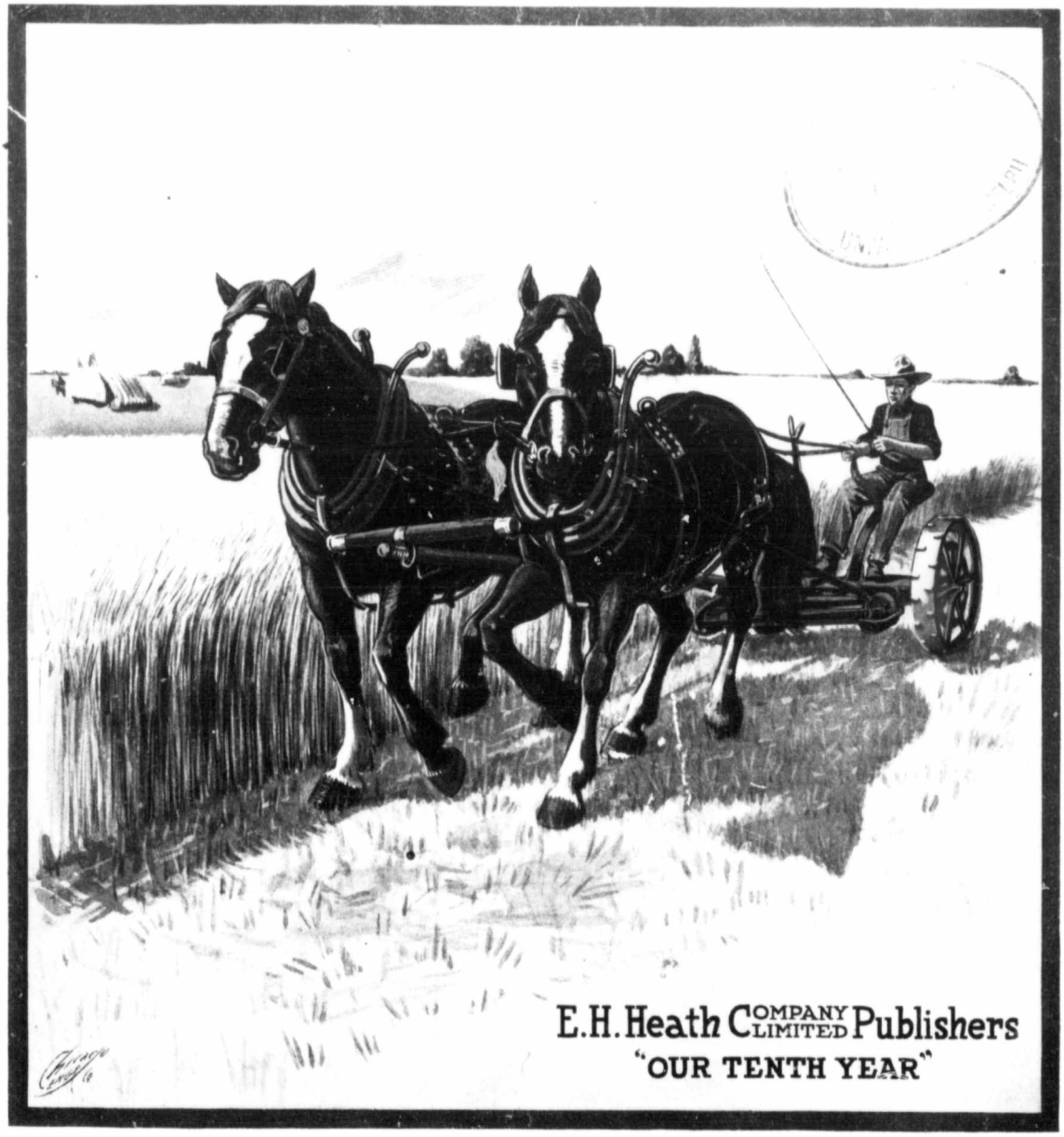
THE CANADIAN THRESHERMAN & FARMER

CANADA'S FARM MACHINERY MAGAZINE

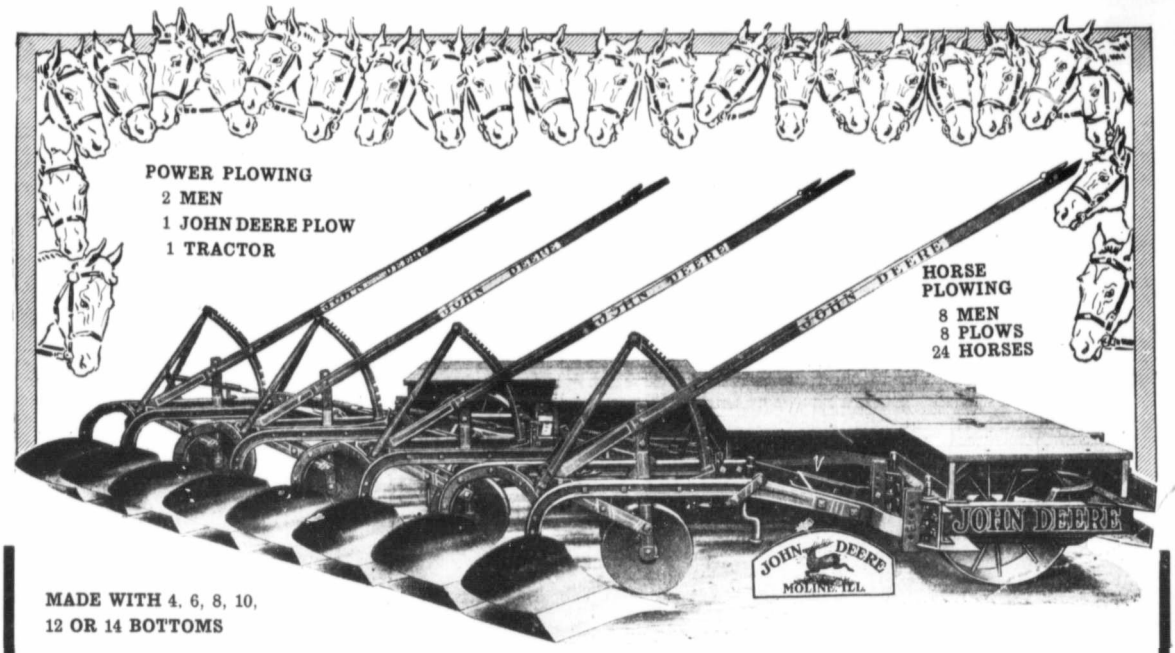
WINNIPEG CANADA

JUNE, 1912



E. H. Heath COMPANY LIMITED Publishers

"OUR TENTH YEAR"



MADE WITH 4, 6, 8, 10, 12 OR 14 BOTTOMS

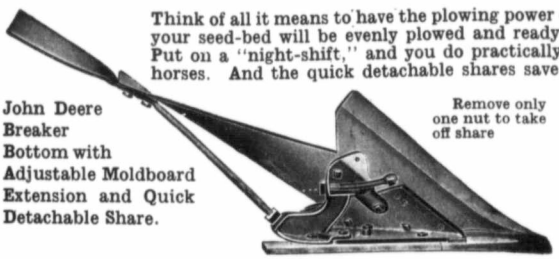
HERE ARE THE FIGURES

One man, with three horses and a single-bottom plow, will turn from two to two-and-a-half acres a day of ten hours. Figuring the man's time at $2.00 a day (labor and board), the cost per day will range from $1.90 to $2.40—depending chiefly on the soil plowed. Data carefully compiled by the United States Department of Agriculture in regard to the cost of engine plowing shows an average expense of $1.40 an acre for either steam or oil tractors. (In some extreme cases less than $1.00 an acre.) This includes depreciation, interest on investments, repairs, labor, fuel and other items of expense ordinarily incurred. Plowing seasons are very often short, and it would take eight men, with eight plows and twenty-four horses, to do what one JOHN DEERE eight-bottom engine plow does. Even then the work would not be uniform.

JOHN DEERE ENGINE PLOWS

WITH QUICK DETACHABLE SHARES

Think of all it means to have the plowing power of eight men and twenty-four horses in 2 men. Furthermore, your seed-bed will be evenly plowed and ready for planting on time. You know how much that means to you. Put on a "night-shift," and you do practically three times as much plowing as can be done with twenty-four horses. And the quick detachable shares save the last available moment.



John Deere Breaker Bottom with Adjustable Moldboard Extension and Quick Detachable Share.

TWO-LIFT BOTTOM; One man can readily lift all the bottoms—4 or 14—with the John Deere Two-Bottom Lift Engine Plow. Bottoms are raised without stopping the engine. Beams and bottoms are built in pairs and attached to the frame, so as to allow free up and down movement around the clevis pins as a center. This insures uniform work. Each pair of bottoms will raise over a hummock or go down into a depression without disturbing the others. Each bottom is braced and kept in alignment by its companion bottom. Attaching beams and bottoms in pairs permits plenty of spread between clevises, which prevent winging and passing around obstructions instead of over them. Plows cannot tip.

ANY STYLE of Stubble, Turf and Stubble or Breaker Bottom can be used. John Deere Engine Plows are equipped with quick detachable shares, that can be put on or taken off in a small fraction of the time required for ordinary shares. Only one nut to remove. An eyebolt attached to the share passes through a hole in the bracket, and one nut holds the share firmly in place. A lug in the share fits into a slot on the landside of the frog. This holds the share rigid and true. Remove one nut and give the share a kick, that's all that is necessary to take it off.

SCREW CLEVISES—There are 5 holes in the clevises for attaching to the plow beams. Each clevis on a John Deere Engine Plow is provided with a screw adjustment which raises or lowers the beam points just the amount needed. This can be easily done while the plow is in operation. Screw Clevises give the plow exactly the right set, are operated by an ordinary wrench, but a handy socket wrench goes with every plow. The plows are kept properly set by this simple screw adjustment at point beams.

MANY OTHER ADVANTAGES

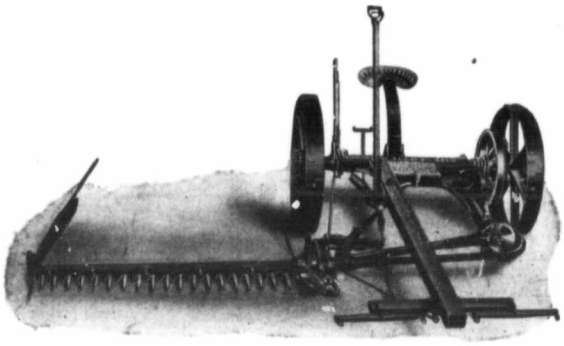
John Deere plows have many other features of merit, including universal hitch, structural steel frames, perfectly level platform with tool box built in, and two pivoted front wheels, which turn freely from right to left, and will not skid when the plow is being turned. WRITE NOW for John Deere Engine Plow Book—free to any address.

JOHN DEERE PLOW COMPANY, LTD.

Winnipeg Regina Calgary Edmonton Saskatoon Lethbridge

For the Ingathering of 1912

The World's Stand-By in Hay Tools is the Dain Line. The hay crop becomes more valuable every year. To make the best of it you have got to use the best tools—in fact the DAIN LINE.



A Powerful Keen Cutter—Cuts 4½, 5 and 6 ft. Simple, strong, durable, easily operated.

Dain Vertical-Lift Mower

The only perfect Vertical-Lift Mower

With the greatest cutting power of all hay harvesters, it has the best arranged gears, the strongest supported cutter bar, the only practical cutter bar re-aligning device, and the most perfect tilt of any implement used in the hay field.

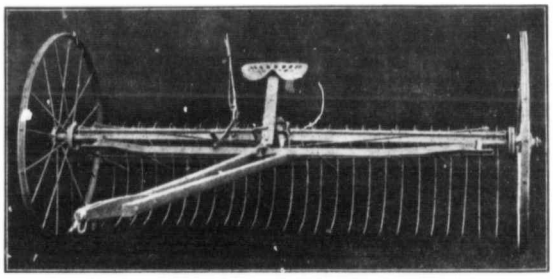
Extremely light draft—free from side draft—drive wheel being very high with broad faced rims. The cutting apparatus by means of an adjustable coil spring is carried on the wheels, avoiding friction on the ground and utilizing for power every pound weight of the machine not used on the cutter bar.

The DAIN Steel Rake

A self-dump rake that has no rival for simplicity and lasting quality. Dump rods are ¾ inch diameter of high carbon steel. Reversible individually; also interchangeable and again reversible, and, therefore, having four times the durability of the ordinary type of dump rod.

Tooth Holders are in two sizes to accommodate a minimum or maximum of teeth; also of various sizes of teeth, so that extra holders are necessary.

Absolute Control of Lever. The teeth can be adjusted by driver from his seat without stopping the team, and it is not necessary to remove cotter pin or bolt. By the lever, however, teeth can also be elevated to a carrying position and held there; hence the **"lever of absolute control."**



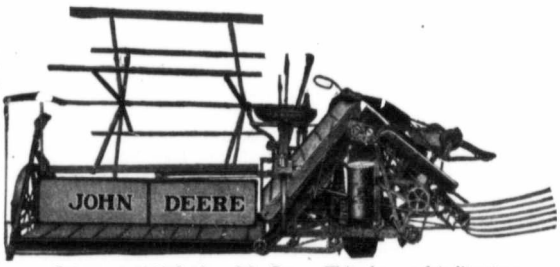
The Dain Self Dump Steel Rake with Special Re-inforced Rigid Frame. Practically everlasting.

John Deere Light Draft Binder

Greatest harvester operating today. Will handle long, short or tangled grain and handle it gently all the time. Specially built for hard work and continuous service. Solid steel deck, three packers and a durable, accurate binding attachment, also roller twine tension that handles even or uneven twine. Strongest frame of any binder.

