for you. Ask your dealer about the
"ACME" or write to the John Deere Plow Co., Ltd.,
Calgary, Regina,
DUANE H. NASH, Incorporated
119 Division Avenue, Milledgeville, N. J.

himself for the rest of his life? They would never know. No one would ever know. But he, Dave Stanton, would have to live with the knowledge.

Morgan's horse, wandering at large in the meadow by the brook, came toward him and nickered. Somehow that helped him to decide.

"I got to do it," he said finally. "It's sure tough luck, but I reckon it's up to me."

He caught the animal and returned to the camp. Here he saddled the horse in nervous haste, never looking toward the golden cliff.

"Come on," he said sharply to Morgan. "I'm going to take you out."

The wounded man sat up. "You ain't playin' me no trick?" he demanded suspiciously. "Swear you ain't playin' me no trick."

"Come on, you damn fool," growled Stanton, tried almost beyond endurance.

He led the horse close, and helped Morgan into the saddle; he caught the man's pack-burro, which had followed the horse to camp, and hastily loaded the provisions on its back. Then they were off, neither of them giving so much as a look behind, Stanton because he dared not, Morgan because his whole mind was now bent on reaching succor before it was too late. Farther down the valley Stanton caught and mounted his own horse, and the caravan passed out of the valley.

The third day Morgan began showingsigns of delirium, betrayed at first by mutterings and bursts of song. His leg was in a very bad way now; the foot no longer hurt him, but the disorder had extended above the knees and the thigh was terribly swollen and painful.

The afternoon of the fourth day he broke away from the caravan, and urging his horse to a gallop went off into the desert at right angles to the trail, yelling like an Indian. Stanton reigned in and watched him for an instant. It would be so easy to let him go.

He was not the man to quit, once he had begun a thing. So he jammed spur to his mount and set off after the fugitive, overtaking him after a furious chase.

It was evident toward evening that the end could not be far away. Morgan had eaten nothing for forty-eight hours now, for the last ten miles to their camping place for the night Stanton had ridden alongside and held him in the saddle.

Morgan's delirium had been succeeded, since dismounting, by a semi-comatose state. Stanton had wrapped him in a blanket and he lay moaning, but making no effort to move. Stanton bent over him and spoke carefully and slowly.

"Where are you from?" he asked. "Where'll I find your wife and kid?"

Over and over again he asked it, but always with the same result. It was too late, and in the end he desisted.

Dry Your Clothes on a Wet Washday
With a New Perfection Oil Heater



When clothes can't be hung outside, and must be dried in a room or cellar, the New Perfection Oil Heater quickly does the work of sun and air. You can hang up the wet clothes, light your Perfection Oil Heater, open the damper top, and the heat rises and quickly dries the clothes.

Do not put off washing to await a sunny day in order to avoid mildew. Dry your washing any day with hot air from a

PERFECTION
SMOKELESS
OIL HEATER

Absolutely smokeless and odorless

It gives just as much heat as you desire. It is safe, odorless and smokeless.

It has an automatic-locking flame spreader, which prevents the wick from being turned high enough to smoke, and is easy to remove and drop back, so the wick can be quickly cleaned. Burner body or gallery cannot become wedged, because of a new device in construction, and can always be easily unscrewed for re-wicking.

An indicator shows the amount of oil in the font. Filler-cap does not need to be screwed down, but is put in like a cork in a bottle, and is attached to the font by a chain. Finished in japan or nickel, strong and durable, well-made, built for service and yet light and ornamental. It has a cool handle and a damper top.

Dealers Everywhere. If not at yours, write for descriptive circular to the nearest agency of the

The Imperial Oil Company,
Limited.

There Is No String To This Pipe

It is absolutely FREE to subscribers who take advantage of this offer

The Weekly Free Press and Prairie Farmer
Winnipeg
The Canadian Thresherman and Farmer

Both including Pipe for the nominal sum of **\$1.25**

The lowest price at which these two papers will be offered this year is \$1.25. It makes no difference whether you take the pipe or not, the price is the same. While the supply of these pipes lasts they will be given away free to all who subscribe. Better get your order in early and be sure of a good smoke.

1910.

Weekly Free Press and Prairie Farmer,
Winnipeg, Man.

Find enclosed \$1.25 for which send the "Weekly Free Press and Prairie Farmer" one year, and the "Canadian Thresherman and Farmer" one year, together with pipe, to the following address:

Name _____
Town _____
Province _____ P.O. Box _____

Patronize those who patronize this Paper.



\$1500 to \$5000 Per Year

have been made by hundreds of people operating the "American" Drilling Machines. 40 years experience, 59 regular styles and sizes and the output of the world's largest manufacturers of this kind of machinery make

"AMERICAN" MACHINES STANDARD

Made in types for every kind of earth and rock drilling or mineral prospecting, equipped with any power, or operated with your traction engine. Our new 196 page Catalog Free.

THE AMERICAN WELL WORKS

General Office and Works:
AURORA ILL., U.S.A.
Chicago Office: First Nat. Bk. Bldg.

"I'd ought to have asked him sooner," he commented. "But it's up to me sure, and I reckon I can find 'em."