Why it is the Best

It is clean cut and without any "patched in" features—every necessary detail is provided for. Frame is not riveted, and will not loosen. Drive wheels have a 10-inch face, giving ample traction and support for machine when working in soft ground. Grain wheel has 3-inch tire—on ordinary binders it is only 2¼ inch. Roller bearings provided wherever necessary. The only binder with all Steel corners which are infinitely stronger than the ordinary wooden evener. Outside reel support and tongue truck furnished with 7 and 8-foot machines.



Let your next binder be a John Deere. Write for complete literature of our Harvesting Implements.

Why it is the Cheapest

Because it lasts much longer than some machines that scarcely vary in price, and twice the time that a machine costing a few dollars less would remain effective in the harvest field. It is so carefully constructed, so perfect in its alignments, there are no kicks and kinks to stop the progress of the machine when cutting the crop. In this way time is saved, and money saved in repairs that are not wanted. There is quality and strength in every bit of material employed and the workmanship is of the very best throughout.

JOHN DEERE PLOW CO. LTD.

Winnipeg Regina Calgary Saskatoon Edmonton Lethbridge

About Ourselves

IN our April issue we offered prizes to those who first came nearest to naming the plows and engines as shown in the illustrations in our Traction plowing number. We always felt that our readers were keenly alive to the Traction Cultivation game and every thing that helped to make it, but we had no idea that the interest was so general. In response to our prize offer we received thousands of answers and it has been no small task to pick out the winners. We find, however, that the following are the lucky ones.

1st PRIZE—GLARE ACETYLENE HEADLIGHT

Andrew Lowry, Roseisle, Man.

2nd PRIZE—OIL PUMP.

Clifford Earl, Swan Lake, Man.

3rd PRIZE—BELT LACING OUTFIT

E. A. Pfrimmer, Myrtle, Man.

4th TO 13th PRIZES.

1 Year's Subscription to Canadian Thresherman and Farmer.

4th—Chas. Danerock, Salvador, Sask.
5th—O. H. Pfrimmer, Myrtle, Man.
6th—Edgar Wright, Slappington, Alta.
7th—D. F. Rempel, Blaine Lake, Sask.
8th—O. A. Hannesan, Isafold, Man.
9th—Dreular R. Jackson, Pense, Sask.
10th—W. G. Glendenning, Brack, Sask.
11th—Peter C. Rempel, Winkler, Man.
12th—P. J. Hutchings, Edmonton, Alta.
13th—Robt. Lawrie Jr., Lawrie, Sask.

The correct inscriptions are as follows.

We might say in passing that no one got the list absolutely correct, the nearest having six errors.

Figure	Engine.	Plow.
No. 1	Fairbanks-Morse	Emmerson Plow.
No. 2	Rumely Oil Pull	Cockshutt Plow.
No. 3	Avery Steam	Cockshutt Plow.
No. 4	Aultman-Taylor	John Deere Plow.
No. 5	Case Engine	Cockshutt Plow.
No. 6	Twin City	Big Dutchman Plow or Moline.
No. 7	I. H. C. Engine	John Deere Scrub Breaker.
No. 8	Nichols & Shepard	John Deere Plow.
No. 9	Gas Traction Engine or Big 4 Thirty	J. I. Case Plow.
No. 10	Gas Traction Engine or Big 4 Thirty	John Deere Plow.
No. 11	Sawyer-Massey	John Deere Plow.
No. 12	Reeves Engine	John Deere Plow.
No. 13	Minneapolis	P. & O. Plow.
No. 14	I. H. C. Engine	John Deere Plow.
No. 15	Hart-Parr Engine	Cockshutt Plow.
No. 16	Sawyer-Massey Engine	John Deere Plow.
No. 17	Flour City Engine(Kinnard Haines)	P. & O. Plow
No. 18	Pioneer Engine	Emmerson Plow.
No. 19	Case Engine	P. & O. Plow.
No. 20	Pioneer Engine	John Deere Plow.
No. 21	Nichols & Shepard	John Deere Plow.
No. 22	Three Oil Pull Engines	2 Rumely Plows, 1 Cockshutt.
No. 23	Goold-Shapley Muir or Ideal Engine	Verity or Massey-Harris.
No. 24	I. H. C. Engine	John Deere Plow.
No. 25	Holt Caterpillar Engine	
No. 26	Rumely Oil Pull Engine	Cockshutt Plows.
No. 27	Rumely Oil Pull Engine & Drills	
No. 28	Hackney Motor Plow	
No. 29	Huber	Moline Plow.
No. 30	Rumely Engine	Cockshutt Plow.
No. 31	Fairbanks Engine	Verity or Massey-Harris.
No. 32	Hart-Parr Engine	Cockshutt Plow.
No. 33	Holt Caterpillar Engine	Big Dutchman Plow.
No. 34	Case Engine	Cockshutt Plow.
No. 35	American Abell	Cockshutt Plow.
No. 36	I. H. C. Engine	Cockshutt Plow.
No. 37	Universal Engine	John Deere Plow.
No. 38	Hart-Parr Engine	
No. 39	Nichols-Shepard	Reeves Plow.
No. 40	I. H. C. Engine	
No. 41	Geiser Engine	P. & O. Plow.
No. 42	Goold-Shapely Muir or Ideal Engine	Cockshutt Plow.
No. 43	Rumely Oil Pull Engine	Verity or Massey Harris.
No. 44	Universal Engine	Cockshutt Plow.

A MAGAZINE FOR THE FARM AND HOME

THE CANADIAN THRESHERMAN AND FARMER

Vol. XVII. WINNIPEG, CANADA, JUNE, 1912. No. 6.

HAY AND HAY MAKING

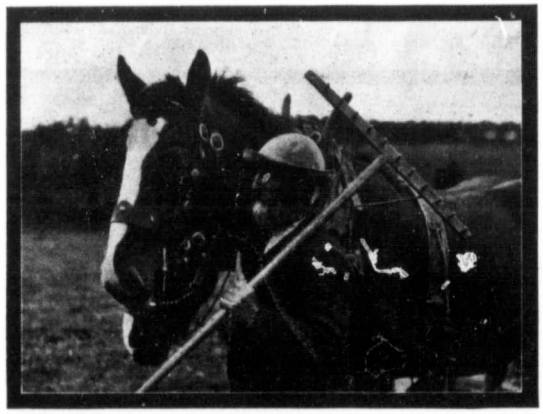
THERE is a romance and a poetical similitude about haying that is to be found in no other branch of agriculture. It is not the oldest form of farm labor by any means, yet associated with it, working in, and through it and stretching out and beyond it, there is a something about which poets love to sing and before which mankind in general bows in reverential respect. The world of poetry is full of song for the haymaker, and not a few poets there are who have puzzled their brains for something which would rhyme with "new-mown hay." It is not a custom, neither is it a freakish fancy, for the fragrance of the newly cut grass wafted upon the summer breeze touches our olfactories in a manner that excites the mind of man to unusual action and unusual feats. Even the painter, who chooses to portray upon his canvas only the most splendid of subjects, has seen fit to turn his attention toward the hay field, as he who has seen the splendid works of the French Millet can testify.

Yet despite all of this the hay field is to the farmer a stern reality, for haying time is a strenuous one when the care, energy and skill of the farmer must be brought into play if he is to put up a crop that is worthy of the name. He must communicate very closely with nature, for upon her subtle forces must he depend for that power which will turn the green grass into fragrant hay.

KINDS OF HAY

To make anything like an attempt at a complete discussion of the different kinds of grasses that go to make hay would fill volumes, and would be of little interest to the ordinary reader, hence for the purpose of our discussion we will go no further than to attempt a brief notice of the principal grasses that enter into the farmer's hay crop.

Probably the first one that should be considered is timothy. This is the most widely grown and popular hay crop that is cultivated to-day. It is the standard of quality, the one by which all others are compared. It is a perennial grass one and one-half feet to four feet high and flourishes best in the rich moist loam of lowlands, growing more sparcely on lighter soils and dry uplands. Experiences show that clay loams form the best soil for timothy, and are to be preferred to those soils of a more sandy nature. Timothy grows in stools and never forms a close compact sod. The roots are very fibrous, but do not feed deep, the crop, therefore, will not withstand drought as some other grasses, and for the same reason is very responsive to top dressings of barnyard manure and other fertilizers. Again timothy will not stand heavy pasturing and except under the most favorable conditions it will not endure at most over five or six years. It is, therefore, seldom used alone for pasture, but is mixed with other grasses so as to increase the yield. Timothy is, in some respects, a very hard hay crop for the farmer to handle, as it is fit to cut at about the same time as the farmer is obliged to harvest his grain. If the hay is required for sheep and milch cows it is well to cut it a little on the green side in order that it may not be so woody in its nature, but if wanted for horses or fattening cattle, it is well to let it get somewhat ripe, although not so ripe that it will shell. Timothy hay should never be cut in the blossom, for just so sure as it is it will develop a certain amount of dust after it is put in the mow or stack, that makes it detrimental to the horses and less palatable to the cattle. Timothy hay requires considerable time to dry and the haymakers should watch the weather carefully in handling this crop. A good plan is to cut it in the morning just after the dew has gone off and the following morning rake it up into windrows; if the weather is at all favorable for haymaking, it will be in good shape to stack in the afternoon and will have dried out but little. If it is put in the stack and if the hay is in the proper condition the stack should be made as large as possible, as it preserves it a great deal better than when it is put in small stacks. If put in the mow, it is a good plan to sprinkle the mow with a little salt, putting on a handful or two for every load. The salt will tend to keep it from moulding and make it more palatable for the stock. Timothy is not a good crop, for the soil but rather uses up its fertility almost as much as a grain crop, the principal difference being in the fact that the land which is seeded will not wash. It never pays to put it on course soil, neither does it pay to seed to timothy in order to bring up the land's fertility.



Three Honest Working Folk.

Next in order to timothy comes clover, and from out the many classes of clover, we will select as a type that which is known as the common red. This is the most important member of the clovers and constitutes the chief forage crop of the north-eastern states on the other side of the line. It is not so very well known in Western Canada, but it is believed by those who have given the matter careful attention that there is a great future in store for the clover plant in Canada West. Year by year it is seen that its introduction is at least possible and not at all unprofitable. The principal drawback seems to have been that the people were afraid to sow it, as it is under ordinary conditions a hardy plant, is endangered most by freezing and thawing, which breaks the

roots and leaves nothing to hold the plant to the ground. One Canadian writer upon this subject, who has given it careful study, says:

"It is quite certain that a good few of our progressive farmers are giving it a fair trial. I might give the names of a hundred who are growing large patches of it with good prospects of success. In the early days about the only patches of clover were found in the grooves along the railroads when the track was laid, the seed coming from the bailed hay imported to feed the horses used to aid construction. I can recollect seeing red clover in Manitou, Man., more than 20 years ago, but it soon perished. What did live was only white, and its continued existence was mainly due to two things: the white subsoil and the covering of snow that buried it every winter, and it always did best where along with these two there was scrub land. On clay or arid soil it dwindled and had a hard fight for life."

It has been contended by some that clover will not grow on the prairie, owing to the fact that there is a lack of bacteria, and the science has demonstrated the fact that these bacteria are absolutely necessary to the growth of the clover plant. These same people contend that there must be some sort of an alluvial deposit in order that the bacteria will grow at all, and hence the lack of clover growth upon open prairie soil. The fact of the matter seems to be, however, it is not due so much to a lack of this alluvial fertility as it is to the fact that on an undulating soil the conditions of the growth is such that it will not hold the clover plant and protect it against the severity of winter, but when once the soil has been cultivated, for any considerable time, or for even a few years, if cultivated properly, it forms a seedbed in which clover will flourish where wheat can be grown. Red clover is one of the best known crops for green manuring, and it is thus one of the most valuable conserves of soil fertility. The plant itself is a biennial of a few years' growth according to the locality, the colder the region the shorter its life. It grows from one to two feet high, and in this northern climate will produce but one crop in a season, although in the extreme southern part of the United States it produces three and in some cases four. In the case of two crops the first is usually made into hay and the next is cut for hay or seed, the reason for this being that the bumble bee is absolutely necessary for the fertilization of the clover blossom, and as these are not abundant early in the season the second crop receives the benefit of their visit and the heads are much more completely filled with seed. In this country, however, the first crop would have to be depended upon almost entirely for seed, as the second crop would be in danger of frost before it was ripe. Red clover should be cut for hay when in full bloom, at which time it contains the largest amount of food. The largest amount of dry matter is found in clover at the end of the blossoming period. In making hay great care should be taken to preserve the leaves since these contains according to analysis made by the Minnesota Experimental Station, two-thirds of the precious, albumen matter of the plant, the constituents which give clover its high feeding value. As soon as the leaves are thoroughly developed the clover should be raked up and put into small piles to cure. In about twenty-four hours with good, clean weather the piles may be drawn into the barns or stacked. The hay should be allowed to cure under cover as much as possible, for the air has a tendency to react upon the clover plant and cause it to lose a large share of its feeding qualities. One authority gives the following programme for a day in a clover field:

"Commence to cut in the morning as soon as the dew is off. With hay averaging one to two tons per acre, no tedding is required. With a heavier crop the hay is either turned or the tedder is run over it. As soon as the top of the swath is well wilted, by two o'clock the hay cut in the morning will be ready to make into windrows and put into piles. In good, hot, sunshiny weather in the morning, hay cut up to ten o'clock will be ready to go into the barn direct from the windrows the same afternoon. That cut later in the day is generally raked into windrows and put up into small piles to be further cured overnight. The later swaths cut may be left till the following day before raking, but that piled up in the afternoon will be ready to go into the barn the following morning. As soon as the dew is off and the outside has become thoroughly dry, it is always desirable to draw all the hay the same day it is cut if possible, for if rain comes overnight, it makes a blackened hay of poor quality. Should rain come after the hay is cut, but before it commences to cure no harm is done whatever, and in uncertain weather some farmers run the mower while it is raining so that it can be rapidly cured when the sunshine comes."

Fair Fields, A Silver River and Noble Hills

Another method used successfully by an old clover grower on the other side of the line is as follows:

"Hold Fast"

"I mow in the afternoon if possible. The next afternoon, after the dew is off, we use the tedder, going over once, and if very heavy, perhaps twice before noon. The clover at this time is not dry enough so that the leaves will be broken off by the tedder. It is left in a better shape to cure than the mower left it. In the afternoon, we rake and bunch, making bunches of about 150 pounds. In bunching hay, we throw two dumps of the rake together for a foundation, then pitch on to this foundation, lifting each forkful and placing it on top in such a manner that it will settle down like a cap or roof. These are left until the dew is off next day, when they are opened. In doing this, we do not tear them apart much, but taking the top invert it; then as each forkful is taken off, invert or leave an edge, being careful to get what was next the ground. In the afternoon we draw in, being careful in mowing to keep it level instead of piling in the centre and rolling each way. We have followed this plan for several years with good success. By this course the hay is secured in about forty-eight hours from the time it is cut.

"Hay cut before the period of full bloom is more digestible than if cut later; it is also harder to cure and must be handled differently, but where the acreage is large we must begin sooner to lose much of the feeding value. In that case, I would mow in the morning, rake and bunch in the afternoon, and leave in the bunch for several days. The after treatment would be the same as before. By this method the quality will be about perfect, if the weather has been favorable, but we must bear in mind if we have followed up our work closely, that before the first cut is in the barn we will have considerable cut and in the bunch."

Brome grass is another very important hay grass which was brought to the American Continent from Europe about 20 years ago. It is a vigorous hardy perennial, with strong creeping root stalks and smooth, upright leafy stems one to four feet high, having loose open panicles four to eight inches long. It is valuable for both pasturage and hay. Extended tests show that it has remarkable drought resisting qualities and is a very suitable grass for dry regions. Once established, it withstands a temperature many degrees below zero without injury. It will thrive on extremely poor soils and return a fair crop. It should be cut for hay when in full bloom and handled similar to timothy.

Two other forms of hay that must not be overlooked in a discussion of this sort are the upland prairie and the marsh grasses. Upland prairie hay is, as a rule, composed of the native grasses of the particular locality in which it is found, and varies in its composition.

It never grows to any great size, but is generally short and stubby, covering the ground thickly. This is due to the fact that the seeds themselves fall from year to year, and the number of seeds that grow, are influenced largely by the amount of room that they have to grow in. It is generally wirey in its texture and it does not possess the fattening qualities of the domestic grasses. If cut for a few years it gradually wears out, and hence is not a profit-

able grass for the farmer to raise.

Marsh grass, on the other hand, grows in low, swampy places, and in most cases is of an inferior quality. It generally grows in rich alluvial soil, which is under water for the greater part of the year and hence the hay is wiry and sour to the taste. After it is cut for a few years it improves gradually, and if the marsh can be drained so that the water will not lie upon it in pools the grass itself will gradually sweeten, and if a little of the domestic grass is sown upon the marsh, a real good quality of hay can be produced. One advantage of marsh hay over the domestic varieties of hay is the fact that it does not have to be cut at any certain time, and when cut can stand for weeks without losing any of its haying qualities. On account of the nature of the ground on which it grows modern hay machinery cannot be so readily used in putting up marsh hay as it can with the domestic varieties. In a great many cases the land is even too soft for the mower and the horses to be used, and the grass has to be cut with a scythe and poled off by hand. If a wild piece of marsh is to be found upon a farm which is too wet to be passed over readily, it should be cut every year either by hand or at some dry period, at the same time throwing on a little domestic grass, such as timothy or alsike clover. The alsike clover will have a tendency to fill up the bogs, and in the course of a very few years it will be found that marsh will be considerably drier, and that there will be an excellent quality of grass growing thereon.

Although the subject of haymaking is very important, there is not much of a definite character that can be written concerning it. The nature of the crop to be converted into hay, the dampness or dryness of the soil of the meadows, the humidity of the atmosphere, and the intensity and continuance of sunlight and heat, are all modifiers of this problem and combine to keep it one of those elements which cannot definitely be discussed in books.

In the making of hay we can find a great many farmers working in error. There is a generally accepted belief that in order to make good hay you have only to mow down the grass when it has reached the haymaking stage in its growth and permit the sun to beat upon and dry it. This, however, is a gross mistake, for if hay can be cured without any sunlight at all it will be far more nutritious and more palatable than where it is exposed to the sun's rays. Grass stems remain alive to a certain extent for some time after they have been cut by the mow, and the leaves while still green continue to exhale moisture in a natural way. If grasses whose leaves are still fresh are gathered in a bunch so that the leaves are not withered, the leaves will continue to gather moisture from the stems, and in so doing rid them of moisture and hasten the drying grasses to the making of hay. In this fact we have one of the advantages obtained in curing grass cocks or bundles rather than spread them out thinly in the hot sun. Hay which is cocked in the afternoon entraps much warm air and the mass remains in a condition favorable to the transpiration of moisture during the night. The heat yielded by the plant in carrying on its living functions and warm air entraped by grass gathered in the afternoon should not be confused by that which may be developed by partly cured or damp hay through fermentation. When hay that has been cocked for a time is exposed to the air in flakes the moisture which has been diffused evenly through the masses yield up rapidly and such material is soon dried. While hay may be made without going through the sweating process in the cock it is usually much better because of having undergone such action. Hay put into the barn when it is so dry that it will not pack well, is not in first-class condition. It should be mowed away with just that amount of moisture which allows it to settle compactly when trodden down. The one thing that will guide the haymaker in putting up the hay is the aroma, and although it is an unweighable quantity it has a real value in rendering the hay more palatable. Every farmer who has had anything to do with the raising of hay knows well that when hay that is nearly dried gets a rain it loses its fragrance, and he furthermore knows that it is not a first quality. Some contend, for this reason, that hay should not remain scattered over the meadow at night, as the dew in rising carries this aroma off into the atmosphere. As new mown hay lives for a time in the sunlight, the bleaching which we observe indicates that chemical changes are taking place within the grass stems and leaves, and such changes are not of advantage. Grass collected sweet smelling is the best, and a prudent stockman securing provender does not overlook such small points as preserving aroma and preventing bleaching.

Homeward with the Winter Feed.

The progress that has been made in haymaking machinery, while of some recent development, is none the less startling and aggressive than that in other lines of agricultural implements. Within the memory of many farmers living to-day, the scythe was the implement of common usage for the cutting of hay, and its "swish, swish" as the haymaker swung the sharp steel blade through the heavy grass was music in the ears of our forefathers. The early mowing machine was a crude affair at the best, and in its earliest type consisted of an attachment for the reaping machine. It was a cumbersome tool, and required two very good horses to draw it. Then there came the old hand dump wooden rake, a sort of a double affair after which the farmer wearily trudged, dumping the hay and stumbling over the bunches in a tiresome pursuit of the haymakers' art. The hay rake next passed into the wheel stage, then into the steel rake, and lastly into the modern self-dump, which is a complete affair, and so simple and easy of operation that a mere boy can handle it. The mower has also passed through many stages of perfection until to-day we have an implement that is light of draft and that will cut the heaviest possible hay crop with very little trouble. The tedder is also a recent tool and was put upon the market mainly to meet the demand that would aid in the handling of the clover crop.

The Last Load Home.

Clover is a very difficult crop to dry and it must be subjected to all possible air, if the best possible hay is to be made therefrom, and it was not until the hay tedder was put upon the market that the farmer could successfully handle his clover crop. The hay loader is also a tool of recent invention, and in its modern form it can be, and is used by, classes of farmers, large and small, and in all kinds of grass; it is a labor-saving tool to say the least, and permits of the hay being handled in a way that will transfer in an almost undisturbed state from the meadow to the mow. A boy and a man with a hay loader can handle as much hay as three men and can do it much more expediently and with less labor. It requires very little power to draw it and under ordinary circumstances the team that is used for drawing the load can be used for both load and loader, the boy driving the team and the man handling the hay.

Two forms of hay loaders are in use at the present time, one that lifts the hay directly from the swath as it is left from the mower, and the other takes it from the bunch. To facilitate the work of the latter, what is known as the side delivery rake has been perfected, and put upon the market. This rake leaves the hay in a loose bunch at one side of the rake and acts as a sort of a tedder and rake, the rake as it draws up the hay into bunches and the tedder as it leaves it in a fluffy condition, so that the air may act upon it.

The side delivery rake is not used to any great extent excepting for domestic grasses, the wild grasses not being heavy enough to permit of its use in a profitable manner. In the old days about the only apparatus that was used for stacking hay was the pitch fork, and the haymaker thought as much about his pitch fork as he does of the most modern implement used

Continued on page 60.

"Everything Begins and Ends with the Soil"

JUNE, 1912

THE CANADIAN THRESHERMAN AND FARMER

CANADA'S LEADING AGRICULTURAL MAGAZINE

PUBLISHED MONTHLY BY

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

E. H. HEATH, PRESIDENT E. W. HAMILTON, SECRETARY AND MANAGER J. D. DUTHIE, EDITOR F. C. BRAY, TREASURER

(MEMBERS WESTERN CANADA PRESS ASSOCIATION

AUTHORIZED BY THE POSTMASTER GENERAL, OTTAWA, CANADA, FOR TRANSMISSION AS SECOND CLASS MATTER

"BOY WANTED"

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.

HAVE YOU A BOY, a real live boy who must always be doing something, if it is only getting into scrapes and getting out of them again? We want him, and will pay a price for his services for the next few months that will probably enable him to obtain easily, honestly and quickly something on which he has set his heart and without calling on his father for so much as a nickel. He will be an honest lad, of course. We will put him on his honor as soon as we have seen his face or his handwriting. He needn't be a genius, he needn't even be good-looking. He may be as ugly and fat as a "Sweepstakes hog" or as lean and scraggy as a last year's Corn Stalk.

IF HE'S A BIT LAZY even that will not "spoil his chances." All boys and most men have suffered from this epidemic till they have been cured. We believe we will cure him, and a good boy, well broke from indolence will be of some use to those who have raised him and a "King in his own right" for all time to come. We will cure him neither by kicks nor kindness. We work by the simple method you have tried yourself on a certain four-footed, long-eared friend when he has balked—by hanging out a little inducement in the form of a nice juicy carrot he may appropriate by simply going for it.

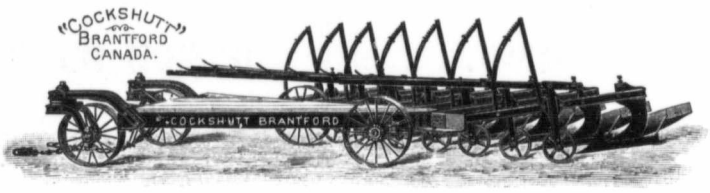
OUR "CARROT" IS SPELT CARAT because it has to do with the weighing out of gold, and it may mean a nice little bit of yellow gold or dollar bills which will have the same purchasing power. The boy we want need not be one night away from his home on the prairie or in the village. He might want to borrow the buggy some day, however, but what we have to offer him is something he can work at outside which will be constantly under the eye of his parents. They will be satisfied and he will be happy because in response to a little energy and the enthusiasm that blazes in every boy's heart when he sees a chance of earning a dollar, he cannot fail to realize what we lead him to expect.

LET HIM WRITE US and find out what the job is we have to offer him. He can start at once and earn a few dollars the first day if he likes. We want a lot of boys—farm boys preferably—and the editor of "The Canadian Thresherman and Farmer" will write him personally and give his application as much attention as if he were replying to a letter from the Governor General of Canada. This "job" is not being advertised—for the present at least, because we feel sure that there are many boys whose fathers take this paper who are the very fellows we need and we would take them before anyone else.

WE ARE HANDLING A BIG TASK and are contemplating a still greater, and it is in one of the nice, clean, interesting and remunerative departments of this work that we want the help of the boys. We have a great belief in the boys and could tell of some wonderful things we know of that they have accomplished by the sheer force of enthusiasm. The writer of this squib is a boy—almost a half a century old. He has a boy of his own (not quite so ancient, of course) and if he lives another century he will still be a boy and cultivate the society of boys before anything else. This is no bluff. You can just try him if it is only with a postal c rd.

HE HAS DONE THE WORK HIMSELF and knows all the ins and out of it. He has been led to make this announcement by the many splendid letters he sees coming in from the boys and the girls. Many of them give the greatest promise of men and women who will become bright and shining lights in the future of Canada. He regrets that the young folks' space in this paper can only accommodate but a small portion of these letters that continue to tell us that their fathers and big brothers are regular readers of the "Thresherman" and "like it fine." We want to get next to all of these boys; so, Mr. Reader-with-a-restless-boy, will you tell the young scamp to send a post card or a letter to the Editor of this paper, merely to say that he knows there is a "boy wanted."

WE WILL ANSWER EVERY LETTER immediately it is received, and whether the applicant is or is not one of the men we want, it will pay him all the same to get to know us. We will spend a large sum of money on the boys this summer and fall and we don t mind taking every one of them we can employ into our confidence. No one can take precedence of another. Every boy will have exactly the same opportunity and encouragement from us. We will never hurt his feelings with an angry word, but we will go a long distance out of our way to encourage and help him, and if he will just put a bit of the ginger into our job that he uses at base ball or bird nesting, he will soon raise the price of the "dream of his life"—even to the extent of being able to support a wife!