He did not sleep much that night. Morgan's condition was such that he feared the end at any time. Toward morning, however, he dropped off, to wake with a start at daybreak. A dead hush lay on the camp and for a moment Stanton lay wondering what it was he missed. Then he remembered his companion and realized that the groans had ceased. A glance at the upturned face assured him of the truth. Sometime in the gray of the morning Morgan had "passed on."

That afternoon Stanton, bearded to the eyes, dust-covered, gaunt, weary, and drooping in his saddle, rode up to the Hot Pup saloon, and rolling in to the bar leaned heavily upon it and pronounced the word "whiskey."

Husk Nicols, the proprietor, served him.

"Another," said Stanton, pushing back the empty glass. Again he emptied it in one hot gulp, and slid it back. After the third he smacked his lips, drew his hand across his fiery mustache, and pulled himself up.

"Know a man named Billy Morgan, Husk?" he asked.

"Sure," answered Nicols.

"What about him?"

"Did he live here?" questioned Stanton.

"Well, here as much as anywhere," answered Husk. "Comes in here about once in so often to get somebody to grub-stake him. What about him?"

"He's dead," said Stanton.

"Dead, eh?" commented Nicols.

"Well, there won't be no super-abundance o' mournin', I reckon."

"That's what I'm lookin' for," said Stanton. "Where'll I find his wife and kid?"

"Wife and kid!" said Husk. "He wasn't married. Not the Billy Morgan I mean."

"Short man, black hair, good rider, bad eyes close together, ugly mouth—"

"That's him, all right, but he wasn't never married," said Nicols positively. "I've knowed Billy Morgan since he was a young one, and many's the drink he's had over this bar. He ain't got no wife and kid, Dave."

"You know that for certain, Husk?" he asked.

"Dead certain," answered Nicols.


"Gimme one more, Husk," said Stanton, and raised the glass in trembling fingers. "I'm obliged to you, Husk. Here's lookin' at you." He drank it down and hurried out.

"When I'm this way again, I'll be buvin' wine," he remarked to himself as he rode off toward the land-office to file his claim on the Dutchman's Mine.

Practical Talks to Threshermen

Continued from page 38

double row of teeth near the rear of the concave circle. Where the grain is damp, six rows are necessary. This is all that is usually



TRACTION ENGINEERING

The Heath School of Traction Engineering (by correspondence) will teach you Traction and Stationary Steam Engineering at home in your spare time this Winter. The School is conducted in connection with The Canadian Thresherman and Farmer, which publication guarantees its reliability to develop practical engineers. A School for the experienced Threshermen as well as the beginner. The Lessons are clear, concise, fascinating, and easily mastered.

We have issued a handsome illustrated booklet, giving outline of Course, with reduced plates of some of the drawings, and explaining The Heath System in detail. This booklet will be sent free to you on request.

E. H. HEATH CO., LIMITED,
Winnipeg, Canada.

SHIP YOUR GRAIN THROUGH US
WE WILL LOOK AFTER YOUR GRADES

References any Bank or Commercial Agency.

THE CANADIAN ELEVATOR CO., LTD.
WINNIPEG, MAN.

REGISTERED TRADE MARK

JOSEPH RODGERS & SONS, Limited
SHEFFIELD, ENG.

Avoid imitations of our **CUTLERY** by Seeing that This **EXACT MARK** is on Each Blade.

GRANTED 1682

SOLE AGENTS FOR CANADA
JAMES HUTTON & CO., MONTREAL



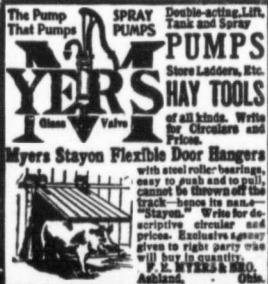
BURRIDGE-COOPER CO., Ltd.
Agents Winnipeg, Canada



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 engines. Those tried, always used. **TRY ONE.** More in use than all others combined. Contains more than 100,000,000. Also, ask about our friction clutch pulleys.

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



The Pump That Pumps **SPRAY PUMPS** Double-acting, Lift, Tank and Spray

MYERS HAY TOOLS Store Ladders, Etc.

Myers Stayon Flexible Door Hangers with steel roller-bearings, easy to push and to pull, cannot be thrown off the track—hence its name—**"Stayon."** Write for descriptive circular and prices. Exclusive Agency gives to right party who will buy in quantities.

J. H. ASHDOWN & CO., Ashland, Ohio.

The J. H. ASHDOWN HDW. CO., Ltd.
Distributing Agents' WINNIPEG, Canada.

A FEELING OF SECURITY
Of absolute reliability and power is enjoyed by every owner of a **GILSON ENGINE "GOES LIKE SIXTY"**

GAS GASOLINE ALCOHOL

A mechanical masterpiece of the highest type, with our improved simple methods of air cooling, governing and sparking. Positively guaranteed, biggest value, free trial. All sizes. Ask for catalogue.

GILSON MANUFACTURING CO., 84 YORK STREET GUELPH, CANADA
Empire Cream Separator Co., Winnipeg, Man., General Agents

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 see it 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

provided with the machine, but, if wanted, concave bars holding three rows of teeth each can be obtained, making it possible to use nine rows of teeth. The safe rule to follow with regard to the number of rows of concave teeth to use is this: Use just as few as will do the work properly. Any more than this will merely clog the sieves, consume power, and result in poorer work being done.