The COCKSHUTT ENGINE GANG

Built for Fast, Even and Clean Plowing by Tractor

COCKSHUTT BOTTOMS DIP WHEN ENTERING THE FURROW AND WHEN AT SET DEPTH RUN LEVEL. THIS MEANS LIGHT DRAFT, CLEAN ENDS AND FURROWS OF UNIFORM DEPTH. THERE ARE NO COMPLICATED TOGLE JOINTS ABOUT IT. THE COCKSHUTT WAS THE FIRST SUCCESSFUL ENGINE GANG INVENTED, OUR DESIGNERS WERE NOT LIMITED BY PRE-EXISTING PATENTS AND WERE ABLE TO BUIILD IT ON DIRECT LINES OF THE MOST PRACTICAL AND SIMPLEST CONSTRUCTION.

Each plow works on its own individual beam. The Cockshutt Plow Beam is heavy, straight and cannot be twisted, throwing the plow out of true. It is doubled. These two beams hinge at, a wide adjustable bearing on the heavy, reinforced channel-steel platform frame. The plows themselves are adjustable by set screw for suck of share. Adjustable depth wheels to each plow keep set depth. Long, easily thrown levers lift plows at furrow ends. A wide wheel at the rear corner of platform maintains proper set of all plows by keeping all beams at proper height. Swivel wheels at front of platform allow short turn at ends.

As ground rises and falls, each single plow adjusts itself to the ground. At rocks the one plow concerned rises and re-sets itself. Tractor rut is plowed at same depth below surface of rut as balance of ground. Work of rear plow is as even as that of first plow. No polishing of clayey ground at bottom of furrow, making land sour. No stops of tractor during work—just cover ground steadily and perfec ly—Sod Breaker bottoms or stubble botto s interchangeable. You save time and money by seeing the Cockshutt dealer and getting a Cockshutt Engine Gang. Write us to-day for our Booklet on Horseless Plowing—Get the Engine Gang Book and

Plow Right, Evenly, Well, Swiftly

See the Dealer

Cockshutt Plow Company Ltd.

BRANCHES:

Winnipeg Calgary Regina Saskatoon

DISTRIBUTING WAREHOUSES:

Brandon Red Deer Edmonton Lethbridge Portage la Prairie

SOURCES OF ENERGY

By Walter Hodgson

Among the forms of energy that are in everyday use, coal is one of the best known, and though the latent heat in the coal is the source of energy, it should be remembered, it is not the initial source. Coal is formed from vegetation and that vegetation owed its vitality to the heat given off by the sun. But where the sun gets its supply of heat is not yet known; all we know is that the sun's heat is apparently inexhaustible.

For practical purposes we can assume that the following are the principle forms of energy at the present time. And of these, none are better known than those three, which are very good servants, but bad masters, namely, wind, water and fire.

COMMON SOURCES

Source	*Form*	*How Used*
Wind	As air under velocity	Windmill.
Water	Moving or under pressure	Water Weel, etc.h
Coal, Wood, Straw, Oils, etc.	When consumed as fire	In a Steam Boiler.
Gases	As a gas	In Gas Engines.
Oils	When Vapourised	In Oil Engines.

The following sources of energy are a little different, as they require material work to be expended on them, before they can act as energies, and might be termed forms of transmission of power, just as a belt transmits power, but more portable and with a larger range of adaptability. It should be noted that some of the force is always lost in transmission. These sources are under many conditions, more economical than would be mechanical power applied direct.

FORMS OF TRANSMISSION

Source	*Form*	*How Used*
Air	Under pressure	Compressed Air Engine.
Air	As liquid air	Liquid Air Engine
Water	Under pressure (artificial)	Water Turbine.
Water	In form of Steam	In Steam Engine.
Electricity	Electric Current	Electric Motor, etc.

Electricity, owing to its great flexibility, is, under many conditions, an economical power. Before electrical energy can be obtained, it is necessary to expend mechanical work, and the amount of work that is expended is greater than that which is got in form of electrical energy. In other words, the electrical energy will not furnish us with as much power as we could have got direct from the engine that was used to drive the electrical generator (dynamo). The dynamo is a machine which converts mechanical energy into electrical energy.

The flexibility of the electrical energy may be illustrated as follows: In many cases where power is used to drive machinery, long lengths of shafting are required to enable all the machines to be driven. To maintain this shafting in motion itself requires considerable power and the further transmission, such as belts, gearing, etc., absorb more power, which is all a loss, especially so when only a part of the machinery is in use. But, if instead of shafting, etc., electric motors are attached directly to each machine or a unit of them, then only the actual power that is required will be used, and the power generation station may be at some considerable distance away, which would not be possible if steam, for example, were used, as the condensation in long lengths of pipes would be too much for practical purposes.

Compressed air is largely used to convey power, but the efficiency is low, when compared with electricity. Compressed air is much used to drive haulage engines in coal mines, the air compressers being upon the surface, and the compressed air is conveyed down the shaft and through the workings by means of pipes.

Wind and water are the cheapest sources of energy, as once the plant is installed there is no further expense for energy, only the cost of the maintenance of plant. But the fact must not be overlooked in the case of water power, that unless the natural conditions are favorable, the cost of installation may be so high as to be prohibitive. Again, wind power is not constant and in these days of rustle people will not wait till the wind blows their way. Water power has this disadvantage: we cannot always obtain it where we require it and we have to go to where it is. It is here that electricty lends itself to advantage, as by the generation of electrical energy at the source of the water power, we can convey the energy to considerable distances with economy.

Electricity might with advantage be generated by wind

power, but owing to the varying action of wind, it would be necessary to store the energy in accumulators if a constant supply is required. But up to the present time accumulators are heavy and costly. It might, however, be practical in some instances to store up the power developed by the wind, in form of hydraulic power, as in a hydraulic accumulator, for use as required. Gases, such as coal gas, blast furnace gas, and oils converted to a gaseous state, or coal oil (petroleum), gasoline (petrol), and crude oils, etc., etc., are largely used as sources of energy in the explosive motors, commonly known as gas and oil engines, frequently termed "internal combustion engine." For small powers the oil engine is rapidly superseding the steam engine.

The internal combustion engine is not so flexible as the steam engine, and is not as suitable for varying ranges of work. Railway locomotives are still run by steam power.

Of the different forms of "internal combustion engines," the most economical are the suction gas and produce gas engines, and also the engines using crude oils, such as the Disel.

Suction gas engines are already made in a portable form and we may see it in traction form yet, perhaps even using straw fuel. The straw pile on the farm might with advantage be used, not only for purposes of threshing, but for general power purposes. The source of energy is right there upon the spot.

Increased Trade Compels Maytag Co., Ltd., to Move to New Quarters.

Wheat makes the wheels go round in Western Canada, and consequently anything so vitally connected with wheat growing as a self-feeder if properly pushed must also come in for its due share of expansion.

For some time past the Maytag Co. (formerly known as the Parson Hawkeye Mfg. Co), have sold to the farmers and threshermen of Western Canada the famous Ruth self-feeder, and no small portion of our many millions of bushels of No. 1 Hard have gone through the "maws" of these machines, so much so that to-day the word "Rush" in a household one on the wheat fields of Western Canada.

Big business in any line brings about a call for larger business quarters, with the result that the Maytag Company have recently been compelled to seek new and larger quarters. The old quarters at 753 Henry Avenue have been abandoned for new ones on Logan Avenue (corner of Arlington Street), in the new up-to-date and commodious office and warehouse building of the Ontario Wind Engine and Pump Co.

A representative of this magazine paid them a visit recently and found them most comfortably and advantageously situated. Large and bright offices are occupied by manager E. E.

Continued on Page 19

GASOLINE TRACTION ENGINES
A DEPARTMENT FOR THE USER

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

Honors Divided.

Your letter of the 15th inst. to hand, and in reply would say that last year we operated a gasoline plowing outfit in the Arden district. We started early in May with a 25 h.p. steam engine, but found that owing to the land being so soft from the amount of snow that lodged in the scrub and from the spring rains, it would not carry up. The drive wheels were only 66 inches in diameter with 24-inch face, and as they were not made for extensions we had to quit using it.

We then purchased a 45 22 break draw-bar h.p. Hart-Parr gasoline kerosene engine with a 10 inch extension rim on the drivers. This stayed on top much better, being lighter per h.p. and the drivers being 72 inches diameter, 24-in. face. We pulled five 14-inch plows on a an eight frame Cockshutt engine gang, and as this was our first experience in traction plowing we had many things to learn.

The land where we operated was very heavy sod with patches of very heavy willow scrub here and there over the field, which made fast breaking impossible. A 14-inch breaking plow was considered a good load for four horses and an acre and a half was considered a good day's work.

We found that the willow roots gave most trouble by rising ahead of the fins and choking up the plow. To guard against this we cut the roots here and there from about 10 to 20 inches long, when we were cutting the scrub. This helped the fins a great deal and we could go through a place that was cut that way fairly well. Just the roots running across the furrows were cut, as those running parallel with the furrow gave no trouble. We also plowed some stubble ground with the breaker bottoms and found them to work very well, though the stubble bottoms are much more satisfactory.

We employed an engineer, plowman, and a handy man with small team, whose duty it was to haul a load of kerosene and oil from town once a week, to take shares to the blacksmith, and do the cooking. The team had only about enough to do to pay for their board. As there were a few stones in the land, we had to sharpen shares every other day.

The following is a list of expenses for the breaking of 70 acres in seven days:

315 gallons of kerosene at 17 cents	$53.55
10 gallons of gasoline at 25 cents	2.50
8 gallons of cylinder oil at 50 cents	4.00
8 gallons of gear oil at 25 cents	2.00
10 pounds of hard oil at 12½ cents	1.25
7 days engineer's wages at $5	35.00
7 days plowman's wages at $2	14.00
7 days handy man's wages at $2	7.00
7 days sharpening shears at $1	7.00
	$133.30

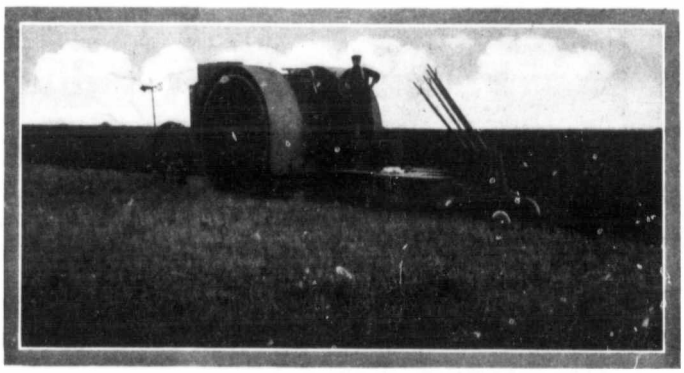
$19.47 per day, or $1.94 per acre.

The honors are about equally divided between steam and gas tractors in this district. We have had no experience with drill or disc hitches, but expect to experiment along this line in the spring.

Wishing your paper every success we remain,

Yours truly,

Z. R. Burch & Sons,
Wellwood, Man.
Box 120.



A "Big Four" and John Deere Near Arnaud, Man.

Plowing and Threshing.

In the spring of 1911, I invested in a 20 h.p. International Type tractor, having operated a portable engine of the same make and size for three seasons previous, together with the tractor, I purchased an Oliver 4 bottom engine gang plow with breaker and stubble bottoms.

I started breaking on the 3rd of May. The ground was so dry and the land a little rolling, so could only pull three plows. I tried the four, but found I made more time by using only three. I operate the engine and plow myself, and had sometimes to walk behind the plow and see that everything was all right, oil, etc. I ran the front wheel of my engine in the furrow, which made steering easy. The only trouble I found when running in the furrow, was when I got to a soft place, the drive wheel in the furrow would slip. I did not use any horses except to go to town for gasoline. I had lots of water handy where I was breaking without hauling.

I used about two gallons of gasoline per hour for breaking or about three gallons per acre. Gasoline cost me about 26 cents a gallon at Windthorst. I used more gasoline per acre on account of the land being so rolling, not being able to pull more than three plows. I consider plowing harder on an engine than threshing. Breaking cost me about $1.25 an care, and sumer-fallow about $1.00 per acre.

For threshing I used 24 by 42 case steel separator with all attachments, which I think is large enough for an engine this size. We kept four stook teams busy, the straw being very tough last season. In a good year it will take five teams and a pitcher. We have threshed wheat at the rate of 1,200 bushels in 10 hours and oats at about 2,200. I threshed 48 days, and did not break or lose a single cylinder tooth, and only tightened them up 200 times during the season.

Hoping this will be of interest to someone, I remain,

A. B. Carlson,
Windthorst, Sask.

Looking for Advice.

I am very glad to have the opportunity to join this important work; it will be of great help to me, as this is my first year with an engine, and what hitches I have, I made them from my own knowledge.

Answering your question, will say: —

1. My engine is a 22 h.p. Hart-Parr on the draw-bar and 45 on the belt.

2. I have a six furrow 14-in. bottom Cockshutt gang. When I think of what gangs I have seen working, the Cockshutt is the strongest, simplest and easiest to keep in repairs I have seen yet, and an easy pulling with the rods on; I am sure it pulled much easier in any kind of land.

3. I have, as a rule, three men, counting myself. I have one man steering the engine, and the engineer runs his engine and lifts the plows at the end. I find by working my men this way the engineer can watch his engine better and also the plows, as I draw the oil and anything in repairing, such as shears and rods. So I believe with three men the outfit can be kept going steady for a 13 hour day, and for a 24 hour day I have five men in the field. This is not including a cook, which outfits have.

4. I have three horses, one heavy team, and a driver, which

I found very easy on all three, especially the heavy team.

5. I use the Imperial engine kerosene on the average land. I use about 45 gallons per day, which cost about $9.00. This will plow me about 12 or 13 acres.