Every machine is provided with some sort of concave adjuster or device to move the concaves to or away from the cylinder. Some machines have these adjusters placed both front and rear so that either the front or the rear of the concaves can be made to approach or recede from the cylinder as desired. The majority, however, have only the one adjustment in front, the concave circle being hinged at the rear. The proper adjustment depends upon the condition of the grain. If heads are passing through unthreshed the concaves should be set up as it is evident that they are passing through the open space between the points of the concave teeth and the cylinder drum.

WESTERN CANADIAN IMPLEMENT DIRECTORY

EXPLANATION.—First find the Implement Wanted and the Number opposite will be the Number of the Concern, in the first column, that handles it.

<p>A—ALBERTA PORT HURON CO., Calgary, Alta.</p> <p>1—AMERY, CAN-ABELL ENGINE & THRESHER CO., Winnipeg, Calgary and Edmonton.</p> <p>2—AMERICAN SEEDING MACHINE CO., Winnipeg.</p> <p>3—BAILEY SUPPLY CO., Winnipeg.</p> <p>4—BEAMAN MFG. CO., Winnipeg.</p> <p>5—BELL, ROBT. ENGINE & THRESHER CO., Winnipeg.</p> <p>6—BRANDON MACHINE WORKS, Brandon.</p> <p>7—BRANDON PUMP & WINDMILL WORKS, Brandon.</p> <p>8—BRANDON & ROBERTSON, Brandon.</p> <p>9—BURRIDGE-COOPER CO., Winnipeg.</p> <p>10—CANADIAN FAIRBANKS CO., Winnipeg, Vancouver.</p> <p>11—CANADIAN MOLINE FLOW CO., Winnipeg.</p> <p>12—CANADIAN PORT HURON CO., Winnipeg.</p> <p>13—CANADIAN RUBBER CO., Winnipeg, Vancouver.</p> <p>14—CANADIAN STOVER CO., Brandon.</p> <p>15—CARRERY IRON WORKS, Carberry.</p> <p>16—CARRERY STACK CO., Carberry.</p> <p>17—J. I. CASE T. M. CO., Winnipeg, Regina, Calgary.</p> <p>18—CHAPIN CO., Calgary.</p> <p>19—COCKSHUTT FLOW CO., Winnipeg, Regina, Calgary, Edmonton.</p> <p>20—CRANE & ORDWAY, Winnipeg.</p> <p>21—DEERE, JOHN FLOW CO., Winnipeg, Regina, Calgary, Edmonton, Saskatoon.</p> <p>22—DE LAVAL SEPARATOR CO., Winnipeg.</p> <p>23—DURHAM RUBBER CO., Winnipeg.</p> <p>24—EMPIRE CREAM SEPARATOR CO., Winnipeg.</p> <p>25—GAAR, SCOTT & CO., Winnipeg, Regina, Calgary.</p> <p>26—GAS TRACTION CO., Winnipeg.</p> <p>27—GRAY-CAMPBELL CO., Winnipeg, Brandon, Moose Jaw, Calgary.</p> <p>28—HAMILTON PULVERIZER CO., Winnipeg.</p> <p>29—HAUG BROS. & NELLERMOE, Winnipeg and Calgary.</p> <p>30—HARMER IMPLEMENT CO., Winnipeg.</p> <p>31—HART-PARR CO., Portage la Prairie.</p> <p>32—HELGESEN, H. T., Winnipeg.</p> <p>33—HERO IMPLEMENT CO., Winnipeg.</p> <p>34—INTERNATIONAL HARVESTER CO., Winnipeg, Regina, Calgary, Edmonton, Saskatoon, Brandon.</p> <p>35—LOUDEM HDWE. & SPECIALTY CO., Winnipeg.</p> <p>36—MAN-TORBA HAYES PUMP CO. LTD., Morden.</p> <p>37—MANITOBA IRON WORKS, Winnipeg.</p> <p>38—MANITOBA WINDMILL & PUMP CO., Brandon.</p> <p>39—MASSEY-HARRIS CO., Winnipeg, Regina, Calgary, Edmonton, Saskatoon.</p> <p>40—MAW, JOS. & CO. LTD., Winnipeg.</p> <p>41—MCKENZIE, A. E., Brandon.</p> <p>42—MCLAUGHLIN CARRIAGE CO., Winnipeg.</p> <p>43—McRAE, ALEX., Winnipeg.</p> <p>44—MELOTTE CREAM SEPARATOR CO., Winnipeg.</p> <p>45—NEEPAWA MFG. CO., Neepawa.</p> <p>46—NICHOLS & SHEPARD CO., Regina, Winnipeg.</p> <p>47—NORTHWEST THRESHER CO., Brandon.</p> <p>48—ONTARIO WIND ENGINE & PUMP CO., Winnipeg.</p> <p>49—PARIS PLOW CO., Winnipeg.</p> <p>50—PARSONS-HAWKEYE MFG. CO., Winnipeg.</p> <p>51—PETRIE MFG. CO., Winnipeg, Calgary, Vancouver.</p> <p>52—RAYMOND MFG. CO., Winnipeg.</p> <p>53—REEVES & CO., Regina.</p> <p>54—REGENT TRACTOR CO., Regina.</p> <p>55—RENNIE, WM. SEED CO., Winnipeg.</p> <p>56—RIESBERRY PUMP CO., LTD., Brandon.</p> <p>57—RUMELY, M. CO., Winnipeg, Calgary, Saskatoon, Regina.</p> <p>58—SAWYER & MASSEY CO., LTD., Winnipeg.</p> <p>59—SHARPLES SEPARATOR CO., Winnipeg.</p> <p>60—STEELE-BRIGGS SEED CO., Winnipeg.</p>	<p>61—STEWART & NELSON CO. LTD., Brandon.</p> <p>62—STEVENS, JOHN & CO., Winnipeg.</p> <p>62a—STUART, JAMES, ELECTRIC CO., Winnipeg.</p> <p>62b—SUB-SURFACE PACKER CO., Winnipeg.</p> <p>63—SYLVESTER MFG. CO., Brandon.</p> <p>64—TIDHOPE-ANDERSON CO., Winnipeg, Regina, Calgary.</p> <p>65—VIRDEN MFG. CO., Virden.</p> <p>66—VULCAN IRON WORKS, Winnipeg.</p> <p>67—WATERLOO MFG. CO., Winnipeg, Regina.</p> <p>68—WATEROUS ENGINE WORKS, Winnipeg.</p> <p>69—WATSON, JNO. MFG. CO., Winnipeg.</p> <p>70—WYFIE, GEO. & SONS, Brandon.</p> <p>71—WINNIEG RUBBER CO., Winnipeg.</p> <p>72—WYFIE, P. E. G. THRESHING MACHINE CO.</p> <p style="text-align: center;">BUGGIES AND CUTTERS.</p> <p>Armstrong Buggies and Cutters..... 19</p> <p>Barrie Buggies and Cutters..... 61</p> <p>Baynes Carriages..... 43</p> <p>Brookville Buggies..... 21</p> <p>Dominion Carriages (Transfer Agents)..... 27</p> <p>Gary Buggies and Cutters..... 27</p> <p>Massey-Harris..... 39</p> <p>Henry Buggies..... 11</p> <p>McLaughlin Buggies and Cutters..... 42</p> <p>Montro-McIntosh Buggies and Cutters..... 11</p> <p>Reinder Buggies..... 21</p> <p>Tudhope Buggies and Cutters..... 64</p> <p style="text-align: center;">CREAM SEPARATORS.</p> <p>Blue Bell..... 33</p> <p>Champion..... 33</p> <p>Dairy Master..... 33</p> <p>De Laval..... 22</p> <p>Empire..... 4</p> <p>Massey-Harris..... 39</p> <p>Melotte..... 44</p> <p>National..... 39</p> <p>Sharples..... 59</p> <p style="text-align: center;">CULTIVATORS AND STUMP PULVERS.</p> <p>Climax Stiff Tooth Cultivator..... 19</p> <p>Cockshutt Cultivator..... 21</p> <p>Deere No. 2 Cultivator..... 21</p> <p>Ek (2 horse) Cultivator..... 21</p> <p>Fleury's Cultivator..... 21</p> <p>Hiborn Stump Pulver..... 64</p> <p>K. A. (2 horse) Cultivator..... 21</p> <p>McCormick Cultivator..... 39</p> <p>Paris Seuffer..... 49</p> <p>Sylvester Cultivator..... 64</p> <p>Verity Cultivator..... 39</p> <p style="text-align: center;">DISC AND DRAG HARROWS.</p> <p>Ajax Drag..... 21</p> <p>Bissell Disc..... 21</p> <p>Canadian Moline Disc Drag..... 11</p> <p>Canton Disc..... 33</p> <p>Case's Disc and Drag..... 39</p> <p>Cyclone Wheel Disc..... 21</p> <p>Cockshutt Disc and Drag..... 19</p> <p>Deere Disc and Drag..... 21</p> <p>Deere King Disc Drag..... 21</p> <p>Deere Disc Drag..... 33</p> <p>Deering Disc Harrow..... 62</p> <p>DeLancey Jr., Disc..... 62</p> <p>Economy Disc..... 11</p> <p>Emerson Disc and Drag..... 64</p> <p>Evans Disc..... 2</p> <p>Fleury's Steel Channel Drag..... 21</p> <p>Fleury's Clipped Drag..... 21</p> <p>Fleury's Disc..... 21</p> <p>Fuller & Johnson..... 61</p> <p>Grand Detour Disc and Drag..... 69</p> <p>Hoesier Wheel Disc..... 2</p> <p>International Diamond and Lever..... 33</p> <p>Keystone Disc and Drag..... 39</p> <p>McCormick Disc..... 33</p> <p>Moline Flexible Drag and Lever..... 11</p> <p>Paris Disc and Drag..... 39</p> <p>Scotch Diamond Drag..... 19</p> <p>Superior Wheel Disc..... 2</p> <p>Union Disc..... 2</p> <p>Universal Traction Disc..... 21</p> <p>Watson Drag..... 61</p> <p>Wilkinson Drag and Disc..... 61</p> <p>Windar Disc..... 19</p> <p style="text-align: center;">FEED AND ENSILAGE CUTTERS AND PULVERS.</p> <p>Cockshutt Feed Cutter..... 19</p> <p>Fleury's Pulper..... 19</p> <p>Fleury's Feed Cutter..... 21</p> <p>Geiser Feed Cutter and Grinder..... 9</p> <p>Massey-Harris Feed Cutter..... 39</p> <p>Paris Feed Cutter..... 49</p> <p>Watson's Feed Cutter..... 69</p> <p>Watson's Root Pulper..... 69</p> <p>Wilkinson's Feed Cutter..... 61</p> <p style="text-align: center;">FEED GRINDERS.</p> <p>Brandon..... 6</p> <p>Challenge..... 6</p> <p>Cyclone..... 9-29</p> <p>Daisy..... 9</p> <p>Diamond..... 64</p> <p>Fleury's..... 21</p>	<p>Goold, Stapley & Muir..... 19</p> <p>Manitoba..... 35</p> <p>Maple Leaf..... 44</p> <p>Ontario..... 45</p> <p>Scientific..... 69</p> <p>Stover Ideal..... 15-11</p> <p>Thoma..... 49</p> <p>Vermont..... 33</p> <p>Victor..... 69</p> <p>Watson's Ideal..... 69</p> <p style="text-align: center;">GARDEN IMPLEMENTS, INCUBATORS AND POULTRY SUPPLIES.</p> <p>Chatham Incubator..... 27</p> <p>Cypress Incubator..... 60</p> <p>Fountain Air Sprayer..... 53</p> <p>Iron Age (Garden Imps), 19-53 and 61</p> <p>Maxwell..... 64</p> <p>Planet Jr. Garden Tools..... 