6. Nine pails of water will run me a full day.

7. I am sure plowing is harder on an engine than threshing. 1st. When plowing, the engine is bumping over the rough ground and hitting stones, where in threshing it is standing still with no hard jerks or hard strain. 2. When threshing, it is wise to get a separator small enough that the engine will handle it where sometimes it might be forced to work hard, and if your separator was too big it would either stop it or slow it down, which will end in bulging the cylinders and crowding the discs, and more it will throw ones grain when starting up again. 3. It has to pull its own weight. 4. An engineer costs me $1.25 per acre. I have heard of people plowing at the cost of 60 cents per acre, but when a man averages up the season, I am sure it will come to double the amount. This is including all expenses.

8. The only hitch I have made is the disc hitch. First, I have a draw-bar for separator from the engine; it is 3 by 10 feet long, "white ash," with wheels on it about 18 inches from the ground, and 3 chains to the engine. One in the centre and two from the outside. Second, I have three inthrow discs on first, so they draw the centre one back a little, and the two outside ones lap a little, and I have three outthrows in the same shape following them. I have trucks on the hind ones to save stiff tongues, and behind them I have 10 sections of harrows drawn in two sections, and behind them I have a two time, 6 by 20 by 18, which I used as a float on the second discing of breaking, which I find was a great improvement to the work. I can't hardly explain them right, and I will try a drawing on the facts of this page.

9. There are ten oil tractors to one steam in this section of the country. Coal is very dear and hard to get out here, and there is no straw to burn. I think this is all I will say, as I don't know much about it, and would be glad to get some good advice, I must say my disc hitch worked fine, and I could turn as short as the engine would, and very seldom this would be any bother.

Sincerely yours.

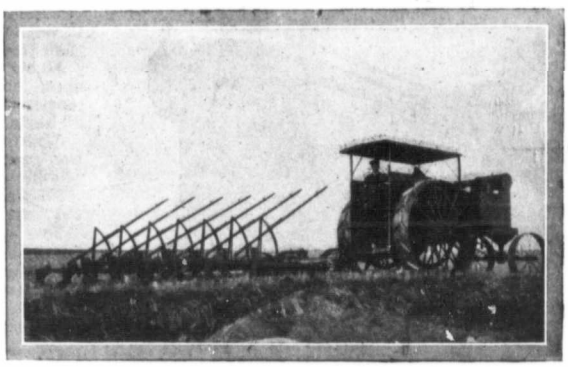
C. P. Jones, Esq.,
Marengo, Sask.

Costs $2.00 per Acre to Break.

I have an International 20 h.p. engine and 5 furrow Cockshutt engine plow, of which I use four furrows in breaking and five in stubble. Last summer I broke 450 acres, doing from 10 to 14 acres a day with just an engineer and plowman with the rig.

I used two or three barrels of water daily and about 22 gallons of gasoline, which I had hauled out in the field by the man and team I had drawing off stones.

Taking everything into consideration, I calculate it costs me about $2.00 an acre to break and not so much for stubble plowing. I pulled 4 discs and disced a thousand acres without any trouble at all, and this last fall I threshed with a 32 inch J. I. Case, averaging a thousand bushels of wheat a day.



Kinnaird Haines and Cockshutt turning up the Prairie.

My experience is that breaking is much harder on the engine than any other work. There are quite a number of both steam and oil tractors around here, but the general impression seems to be that the oil tractor is the most profitable and economical.

Hoping this may be of service to you, I remain,

Nels Oalden, Esq.,
Strassburg, Sask.

Experience Necessary.

Answering your inquiry as to our experience with gas tractors and gang plows, we have only had one season's experience. In the spring of 1911 we purchased a Rumely gas tractor, 25 h.p. draw-bar, and a Verity eight bottom engine gang, but used only six bottoms in breaking. We could have pulled seven or eight bottoms if our land had been near level, but owing to some sharp grades we only used six bottoms.

We find our total cost per acre for engine fuel and breaking was 79 cents per acre, or 63 cents per acre for fuel and oil, but this includes travel on roads back and forth. The difference covers cylinder oil, cooling oil and lubricants. But this cost was much increased by our lack of experience in handling gas tractors. None of us ever having had any experience in handling tractors of any kind, we naturally lost a lot of time and more fuel running engine empty whilst hunting and adjusting trouble in different parts of the engine. We had little trouble with the plows. They did first-class work, breaking four or more inches deep.

After we had learned to run the engine then, our cost per acre was much reduced. We used kerosene for fuel, using about 80 per cent. water with it. We used gasoline when threshing, because that did away with using water, and, of course, all danger of freezing pipes. We used about 33 gallons gasoline per day of ten hours, using a 34-56 Rumely separator. We keep about eight horses on our section of land, using three men on an average through the summer season.

We consider threshing much easier on our engine than plowing, considering the pull to be about even, because when threshing there is no racking of the whole engine, as when going over such uneven ground as ours and little or no wear on the driving gears by dust and otherwise.

What experience we have had discing is not very satisfactory. We used six common four horse disc harrows, three abreast, attached to a long pole, with short tongues, and three chained to behind in such a way as to lap. But were constantly troubled by axles of discs breaking, first one then another. Sometimes we would no sooner get an axle welded and put to work than it would break again. Otherwise the work done was good. We must find some stronger discs before discing with tractor will be satisfactory.

In our locality I should say there are four gas tractors to one steam tractor. We use two men with rig when plowing.

If this is of any use to you, all right, if not, chuck it into the waste basket. I am,

Yours truly,
Jesse Varley, Esq.,
Davidson, Sask.

Hart-Parr and a Full String of Implements Making a Seed Bed.

The Oil-Pull Baby Did It.

In answer to your request for information, we purchased last fall from the Rumely Co. a fifteen horse power oil-pull, also a 28-44 separator. This outfit gave us good satisfaction.

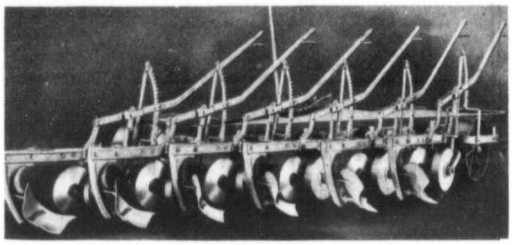
The engine furnished sufficient power to drive the separator to its full capacity. The separator is a very well balanced machine, there being very little shake while at work, and the separation of the grain from the straw and chaff very thorough.

We also did some plowing with our engine last fall. We have a 6 bottom Massey-Harris engine gang. Our engine will haul this plow and also a harrow on any of our upland without difficulty, and the plows do good work.

It requires about 40 gallons of oil and the same of water for a day's work. We paid 14½ cents per gallon for our oil, but we hope to get this oil cheaper this

Make Your Tractor Pay Better

The three Rumely products pictured on this page will make your tractor pay better. Good equipment is the prime essential of a successful tractor outfit. Good plows are particularly to be desired.



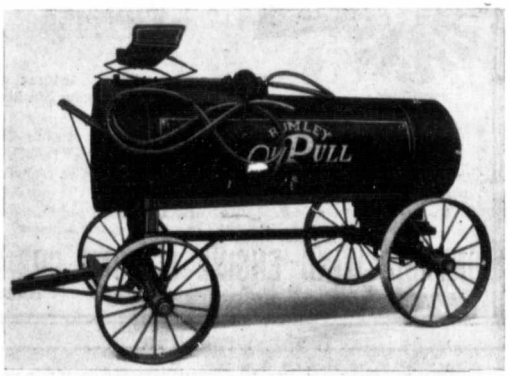
Rear View, 6 Bottom Rumely Engine Gang

THE DREADNOUGHT GUIDE

"The Guide that **Will.**" Now every tractor can be equipped with this great saver of time, temper, labor and money. Now every tractioneer can be relieved of the monotonous hand-steering grind and give his engine and plows the attention they need. The Dreadnought Guide will automatically guide the tractor more perfectly than any man can possibly do it. It ensures straight furrows of equal width and eliminates the possibility of cutting-and-covering. **You know what this means to the new crop.**

The Dreadnought Guide is of substantial construction—as solid and secure as the steel structure of a sky-scraper. Made of high carbon channel steel beams, securely braced. No threads to strip—no piping to break—no castings to give way under strain. The only guide equipped with positive guide-wheel protection.

Can be attached to any make of oil, gasoline or steam tractor. Equip your tractor with the Dreadnought Guide and add 25 to 50% to its efficiency.

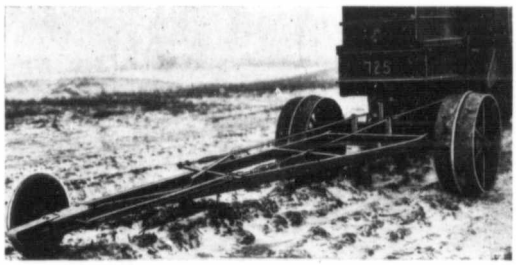


Rumely Truck Wagon Complete.

RUMELY ENGINE GANG PLOWS

are made in 4, 5, 6, 8, and 10-bottom sizes, with both stubble and breaker bottoms. They are built for strength and compactness—a roomy platform for the operator and two swiveled frame wheels so that the plow may be steered by a lever around any turn the tractor might make. All parts interchangeable. **Straight beams** of strong, durable, high-carbon steel that can be hammered back to correct shape by any blacksmith, if ever sprung.

Proved in the Winnipeg Motor Contests to be the lightest in dynamometer-registered draft. No landside, and a four-inch off-set to each beam give great, almost unchokable, throat room.



Dreadnought Guide attached to Oilpull Tractor, following frozen wagon truck.

RUMELY LIQUID-FUEL TANK WAGON

Often the source of your kerosene or gasoline supply is some distance from the place you are working. This necessitates the use of a tank wagon, in order that you may adequately and inexpensively handle your fuel supply. The Rumely Liquid-Fuel Tank Wagon consists of a tank of 510 gallon capacity, made of 12 gauge steel, welded seams, trucks of best steel construction, spring wagon seat, wooden platform to which to attach pump, so the oil can be economically handled. The Rumely Tank will pay for itself in a short time by its saving of oil as compared with other methods of handling. Furnished with or without wagon, as required. Can be set into any 38-inch bolster farm truck or wagon

Ask for free literature on the **Rumely** Products described above. We are at your service always.

Address—

Rumely Products Co. (Inc.)

1963 Dufferin Ave. Winnipeg, Man.

year. We think it takes a little more fuel for to plow than thresh. We propose doing most of our spring plowing with the engine and the seeding and discing with our horses.

We employ four men during the summer season and two for the winter. Our farm consists of two sections, one through which the Souris River passes. We keep from 80 to 100 head of cattle, most of which are thorough bred Herefords, and from 20 to 25 horses. The steam engine is most in evidence in this locality, as motive power for threshing; gasoline and oil-pulls for plowing.

Yours respectfully,
G. Dobbyn,
Melita, Man.

Stones Hard on Engine.

In reply to your letter of Jan. 15th, will give you a brief sketch of my experience with engine plowing. Mr. F. Ross, who is my partner, and I bought a 20 h.p. Oil-pull Rumely engine and a 36-60 separator, also Rumely make. We got a John Deere 12 bottom plow. It takes four men to run the outfit and one pair of horses.

We use kerosene as fuel and in extreme cold weather we use gasoline. It takes about 85 gallons a day plowing, that is in breaking season. When the days are good and long we get a great deal better power from kerosene than gasoline, and besides it is so much cheaper. Kerosene costs us 15 cents a gallon and gasoline 25 cents. How about the water proposition? It takes about 1½ barrels a day. Now you ask if plowing is harder than threshing. I would say yes, a great deal harder. For instance when we were almost through breaking, our main drive wheels gave way so we patched them up and pulled through, and now we have used same wheels all fall threshing, and they are still about as good yet. Of course, if there are no stones it is not nearly so hard plowing on an engine, but in our case we had quite a lot of rock to contend with. We plowed about 1,000 acres and plowed from 4½ to 6 inches deep, doing very good work at a cost of $1.75 per acre all told. Our fuel cost us about 70 cents per acre.

We used eight 14-inch plows in breaking, but in stubble or summer-fallow we could pull 10 easy, so that left 2 extra plows for spares. We would advise anyone not to buy over a 10 bottom with this sized engine, but in our case we got a good deal on this plow and took it, and like the plow very well.

We haven't done a great deal of discing and harrowing, but we have done some. We worked down one quarter section and hauled five discs, two large harrows and two floats.

Now as to whether the oil or steam is used the most in our locality, they are used about the same, and a few gasoline mixed in here and there.

Now as far as giving you any idea of hitches, we haven't had very much experience in that line, as we haven't done any of this kind of work with our engine, but will probably do some of it this season.

Now I might say that we employ our own blacksmith in our breaking, which was all included in the figures I gave you. He did all our work and took in quite a lot of outside work, which cut down expenses considerably.

Hoping this will be of some benefit to you, I remain,
Respectfully yours,
M. C. Campbell,
Horfield, Sask.

Stick to Steam Where Coal and Water are Plentiful.

I am sending you a few lines of my experience in traction plowing. I have a 20 h.p. International tractor and a five furrow Cockshutt engine gang, but my engine would not pull all five plows, so I only used four, but the engine needs lots of power for four plows in breaking. The engine takes about 25 to 30 gallons of gasoline per day at a cost of about 24 cents per gallon, and will break about 12 to 14 acres with this amount, and takes two men to handle the outfit, and one 12 barrel tank of water every four or five days for cooling. I have my horses on the farm, so can draw water and gasoline at any time without extra cost, but if the outfit is away from home it could be run to good advantage with one team and two men. Still, I find that a 45 h.p. engine with 8 plows could be run with the same outfit, only it would take more fuel, but the returns would be much greater in comparison.