41-55</p> <p style="text-align: center;">GASOLINE ENGINES.</p> <p>Brandon..... 6</p> <p>Buffalo Pitts..... 72</p> <p>Caters..... 7</p> <p>Chatham..... 10</p> <p>Fuller & Johnson..... 61</p> <p>Gads..... 9</p> <p>Gas Tractor..... 261</p> <p>Geiser (Stationary Portable Tractor) 9</p> <p>Hart-Parr (Tractor)..... 18-30</p> <p>Ideal..... 44</p> <p>International..... 33</p> <p>International (Tractor)..... 33</p> <p>Joy McVicker (Tractor)..... 62a</p> <p>Manitoba..... 37</p> <p>Master Workman..... 69</p> <p>Ohio..... 57</p> <p>"Oil Pull" Rumely (Tractor)..... 57</p> <p>Regent (Tractor)..... 544</p> <p>Stover..... 18-14</p> <p>Sylvester..... 63</p> <p>Waterloo Boy..... 61</p> <p style="text-align: center;">GASOLINE ENGINES.</p> <p>Clover-Leaf..... 33</p> <p>Corn King..... 33</p> <p>Great Western..... 61</p> <p>Hawleys..... 61</p> <p>Mandt..... 11</p> <p>Massey-Harris..... 39</p> <p>National..... 11</p> <p>Success..... 21</p> <p style="text-align: center;">MANURE SPREADERS.</p> <p>Canton..... 33</p> <p>Case, J. L. Engine Gang..... 29</p> <p>Case, J. L. Engine Gang..... 33</p> <p>Cockshutt..... 19</p> <p>Cockshutt..... 19</p> <p>Deere Engine Gang..... 21</p> <p>Emerson Engine Gang..... 61</p> <p>Geiser Engine Gang..... 9</p> <p>Grand Detour..... 64</p> <p>Maw Hancock Disc..... 11</p> <p>Moline Engine Gang..... 61</p> <p>New Eclipse..... 49</p> <p>Paris..... 49</p> <p>Randall Grader and Rooter Flows 58</p> <p>Rock Island..... 39</p> <p>Verity..... 39</p> <p>Wilkinson..... 21</p> <p style="text-align: center;">GANG PLOWS, ETC.</p> <p>Case, J. L. Engine Gang..... 29</p> <p>Case, J. L. Engine Gang..... 33</p> <p>Cockshutt..... 19</p> <p>Cockshutt..... 19</p> <p>Deere Engine Gang..... 21</p> <p>Emerson Engine Gang..... 61</p> <p>Geiser Engine Gang..... 9</p> <p>Grand Detour..... 64</p> <p>Maw Hancock Disc..... 11</p> <p>Moline Engine Gang..... 61</p> <p>New Eclipse..... 49</p> <p>Paris..... 49</p> <p>Randall Grader and Rooter Flows 58</p> <p>Rock Island..... 39</p> <p>Verity..... 39</p> <p>Wilkinson..... 21</p> <p style="text-align: center;">POTATO AND BEET MACHINERY.</p> <p>Acme..... 61</p> <p>Carberry..... 21</p> <p>Cyclone..... 21</p> <p>Gopher..... 29</p> <p>Norfolk..... 9</p> <p>Tazgart..... 29</p> <p>Wisard..... 29</p> <p style="text-align: center;">POTATO AND BEET MACHINERY.</p> <p>Aspinwall Potato Planters and Sprayers..... 19</p> <p>Aspinwall Sorters and Cutters..... 19</p> <p>Canton Potato Diggers and Beet Tools..... 33</p> <p>Deere Potato Diggers and Beet Tools..... 21</p> <p>Dowden Potato Harrow..... 43</p> <p>Egan Potato Sprayer..... 43</p> <p>Evans Potato Planter..... 2</p> <p>Furell Potato Digger..... 19</p> <p>Hallok Potato Digger..... 43</p> <p>Hoover Potato Digger..... 19</p> <p>Iron Age Potato Digger..... 61-65</p> <p>Iron Age Potato Digger..... 61-65</p> <p>Splitstator Sprayer..... 21</p> <p style="text-align: center;">RIDING ATTACHMENTS, HARROW CARTS, WHEELBARROWS AND HAND CARRIES.</p> <p>Cockshutt Wheelbarrow..... 19</p> <p>Cockshutt Harrow Cart..... 21</p> <p>Deere Harrow Cart..... 21</p> <p>Eclipse High Harrow Cart..... 29</p> <p>Emerson Harrow Cart..... 64</p> <p>Fleury's Wheelbarrow..... 21</p> <p>Fuller & Johnson Harrow Cart..... 61</p> <p>Kramer Rotary Harrow, Man. 21.</p> <p>Alta. & Sask..... 21</p> <p>Navley Harrow Attachment..... 29</p> <p>Paris Wheelbarrow..... 49</p> <p>P. & O. Harrow Cart..... 33</p> <p>Racine Rotary Harrow..... 29</p> <p>Success Harrow Cart..... 11</p> <p>Verity Wheelbarrow..... 69</p> <p>Watson's Wheelbarrow..... 61</p> <p>Wilkinson..... 61</p> <p style="text-align: center;">ROAD SCRAPERS AND ROAD MACHINES.</p> <p>Cockshutt Scrapers..... 19</p> <p>Good Roads Machinery..... 6</p> <p>Indiana Road Machine..... 64</p> <p>Russell Elevating Grader..... 32</p> <p>Standard Reversible Grader..... 61</p> <p>Toronto Pressed Steel Scrapers..... 61</p> <p>Sawyer & Massey Reversible Grader 58</p> <p style="text-align: center;">SEEDING MACHINES.</p> <p>Cockshutt..... 19</p> <p>Deering..... 33</p> <p>Frost & Wood Champion..... 19</p> <p>Hoover..... 18</p> <p>Imperial..... 50</p> <p>Kentucky..... 2</p> <p>Massey-Harris..... 33</p> <p>McCormick..... 33</p> <p>Monitor..... 11</p> <p>Superior..... 33</p> <p>Sylvester..... 63</p> <p>Van Brunt..... 21</p>	<p style="text-align: center;">THRESHING MACHINERY, SELF-FEEDERS, WIND STACKERS AND ATTACHMENTS.</p> <p>Advance..... 1</p> <p>American-Abell..... 33</p> <p>Aultman & Taylor..... 33</p> <p>Avery..... 23</p> <p>Belle City Thresher..... 33</p> <p>Bell, Robt..... 6</p> <p>Brandon Feeder..... 8</p> <p>Brandon Cornell Engine..... 6</p> <p>Buffalo Pitts..... 72</p> <p>Cascadia..... 34</p> <p>Case, J. L. (ask any Thresher Co.)..... 17</p> <p>Dakota Weigher (ask any Thresher Co.)..... 31</p> <p>Gar-Scott..... 26</p> <p>Geiser..... 9</p> <p>Goodison..... 33-68</p> <p>Hawkeye Feeder..... 18-21</p> <p>Horley West..... 58-57</p> <p>Minnesota..... 1</p> <p>Monarch Feeder..... 31</p> <p>Nichols & Shepard..... 46</p> <p>Northwest..... 47</p> <p>Parsons Feeder..... 18-21</p> <p>Peoria Wind Stackers (ask any Thresher Co.)..... 51</p> <p>Perfection Weigher (ask any Thresher Co.)..... 51</p> <p>Port Huron..... 54</p> <p>Reeves..... 68</p> <p>Ruth Feeder..... 18-21</p> <p>Sawyer & Massey..... 58</p> <p>Self Feeder Auto-Threshing..... 67</p> <p>Waterous..... 68</p> <p>Waterous Justo Measure..... 65</p> <p>White, Geo. & Sons..... 79</p> <p>Whitewings Feeder..... 51</p> <p style="text-align: center;">THRESHERS' SUPPLIES.</p> <p>Bailey Supply..... 3</p> <p>Brown Wing Carrier—Ask any Thresher Co..... 10</p> <p>Canadian Rubber..... 13</p> <p>Crane & Ordway..... 20</p> <p>Deere..... 20</p> <p>H. T. Halgerson..... 21</p> <p>Threshers' Supplies carried in Western Canada by all the Thresher Companies..... 51</p> <p>Madison-Joy Lubricators..... 51</p> <p>Massey-Harris..... 39</p> <p>Ohio Injector Co.—Ask any Thresher Co..... 51</p> <p>Parsons Hawkeye Mfg. Co..... 51</p> <p>Penberthy Injectors and Brass Goods Handled by all Leading Jobbers and Thresher Companies..... 23</p> <p>Durham Rubber..... 23</p> <p>Johns..... 21</p> <p>Winnipeg Rubber..... 21</p> <p style="text-align: center;">WAGONS AND SLEIGHS.</p> <p>Adams Farm Trucks..... 19</p> <p>Adams Wagons and Sleighs..... 19</p> <p>Anderson Metal Wheel Trucks..... 64</p> <p>Bain Wagons and Sleighs..... 39</p> <p>Bain Wagons and Sleighs..... 39</p> <p>Canadian Crescent Wagon..... 11</p> <p>Canadian Wagon..... 61</p> <p>Cockshutt Metal Wheel Trucks..... 19</p> <p>Columbus Wagon..... 33</p> <p>Emerson Wagon..... 33</p> <p>Electric Steel Wheel Trucks..... 29</p> <p>Fish Bros. (Rathes) Wagons..... 64</p> <p>Grand Detour..... 69</p> <p>Grand Detour..... 69</p> <p>Gray Light Farm Sleigh..... 27</p> <p>Hamburg American Wagon..... 64-69</p> <p>Metal Wheel Trucks..... 21</p> <p>Millers Wagon..... 33</p> <p>New Deal Wagon and Sleigh..... 21</p> <p>New Deal Farm Trucks..... 21</p> <p>New Moline Wagon..... 7</p> <p>Northern Child Metal Wheel Trucks 21</p> <p>Old Dominion Wagon and Sleighs 33</p> <p>Patrolia Wagons and Sleighs..... 33</p> <p>Paris Wagon..... 33</p> <p>Stone and Gravel Spreading Wagon 58</p> <p>T. G. Mandt Sleighs..... 11</p> <p>Wabe Cart..... 33</p> <p>Wilkinson Wagons and Sleighs..... 61</p> <p>Winona Wagon..... 61</p> <p>Woodstock Wagons and Sleighs..... 19</p> <p style="text-align: center;">WELL DRILLING MACHINERY.</p> <p>Austin..... 6</p> <p>Brandon..... 6</p> <p>Kelly & Tashmiller..... 10</p> <p>Standard..... 48</p> <p style="text-align: center;">WINDMILLS, TANKS AND PUMPS.</p> <p>Caters Pumps..... 7</p> <p>Caters Star Windmill..... 49</p> <p>Canadian Air Motor..... 49</p> <p>Chicago Aeromotor..... 29-7</p> <p>Florence Pump and Grain Tanks..... 44</p> <p>Goold, Stapley & Muir-Windmill Pumps..... 19</p> <p>Haves Pumps..... 34</p> <p>London Pumps..... 34</p> <p>Manitoba Pumps and Windmills..... 37</p> <p>Parsons Pumps..... 37</p> <p>Myers Pumps..... 48</p> <p>Ontario Pumps..... 48</p> <p>Robbery Pumps..... 56</p>
---	---	--	---