I have also done quite a lot of discing with my engine. I draw three discs, harrows, and 24 feet of float behind, and it was easy work for it. My draw hitch is simply a 6 by 6, 16 feet long, with two bands of iron in it the shape of clevices which bolt to the iron draw-bar of the engine. I couple my discs to it at the two ends and middle, and draw my float or drag harrow with two chains over the two outside discs, and find it works good. You will find I am sending you a cut of how I couple my discs and float or drag, and I am also sending you a photo of my engine and thresher at work. It is not as good a photo

as I would liked to have sent, but it is the best I have at the present time. I am sending you two views.

As to the difference of cost between traction plowing and plowing with horses, I find the traction plowing the cheapest. Next spring I am going to plow by steam, as my steam engine is heavier and more powerful than the gasoline, and will do more work, and I think the cost will average, about the same, as water is handy and coal reasonable in price. Still, if it is a section where the water is scarce, stick to the gasoline, but where water and coal are plentiful I think the steam is the most reliable for both plowing and threshing.

Now I will give you a few words on my experience threshing. My outfit consists of a 20 h.p. International gasoline tractor, a 28 by 42 John Goodison separator. This outfit has given good satisfaction, and I think they are a good machine for a small farmer, but for a man who has a section of land or more he should buy a machine not less than 36 by 58 at the least, in my opinion, although I cannot kick at my little outfit. I can thresh from 1,000 to 1,300 bushels of wheat a day with it at a cost of about $7.00 per day for gasoline.

My steam outfit consists of a 20 h.p. J. I. Case engine and a 32-54 J. I. Case separator, and does good work threshing, and plenty of it, too. I have not used the steam engine for plowing yet, but the same size and make of engine in this part are pulling 6 and 7 plows, and doing it easy. I think that traction plowing is the only thing for Western Canada to-day to break the prairie sod.

But on selecting an outfit for this purpose I think every man should choose his own. There are a good many makes of both gasoline and steam tractors and likewise separators and plows. I have a Cockshutt plow and could not wish for anything better. Well I don't think I have anything more to say, so will close.

Wishing the Canadian Thresherman and Farmer every success, I remain,

Yours truly,
Arthur V. A. Carrington,
Keeler, Sask.

Increased Trade Compels Firm to Move to New Quarters.

Continued from page 13

Lyday and his staff. These consist of a general office where the stenographic and accounting work is done, an office for the repair department and display of small goods and the manager's office. Adjoining these offices is the repairs room where all repair parts are neatly and conveniently arranged in suitable boxes in such a manner as to greatly facilitate the handling of the repair end of the business. By an ingenious arrangement of these repair boxes, repairs are built almost to the roof, yet no step ladder is required to get at them. The whole of one floor of the building is devoted to storage and to the heavier repair parts, such as feeder crank shafts, feeder rakes, feeder attachments, etc. On this floor are stored self feeders, Pastime washing machines, Madison Kipp oil pumps, spark arresters, headlights, etc., etc. These are all neatly arranged, the whole making a pleasing show.

The location of the Maytag Co. is much better than formerly. All you need to do is to take a Logan Avenue West street car at the C.P.R. depot, and ask the conductor to let you off at the offices of the Maytag Co. He'll know what you mean. He sees the sign on the window several times a day.

Course in Gas Engineering

Conducted By D. O. BARRETT.

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

LESSON XIX.

The subject of fuels for the internal combustion engine is a very live and important one at the present time, due to the scarcity and ever increasing price of gasoline, inasmuch as this fuel up to the present time has been the mainstay of this type of engine for farm use. Gasoline, as a rule, is not used as a fuel for engines over 60 h. p.

The most common fuels are:

Natural gas.
Illuminating gas.
Producer gas.
Gasoline.
Naptha.
Kerosene.
Distillate.
Crude oil.
Alcohol.

The use of natural gas is, of course, limited to those regions where it occurs, or near enough so that the gas may be piped. However, the supply of natural gas as gradually failing, and most all towns are now equipped with plants for manufacturing gas from coal. Illuminating gas as ordinarily manufactured, contains about 600 British Therminal Units per cubic foot. Engines of medium size, and especially engines which are not continuously operated, may use this gas very economically. They require a higher compression than the regular gasoline engine, and this is usually obtained by fitting a special piston somewhat longer than that usually supplied. When the engine is purchased the exact nature of the fuel to be used should be stated so that the engine may be fitted at the factory to operate on that particular fuel at its highest efficiency. The usual compression for this gas runs from 90 to 110 pounds per square inch. Many engines are fitted to operate upon either gas or gasoline, but in this case, are, of course, supplied with the proper compression for gasoline, which causes them to run uneconomically with gas.

Producer gas is rapidly coming into favor because of the low cost at which it may be produced. This gas is formed from coal, wood, sawdust, peat, and various kinds of refuse; in fact, from any substance rich in carbon. The producer itself somewhat resembles an inverted steam boiler in appearance. It is lined with fire-brick and supplied with a grate at the bottom, the coal being dumped in at the top through an arrangement which contains an air-tight joint at all times. Heated air is taken in at the bottom, and combines with the carbon of the coal, forming carbon dioxide (CO_2); this passes up through the red hot coal, and in the top layers is broken up into carbon monoxide (CO) and carbon (C), which now unites with more oxygen of the air and forms more carbon monoxide. The gas is taken off the producer at the top and passes up through a tall vertical tank called the scrubber. The scrubber is filled with coke or other loose material with a spray of water at the top. This cools the gas as it passes upward and also removes all dust and other impurities which are carried over from the producer.

Producers are of two types depending upon the method of getting the air up through the producer proper. In one type the air is forced up through the producer by means of a blower, but the most common method is to have the engine itself on the suction stroke draw the air through the fuel bed. By this means the pressure in the producer and the pipe lines is less than that of the atmosphere so that, should any leaks occur, it would be the air from the outside into the producer rather than the gas from the producer to the outside. This eliminates almost entirely any danger from an explosion of the gas.

The producer is one of the cheapest methods of producing power, and its use is being rapidly extended. One of the chief difficulties has been that up to the present time there has hardly been a producer that would successfully burn the bituminous coals. These coals contain an enormous amount of tar which is carried over with the gas, and in a short time completely fouls the valves, piston, and rings. Producers, however, are being constructed with tar extractors, which will readily handle these low grades of coal, as well as factory waste of many kinds, such as leather clippings, tanbark, etc. In fact, in some cases the entire power for factories is produced from material which would otherwise be an entire waste.

Producers are not suitable for intermittent power, such as farm work, as it would be necessary to maintain a fire continually in the producer, which would mean a large standby loss, or else the producer would have to be started each time, which would entail a considerable loss.

Almost all internal combustion engines for the smaller powers, and especially for farm use, both stationary and traction, employ as fuel some product of crude oil, such as gasoline, naptha, or kerosene. Crude

oil was first produced in 1859 in Pennsylvania, and was found at a depth of about 400 feet. The total production for that year amounted to about 2,000 barrels; for the year 1908 the total production of the United States was over 175,000,000 barrels. The states of Pennsylvania, Ohio, Illinois, California, West Virginia, Oklahoma and Texas produced the largest amount. When an oil vein is encountered the oil is usually under great pressure, so that the well is self flowing. Afterwards, however, the pressure may decrease so that it becomes necessary to pump the oil to the surface.

There are several theories regarding the formation of the oil, some contending that it is of vegetable origin, while others say of animal formation. There is a vast difference in the various crude oils, as produced from different localities; these differences being both physical and chemical. The colors vary all the way from a light amber to a deep black. The weights of the different oils vary from 12 to 50 degrees Beaume.

The ordinary method of expressing the weights of various substances is by means of specific gravity. The specific gravity of any liquid is found by comparing the weights of a given volume of the liquid with the same volume of water, the water being at 39 degrees F., while the weight of the liquid is usually taken at 60 degrees. The weight of the volume of the liquid is now divided by the weight of the same volume of water, and the quotient obtained is called the specific gravity. For liquids lighter than water this value would be less than unity, while for liquids heavier than water it would be greater. Since oils are lighter than water this specific gravity will always be expressed as a decimal, and the ordinary means of expressing density for these oils is by means of another scale known as degrees Beaume, in which whole numbers are used. The method of transforming specific gravity to degrees Beaume, or vice versa, is by means of the following formula:

The usual method of determining the specific gravity of oils is by means of a hydrometer, which is a hollow glass tube weighted at the bottom

$$\text{Spec. Grav.} = \frac{140}{\text{Deg. B.} + 150}$$

$$\text{Deg. Beaume.} = \frac{140}{\text{Spec. Grav.}} - 130$$

The following table shows the specific gravity corresponding to various numbers on the Beaume scale.

Deg. B.	Spec. Grav.	Deg. B.	Spec. Grav.
56	.755	71	.699
57	.751	72	.695
58	.747	73	.692
59	.743	74	.689
60	.739	75	.685
61	.735	76	.682
62	.731	77	.679
63	.727	78	.676
64	.724	79	.672
65	.720	80	.669
66	.717	81	.666
67	.713	82	.662
68	.709	83	.658
69	.706	84	.655
70	.702	85	.651

and carrying a scale on the inside graduated in degrees Beaume. The hydrometer is simply placed in the oil and it will settle vertically to a certain depth, the gravity being shown on the scale at the top of the liquid.

There are only one or two engines on the market which are so constructed as to enable them to burn the crude oil as it comes from the ground. Before being used the crude oil goes through a process of refinement or fractional distillation as it is called by means of which the various products, gasoline, benzine, naptha and kerosene are obtained. The oil is first heated at a relatively low temperature, this driving off the more volatile oils. The temperature of the heated oil is carefully maintained between certain limits and the gases coming off are condensed. When all the gases have been driven off between these limits the distillation temperature is raised, the products of distillation being again condensed and forming another oil. This process is continued until at the last lubricating oils, paraffin wax, etc., are obtained.

There are two varieties of oil, one having a paraffin base, and the other an asphalt base, the paraffin oils yielding a high percentage of gasoline, while the asphalt oils have a heavy black residue, which is chemically the same as the natural asphalt, and is used for the same purposes. The table gives the relative production of two different crude oils, these, of course, being only average. The various temperatures of distillation for the different products as well as the average specific gravities is given in the following table:

qualifications. The heavy demand for gasoline caused by the great numbers of automobiles and stationary engines has gradually caused the quality to deteriorate. This is not entirely due to the fact that there is a scarcity of gasoline, but the lower grades of oil, such as the napthas and kerosene, are gradually piling up on the hands of the refiners, and these must be worked off in some manner. Consequently the high and low grades are mixed, so that the average gravity varies somewhat around 58 or 60.

Due to the low volatility of these oils and also to the fact that kerosene may be purchased very cheaply due to the increasing quantities in which it is being produced, designers are now producing internal combustion engines which will handle these fuels. Of course, there are difficulties in starting the engines and this is usually accomplished by using a higher gravity oil, and after the engine is heated up switching on to the less volatile oils.

Kerosene and gasoline contain about the same number of b.t.u. per pound, namely, an average of 18,500. Taking the specific weights as used at the Winnipeg contest, 7 pounds to the gallon for gasoline and 7.9 pounds for kerosene, we have as the heat units per Imperial gallon 129,500 for gasoline and 143,150 for kerosene. Since these fuels are always sold by the gallon, comparisons must be made in that way; kerosene thus contains about 13 per cent. more heat for the same volume than gasoline. The price of kerosene is also a great deal less than that of gasoline, so that if all the heat units in each fuel could be transformed into work there would be an enormous saving in favor of the kerosene. However, with the present engines using kerosene a great deal of the heat is lost, as designers have not yet reached the point where they can produce a kerosene mixer which will show the same degree of economy as do

Pennsylvania Crude			Western Crude		
Products		Percent	Products		Percent
Gasoline, Benzine, Naphtha	Com. Gasoline	16–18	Gasoline, Benzine, Naphtha	Com. Gasoline	2.5–5
Kerosene		45–52	Kerosene and distillate		35–40
Lubricants		15–18	Lubricants		30–35
Residium, wax, etc.		16–18	Residium, wax, etc.		22–26

Products	Distillation Temperature	Specific Gravity
Rhigoline	113	0.59–.60
Chimogene	122–138	0.25
Gasoline	149–158	0.636–0.657
Benzine	160–216	0.66–0.70
Naptha B	200–240	0.71–0.74
Naptha A	250–300	0.725–0.737
Kerosene	300–500	0.76–0.80
Lubricating Oils	500–Up	0.85–0.915
Commercial Gasoline	125–200	0.62–0.74

Residium, consisting of paraffin wax, asphaltum, etc., boiling point above 500; specific gravity above 0.90 after distillation

Strictly speaking, gasoline is supposed to come off between the temperatures of 140 and 158 degrees F., corresponding to a gravity of 82 to 90 degrees Beaume. However, at the present time there is no commercial gasoline corresponding to these

those for gasoline. The results of the Winnipeg contest show that, even with these drawbacks, the kerosene fuel is actually the cheaper if it is possible to use it in the engine without fouling. In fact, the time may come when engines of the Diesel or other similar types may be produced which will be capable of handling the crude oils directly.

About five years ago there was considerable agitation in the United States regarding the use of denatured alcohol as a fuel for the internal combustion engine and laws were passed governing its manufacture for this use. Up to the present time, however, little has been done although on the Continent it is being used continuously. Tests made by the U.S. Government showed that when alcohol was used in the regular gasoline engine, which was entirely possible, the fuel consumption was increased about 30 per cent. By increasing the compression to 180 pounds per square inch the economy was greatly benefited over that of gasoline and the power delivered was also greater. This, of course, necessitates a heavier construction as the ordinary engine would be unsafe at this compression, so that the alcohol engine has made little progress. There is little doubt, however, but what the alcohol engine will come into its own in a few years, as the difficulties of obtaining gasoline become greater.