Does It Pay
To Own



DISCING AND SEEDING 40 ACRES PER DAY

A Modern Farm Horse?

HART-PARR GAS TRACTOR

ASK THE MAN WHO OWNS ONE

John E. Burchard Co., by F. C. Woods, Manager, Stephen, Minn.:—"With the Hart-Parr plow engine which we purchased of you about May 1st last year, we broke in fine shape 540 acres of very tough raw prairie, which a steam plow man had given up at \$3.00 per acre, because he could not make expenses. Through the summer and fall we plowed about 2,000 acres of this heavy clay soil, deeper and better than it had ever been plowed before; and believe that the additional crop next year on account of the better, deeper plowing will pay for the engine. We consider that this and other Hart-Parr engines in this community have raised the value of land here at least \$3 to \$10 per acre."

Benton County Land Co., by F. A. Green, Manager, Stephen, Minn.:—"The engine we bought of you last September has given the best of satisfaction. We commenced plowing Sept. 8th and quit Nov. 30th. In that time we plowed 1,385 acres, ground feed four days, and was laid up for repairs one-half day. The engine was operated by my boy, who is 17 years old and had not had to exceed three weeks' experience prior to starting this engine. We worked night and day, and plowed as high as 48 acres per day, and it was the best plowing I ever saw. The engine is in splendid condition and ready to go out for another season."

R. J. Cole, Yellow Grass, Sask.:—"In my opinion it pays very well on a farm of a section or more. We spring plowed and got into crop 160 acres that we could not have seeded otherwise; and now have our fall plowing all done, which we could not have done with horse power."

Harold McNally, Regina, Sask.:—"During the summer we broke 1120 acres of heavy clay land at \$4.00 per acre and plowed 360 acres at \$3.00. Total \$5,560. Cost of Kerosene, Gasoline, lubricating oil, grease, labor and repairs, \$3,129. Net earnings \$2,431."

Fairfield Bros., Gardena, N.D.:—"We can cheerfully say that we are more than satisfied with our investment. We tried to make arrangements with some steam plowing outfit last spring to break 600 acres of turtle back ground. No one would attempt it, as they claimed the ground was too rough, and no machinery could stand such punishment. We bought one of your gas tractors, and had the work completed in 60 days."

A. Minard, Fannystelle, Man.:—"I think it has paid me well, for the ground was so dry and hard last fall that I could not do anything with my horses."

J. T. & Ed. Worrall, Thorne, N.D.:—"We broke about 400 acres of new land, pulling six 14 in. plows; and plowed 600 acres of stubble, pulling eight 14 in. plows. Our average consumption of Kerosene was 50 gallons per day. Our repairs only cost us 55 cents. Our land is quite heavy and rolling."

Swerdfeger Bros., Bowville, Alta.:—"We have been threshing now for five weeks, and have not been laid up a half hour with engine troubles. We also broke 1300 acres in the spring, pulling seven 14 in. breaker bottoms 3½ to 4 inches deep, and much of the land was rocky, and heavy gumbo. Our cost for repairs doing this breaking was \$1.35."

Milnes & Noble, Claresholm, Alta.:—"We have broken 1000 acres with one engine, summer fallowed about the same with the other, double disc and seeded 2000 acres to fall wheat with the two, and will soon complete another 1000 acres of discing and harrowing for spring wheat. We will then fall plow one section with the two to complete the season's work."

Bowser & Patterson, Nanton, Alta., in 1909 season broke 957 acres of tough heavy sod, on stony ground, plowed 409 acres of stubble with packer and harrow behind plows, double disc and harrowed 541 acres, threshed 77,241 bushels of grain, and are now running a large roller feed mill with this engine.

J. T. Henning, Welling, Alta., in 1909 broke 530 acres sod, did 455 acres stubble plowing, double disc 1000 acres, and threshed 115,000 bushels of grain. A pretty fair record for one season's work.

Frank Webster, Straw, Mont.:—"I bought my engine in the spring of 1908, and that year did \$5,200 worth of work at a total cost of \$1,611, besides breaking and seeding 500 acres from which I harvested 13,000 bushels of wheat this year. I pulled into a neighbor's field last June on Monday noon, and left at dark Saturday, and he gave me his check for \$1,015 for my work that week."

J. R. Smith, Beach, N.D., in the 1909 season, with two Hart-Parr Tractors, broke and crushed 3,000 acres, disc and seeded 2,000 acres to flax, harvested the flax, pulling five binders behind each engine, threshed it with one engine and hauled it to the elevator with the other. He raised 32,000 bushels of flax which he sold for \$48,000. His total operating expenses on this 2,000 acre crop were \$11,085.

WHAT IT HAS DONE FOR OTHERS IT WILL DO FOR YOU — Remember that the daily feed of this *Modern Farm Horse* is *Kerosene* — and the cheapest grade of kerosene at that. You can buy low-grade kerosene anywhere for 5 to 8c per gallon less than gasoline. One gallon of kerosene produces even more power than a gallon of gasoline. Just consider the daily saving. Remember also that expenses stop when the engine stops. **DON'T DELAY LONGER — WRITE US TO-DAY.**

HART-PARR CO.



HARVESTING 100 ACRES PER DAY

30 MAIN STREET
PORTAGE LA PRAIRIE
MAN.
SASKATOON, SASK.

The Chapin Co., Calgary
Sales Agents for Alta.



HAULING 1000 BU. OF GRAIN

THE CASE LINE

Engines -
Boilers

Threshing Engines

Plowing Engines

Contractors Hauling Engines

Municipal Engines

Portable Engines

Skid Engines

Engine Tenders

Plow Attachments

Steam Lift Gang Plows

All Steel Threshing Machines

8 SIZES FOR WHEAT, OATS, RYE, BARLEY, ALFALFA
FLAX, PEAS, BEANS, CLOVER, RICE, PEANUTS.

Case Steel Geared &
Gearless Windstackers

Case Steel Feeders &
Band Cutters

Case Grain -
Weighers & Baggers

Case Corn -
Husker Shredder
Corn Sheller

Automobiles

Roadster Touring

Suburban

Torpedo

Limousine

Steam Steered Road Rollers

Road Building
Machinery

Road Graders

Road Scrapers

Road Rooters

Road Drags

Rotary

Stone Screens

Rock Crushers

Street Sprinklers

Troy Bottom Dump Wagons

Bottom Dump Asphalt Wagons

Bottom Dump Earth Wagons

Bottom Dump Gravel Wagons

Bottom Dump -

Reversible Wagons

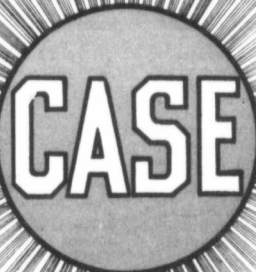
Bottom Dump -

Wagon Boxes

Din&e-Woodbury

Sweep Horse Powers

Racine Rotary Harrow



Hay Baling Presses

Write For Catalog No. 67

J.I. CASE THRESHING MACHINE CO.

INCORPORATED

RACINE, WIS., U.S.A.

Chicago
ENGR'G CO

TORONTO WINNIPEG REGINA CALGARY