How Would You Like to Keep a Snake Instead of a Cat or Dog?

In some respects snakes are better as mousers than dogs or cats, according to the current issue of Farm and Fireside. An extract from the article on the subject follows:

"It has been suggested by a French professor that every household should have its snake instead of its cat or dog, for the purpose of keeping rats or mice away.

"It is not new; for in the days of the Romans many snakes were kept by the housekeepers for precisely this purpose. Since those early times, however, the household reptile has been supplanted by the cat or dog, and the modern housewife, as a rule, has nothing but revulsion of feeling for every species of snake, harmful and harmless. The hostile attitude toward snakes, however, is largely due to ignorance. Thus it is commonly supposed that snakes are 'slimy.' As a matter of fact, they are not. Their skin is cold to the touch, but absolutely dry. It feels as if it were made of china or porcelain.

"Then, again, the sharp worm-like tongue of the snake, which darts in and out at lightning speed, is harmless, although it is commonly believed to be the medium by means of which the snake ejects its venom.

"Snakes which have venom communicate it by means of special teeth called fangs. Harmless snakes do not have these fangs.

"The principal disadvantages about a cat or dog is that these animals are apt to carry the same disease-spreading vermin as the rats and mice they are supposed to destroy.

"Both the dog and the cat frequently kill rats and mice without eating them, leaving them to decompose in invisible places. The snake never does. Every rat killed by a snake is at once swallowed. The snake, too, is much cleaner, than either of the other household pets."

There is no power which can harm us if we do oud duty, and do not harm ourselves. There is an everlasting superiority in virtue to all evil. No one but himself can harm any man. He is his own worst enemy or friend; hence the watchfulness needed with regard to self.

Questions and Answers

For Gas Engine Operators

This is a department for gas engine operators similar to that which we have so successfully carried on for the past few years for those interested in steam. We invite your questions and will give them our best attention. Just tell us your troubles or ask us about any point upon which you desire information. We have secured the services of a competent expert who can handle gas engine queries intelligently and to the complete satisfaction of all concerned.

Q. E. S. 1. I have a gasoline engine, and as I was overhauling the engine to-day I found that the connecting rod pin in the piston has gotten loose, and rubbed a small groove abut 1-32nd of an inch deep on one side of the cylinder. The engine runs, but the compression isn't as good as it was before this happened. Can it be repaired in any way, or will the cylinder have to be rebored?

2. I also have some trouble with the carburetor. I have to keep a piece of cloth tied over the intake valve.

The engine is a 4-horse power which I use for sawing wood and pumping water. Please advise me what to do.

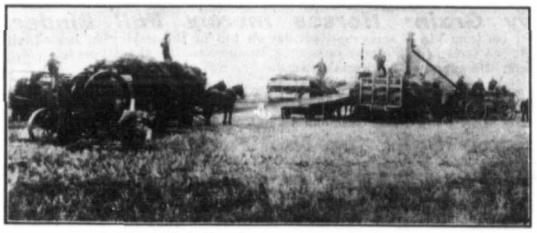
A. 1. The only way to repair your cylinder is to have it rebored. A patch would not be any good for a difficulty of this kind.

2. The trouble with your carburetor is that it is not adjusted right. It gets too much air for the amount of gasoline supplied, and you are cutting down the air supply by means of a piece of cloth. Not knowing the construction of your carburetor I cannot tell you how just where to make the adjustment, but this hint ought to be enough. Adjust it so that it gets more air, or else cut down the gas supply. In order to have sufficient power you will have to adjust the air properly.

Q. D. C. E. I have a 7 horse power gasoline engine. On one side of the piston a bright spot shows about as large as a man's hand, which does not seem to take lubrication. It seems to be rubbing as if some scale or gum on the cylinder wall were scraping the oil off and leaving it bare or unsoiled. I examined the cylinder, and scraped where I thought grease or scales might interfere, although nothing seems to be interfering. I can't see why it should not take oil on one side as well as on another. Can you tell me the cause?

A. While we cannot say definitely what the cause is we are going to venture the opinion that your lubricator delivers the oil all on the one side of the piston. This may be caused by a burr having formed on one side of the lubricator delivery pipe or by the tapped hole into which the lubricator is screwed being broken out on one side, and allowing the oil to go to one side only. It is possible also that the trouble is due to the piston rings not being turned up right, that is, they may be too thick on the thin side, or they may not have been pressed together and turned again after being out.

Q. A. C. No. 1. Will a gasoline engine, that ran at 215 revolutions per minute, and the belt pulley is 40 in. diameter, give more power by putting on 34 in. diameter belt pulley and running the engine 255 revolutions per minute, running the separator at same speed; the engine piston is 9 in. diameter, 14½ in. stroke. Do you think engine has enough power to run a 28 in. cylinder by 44 rear separator?



A "Manitoba" Gas Engine Making No. 1 Hard.

No. 2. Does the Rumely Ideal of 28 cyl. by 44 rear take much more power to run than their Ideal Junior of the same size?

A. Increasing the speed of the engine as suggested would increase the power delivered about one-sixth. The 34 in. pulley would give the same belt speed at 255 r.p.m. as the 40 in. at 215 r.p.m. This engine should deliver about 22 brake horse power at 255 r.p.m., and should be amply large for the separator mentioned.

We should advise you to write the manufacturer as to the relative power necessary for driving these machines.

Q. C. A. H. Please explain through your columns Beaume test, and how a farmer can employ it. Also, is there any method of determining the

amount of carbon in lubricating oil, and testing the viscosity?

A. You might turn to the gas engine course in this issue for a partial answer to your question. A Beaume hydrometer may be obtained at a nominal cost, and is used by simply placing in the liquid and noting the reading on the scale at the level of the liquid when the instrument has come to rest. You might also make the determination as follows:—

Suppose one imp. gallon gasoline to weigh .....7 lb.
Suppose one imp. gallon water weighs .....10 lb.
Specific gravity of gasoline—
7-10=0.70
From table degrees Beaume..71

We would refer you to some work on testing oils.

Q. R. G. R. Having ordered an engine of the heavy duty marine type, double cylinder vertical, I wish to equip the engine with a magneto, and not wishing to have to go to the high tension price of the high tension magneto, I have written for information about a machine that would operate the vibrator coils in place of batteries, how is it that certain magnetos are made for make and break only, and why is it that the current from them will not operate a vibrator coil, provided the magneto is driven by chain or gear, and at its maximum when one of the cylinders is at its firing stroke? Will not the vibrator, on the coil becoming magnetised, break the circuit and so produce the spark? Is not a dynamo liable to burn out an ignition coil?

The ordinary generator when coupled direct to the engine will develop current proportional to the speed, and there would be danger of burning out the coils. Write the K. W. Ignition Co., Cleveland, Ohio, and the Mortsinger Device Mfg., Co., Lafayette, Ind. The Witherbee Igniter Co., Springfield, Mass., are manufacturing a magneto which has the make-and-break mechanism directly in the body of the magneto, and produces a high tension current regardless of the speed at which the engine is operating. No coil or batteries are used, the engine standing directly off the magneto. It is suitable for speed up to 500 r.p.m.

Does the Raise in Price of Internal Combustion Fuels Mean Anything?

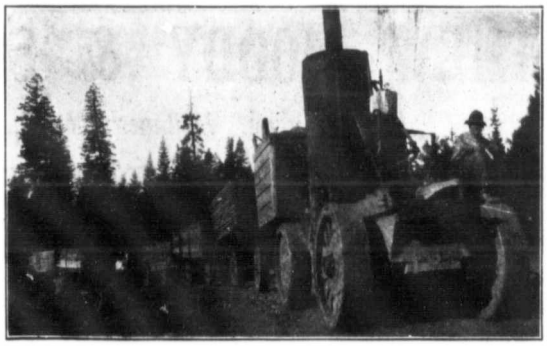
SEVEN years ago if it had been announced that the price of gasoline and low grade kerosene were to be advanced 2 or 3 cents per gallon, it would have occasioned very little comment among the agricultural public. It is true that several hundreds of small stationary internal combustion engines were to be found upon the farms of Western Canada, but these were of a horse power ranging from about 1½ h.p. to 10 or possibly 15 h.p., and were used largely for chopping feed or pumping water. The total amount of fuel consumed in a year by each engine was so small that the increase in price would not amount to a great deal.

Take, for example, a 2 h.p. stationary engine running on an average of two hours per day for 200 days in the year. 2 by 2 by 200 equals 800 horse power, and if it consumed a pint per horse power hour it would mean a total consumption of 800 pints or 100 gallons. If the price were advanced 2 cents per gallon it would mean an increased cost of $2.00 or 1 cent per day for each day's run.

To-day, however, things are very much different, due to the wide use of the internal combustion tractor for farm purposes. In 1905 there were less than a dozen of these tractors in Western Canada. To-day it is safe to say that there are approximately 5,000 of them. Let us assume that each tractor works 60 full 10 hour days in a year and that the average break horse power developed is 40 h.p. 60 by 10 by 40 equals 24,000 horse power hours for each tractor. Assuming as before a fuel consumption of a pint per horse power hour, and we have 24,000 pints per tractor or 3,000 gallons. An increase in price of 2 cents per gallon means $60.00 per tractor or over a quarter of a million dollars on the total number of tractors in use.

It can thus be seen that the internal combustion fuel question is one of the most vital importance to a large number of our Western Canadian farmers. It is an established fact that the prices on fuel oils have increased in 1912 over what they were in 1911 by about 2 cents per gallon, hence the basis for the above figures.

The question naturally arises among tractor owners, who are necessarily heavy consumers of fuel oils, as to just why there should be such an increase. Is it due to an inclination on the part of the distributors of oil products to make greater profits, or is there some good natural or economic reason responsible for at least a portion of the increase in price? Let us look at a few figures: On April 30, 1911, there was in storage in the United States 82,287,000 barrels of high grade crude oil, meaning by this oil first as it came from the wells and before it had passed through the refinery. On April 30, 1912, there was in storage 68,753,000 barrels, or a shortage over 1911 of 13,534,000, or 16½ per cent. It is also noted in this connection that the draft on the stocks in storage for the first four months of this year were above the average and those who are in a position to know state that there will be a decrease in the output of crude oil in 1912 as against 1911 of about 20 per cent.



A Four Wheel Drive Tractor in the Lumber District

It is true that in any market with practically any commodity the law of supply and demand greatly influences price. When the world's wheat crop is large the price of wheat drops, but when there is a shortage, the price rises. It is further true that price is also partially influenced by factors other than demand and supply, but these factors control only temporarily, and if demand and supply are working in harmony prices will generally seek a proper level. A few men on a grain exchange floor may lower or boost the price of wheat for a short time, but if the visible supply is unusually short all the manipulation possible can't keep the price down.

The trouble in the oil business at the present time is not with the supply, but with the demand. The supply has been steadily on the increase for several years, but so many new uses have been found for petroleum and its by-products that it is practically impossible to exploit sufficient new oil fields to keep up with it. Take, for example, the automobile. Its development has been wonderful, the output being 20 per cent greater than last year. The internal combustion tractor business is another factor in oil consumption that is growing by leaps and bounds, and the fact that a number of the railways are burning oil in their engines instead of coal makes a big inroad on the supply of oil.

In order to show that oil production has not decreased we give below a brief history of its production in the United States, this being at present the largest field of supply in the world.

The first well drilled for oil in the United States was completed August 28th, 1859. The total production that year was 2,000 barrels. With the completion of the first well, every home the wrold over, from the palace to the most humble cabin, became the recipient of a great gift, the value of which no one has ever attempted to estimate.

The production of petroleum in this country since the completion of the Drake well has steadily year by year increased like a snowball rolling downhill, until in 1910 the stupenduous total of 216,588,308 barrels of 42 gallons each was produced, and in 1911 from available figures the output was approximately 218,000,000 barrels. Since the birth of the industry to the close of the year 1911—53 years—the amazing total of 2,601,855,400 barrels has been produced, more than sufficient to twice fill the Panama Canal when completed.

Figures are bewildering when appertaining to the production of petroleum in America, as an industry has grown to such proportions as to baffle the average intellect to fully grasp the real significance of what hundreds of millions of barrels increase within a few years means.

According to the official records of the United States Geological survey, there was produced during the first nine years of petroleum production in the United States 1859—1867, 19,842,417 barrels.

During the next five years, 1868—1872, there was produced a total of 24,620,290 barrels. This was 4,777,873 barrels in excess of the total quantity produced during the first period.

During the next five year record, 1873—1877, the total production amounted to 52,091277 barrels, or 7,628,570 more than was produced during the fourteen preceding years.

The phenomenal increase in the United States has no parallel in the history of any other commodity.

From 1878 to 1882, both years included, five year period, the production totalled 119,608,272 barrels—23,054,288 barrels greater than the total production for the first nineteen years of the industry.

The total production during the next eight years, 1183—1890, was 234,474,290 barrels, which was 18,312,034 barrels more than the whole output for the 24 preceding years. This would indicate that the search for and the development of the oil territory is a safer enterprise than that of hunting for any other mineral.

During the next nine years, or from 1891 to 1899, the production of oil in the United States reached 489,346,120 barrels, being 38,709,584 barrels in excess of the total amount provided during the first 32 years of the petroleum industry in this country.

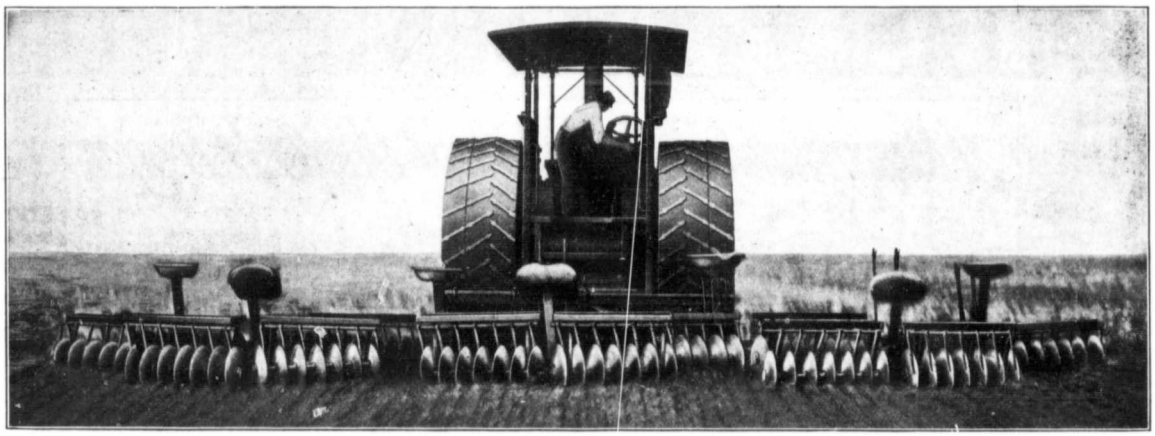
There is magic more potent and powerful in oil than the call of the world, or the lure of gold.

From 1900 to 1908 the production of crude oil in this country aggregated the amazing total of 1,045,153,142 barrels, which was 105,170,466 barrels more than the total amount produced in all of the preceding 41 years.

During the last five years of petroleum production in the United States there was brought from the depths of the earth the stupenduous amount of 869,639,208 barrels—within 13,072,618 barrels of the total amount produced during the first forty years.

Petroleum has been the liberty light to the nations of the world. It has been the greatest wealth-producing mineral ever discovered. It has brought into the homes of the rich and poor

Continued on page 42b



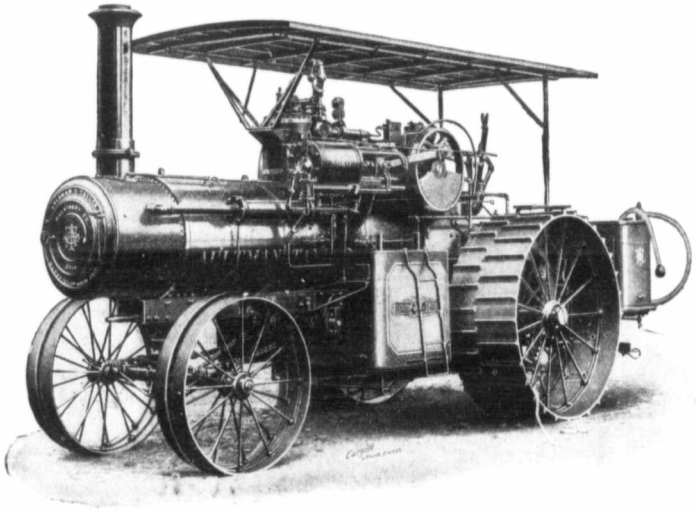
30 Tractive H. P. 60 Brake H. P.

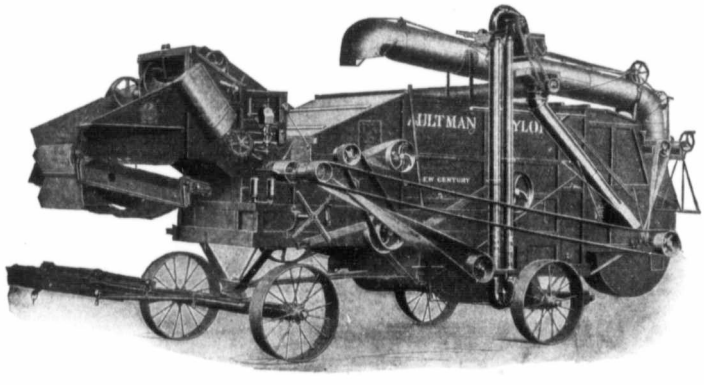
A COMPLETE SOLUTION OF THE FARM POWER PROBLEM

That the **Aultman-Taylor** "30" has completely mastered every requirement of power farming is evidenced by the fact that the increasing, natural, unforced demand for these tractors keeps our mammouth factory running overtime to supply this demand. Years of close application to the needs of the thresherman and farmer enabled us to meet these requirements in an intelligent manner. We knew the varying conditions and severe strains to which these tractors would be subjected in actual use; we knew just how to meet these conditions at every point. With this information at hand, we designed and built the **Aultman-Taylor** "30" and incorporated in its construction a motor with abundant power placed horizontally on a specially designed frame of the locomotive truss type, thereby eliminating all bevel gears and vibration strains so detrimental to all vertical types of engines; very high drivers, (90 inches) giving tremendous purchase in pulling; single lever control, forward, reverse and belt drive operated by one lever; three distinct methods of starting provided; simple and efficient cooling system.

These are just a few of the many undisputable advantages embodied in this famous tractor.

If interested, drop us a postal, we'll do the rest.





Our 1912 Catalog Tells All About Our Famous Independently Mounted Traction Engines

THE INTERNATIONAL HARVESTER COMPANY OF AMERICA

CANADIAN SALES AGENTS FOR

"NEW CENTURY" SEPARATORS

The Aultman & Taylor Machinery Company

MANSFIELD, OHIO.

Sales Agencies: Minneapolis, Minn., Calgary, Alta., Regina, Sask., CANADA

PLEASED FARMERS GIVE GOLD MEDAL TO CASE THRESHERMAN

A Remarkable Tribute Is Paid Homer D. Troyer

The supremacy of Case Threshing Machinery has been attested and proven in many ways but never more forcibly than by the Gold Medal conferred upon Homer D. Troyer, a Case Thresherman of Colby, Kansas, by the farmers of South Rawlins County as a mark of their appreciation of the good threshing he did for them with his Case Thresher.

Mr Troyer is a typical example of the universally prosperous Case Thresherman—a man who knows by long and practical experience what a Threshing Machine ought to be and do to prove a profitable investment. He is a man not easily influenced by glittering promises. He bought Case Machinery only after a careful study and thorough investigation and comparison with other makes, because he found it ***"exceptionally well built and strong*** and would therefore ***wear long"***—because the Case is ***"so simply constructed, with all bolts and working parts easily accessible"***—because the Case has ***"a cylinder that is a cylinder, with two-fifths more threshing ability than any other make"***—because the Case ***"has the only scientific sieve shake***—a quick short shake"—because the Case threshes ***fast and clean, saves the grain,*** is ***economically operated*** and at a ***minimum expense*** for ***repairs and up-keep.***

Mr. Troyer has succeeded as a Thresherman because he started with the right equipment. Every Thresherman knows that the secret of Threshing Successes lies in pleasing your customers. It is the pleased customer that waits for you—that boosts you among his friends—that insures your Continued Prosperity.

Case Threshermen are the most Prosperous Threshermen in the world because Case Threshing Outfits please customers by doing the work best. Homer D. Troyer's Gold Medal proves it.

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

Simply Marvelous! Marvelously Simple!

Nothing like the Case Oil Tractor has ever before been offered. It is distinctly different from any other Oil Tractor—and decidedly better. It embodies many new and reliable improvements not found in any other Tractor. Everyone familiar with Internal Combustion Machinery knows the importance of Carburetor, the Ignition System, Transmission, Steering Device and Cooling System. That's where the power is created and transmitted. That's where so many Combustion Engines are lacking. That's where the Case Oil Tractor is superior and far in advance of any other Oil Tractor on the market.

The Case Carburetor is an especially meritorious improvement. It is of our own design and type built for the Case Oil Tractor—not an independent arrangement made for an automobile or some other purpose, radically different from the tractor service and stuck on. It is simplicity and economy itself. Is of the highest efficiency for the lower gravity of fuels, such as Kerosene, Naptha, Distillate, etc. Water is used with the charge, the amount being automatically adjusted to correspond with the load.

The Case Oil Tractor uses batteries only for starting, the ignition being furnished by a High Grade Magneto located within easy reach of the operator and always under his control when the engine is in operation.

Owing to its improved system of Carburetion and Ignition, the Case Oil Tractor develops the maximum of power on a minimum fuel consumption because every charge entering the cylinders is of just the right consistency and a powerful spark that explodes the mixture thoroughly, always occurs at the right instant.

The Case Oil Tractor is rated at 60 H.P. Maximum H.P. 75. Actual tests have developed 80 to 90 H.P.

A special feature greatly appreciated when the Tractor is used for plowing, is the Steering Device which is of the automobile type, doing away with chains and making the Tractor as easily controlled as an automobile.

The Case Oil Tractor Is Not An Experiment

The Case Oil Tractor as a whole, as well as every part and every feature entering into its construction, has been Time Tried and Time Proven at the expense of the Case Company and is backed and guaranteed by the 70-year reputation of the Case Company as builders of Reliable Machinery.

Write Today for Complete Specifications

of the Case 60 H. P. Oil Tractor and the Case 40 H. P. Gasoline Tractor. Or better still, call at our nearest Branch House and let us prove our statements by actual demonstration.

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

CANADIAN BRANCHES, TORONTO, WINNIPEG, REGINA & CALGARY

Selection and Care of Gas Traction Engines and Equipment

By F. H. Crossman, Fairmount, Sask.

ABOUT this time of the year a great many farmers "lightly turn to thoughts" of gas traction engines, and for the farmer who contemplates buying and the farmer who already owns one, a little advice on the subject will, I dare say, not come amiss. I have had a good deal of experience with this kind of power, being a gas engine expert for a large firm and work out of Saskatoon. In my line of work I come in contact with a great many farmers and a great many gas traction outfits of all kinds, some of which are making money for their owners and some who are not succeeding as they should. In the latter case a great deal of the fault lies with the owners themselves who do not think it necessary to invest in a proper outfit of tools, etc., to do the work to advantage. This is one of the biggest mistakes that traction engine owners are making, and in most cases it is due principally to those that some gas traction owners have not been successful, and, as a rule, the engine gets all the blame. Now for selecting a gas tractor. If you want to do your own work only and have not got over two sections of land, you will find that the 15—30 h.p. single cylinder throttlery governor, burning either gas or kerosene, will be about the best size for you.

This type of engine is generally water cooled. If, however, you intend doing your own work and making a business of breaking for others, you should have a 30—60 h.p. kerosene or gas engine oil cooled. In the 15—30 type of engine the throttling governor, while using a little more fuel than an engine of the hitt and miss type of governor, gives a much more steady power; in fact, about as steady as a steam engine.

An engine of this style will pull four plows four inches deep, breaking on the heaviest land and will drive any 28 inch separator built, including self feeder and wind stacker. In choosing an engine care should be taken in getting an engine that is simple and very accessible to all parts. Also that all gears are semi-steel or cast steel. While cast iron gears are good, the trouble is that they are seldom made heavy enough to stand the work.

The drive wheels should be cased up on the inside and over the top to prevent dust and dirt blowing all over engine and into operator's eyes. Why all gas traction outfits do not do this is a mystery to me, as these hoods are an absolute necessity on all engines used for cultivating land. However, you can put these on yourself at a cost of $10 or $15. You will find that 20-gauge galvanized iron is about the best for this purpose. Another thing that is as necessary part of the equipment as the plows is an automatic self-steering gear. This very necessary device can be bought for $100, and one man can run engine and plows with ease, thus doing away with plowmen, besides doing a far better job than could be done by hand steering. It works equally well on disc plowing, discing and seeding, and once used you would never be without it. Also be sure that your engine is equipped with a good magneto for supplying spark while running.

For starting, four or five No. 8 dry cells are the best. A gear or bell-driven magneto is to be preferred. If your engine is water cooled, the best and simplest water circulating pump is of the centrifugal type, belt-driven. With a pump of this kind, should anything get into water and find its way to pump and stops it, the belt will slip on pulley, and by grasping pump shaft with the hand, and turning backwards and letting go ahead, a few turns, the obstruction in pump will generally go up there. In a gear-driven pump any obstruction of this kind, generally means a broken gear or pump. For packing gland on pump shaft ¼ inch round Palmetto packing is the best I have ever used.

Ignition wires should be incased in lead tubing, this prevents the wires becoming soaked in oil and short circuiting. Regarding make and break or jump spark, the former is to be preferred on single cylinder engines, as it is very simple and reliable. For large engines of more than one cylinder the jump spark ignition is to be preferred, but it is a little more complicated. Also be sure to invest in a few pounds of cotton waste and use it. Keep all wire terminals clean, bright and tight. The engine should be such that it can be primed with gas by hand for starting. This is especially valuable in cold weather; by this method use an ordinary oil can filled with gas. Set this can in a can of hot water and get the gas quite hot. There is no danger heating gas in this way, but care should be taken to keep it away from any flame, such as a lighted match or stove. Now put piston on working stroke and prime cylinder with this hot gas, using two or three times as much in cold weather as you would in warm weather. Pump up your gas into mixer and wait 5 or 10 minutes before starting. This gives gas a chance to vaporise. Now start in the usual way. The trouble is that in using cold gas in cold weather, the gas vaporises very slowly. Unless it vaporises, you will not be able to start. With this system you can start a great deal easier in cold weather than you would otherwise. Another thing is that when you have bought your engine, insist on an expert unloading engine and delivering same at your farm and staying at least three to six days. You should be with expert when bringing engine home and do the steering, and by the time you get to your farm you will be fairly proficient at the wheel. After you get into the field, insist on doing all the work, including starting and stopping and steering; if hand steering, under the direction of the expert. In this way you will learn quicker and when expert leaves you will have confidence in yourself and should not have much trouble. If your engine stops in the field, take your time and study the thing out. Ninety-five per cent. of engine trouble is with gas or ignition. Your gas tank might

FLAX! FLAX!! FLAX!!!

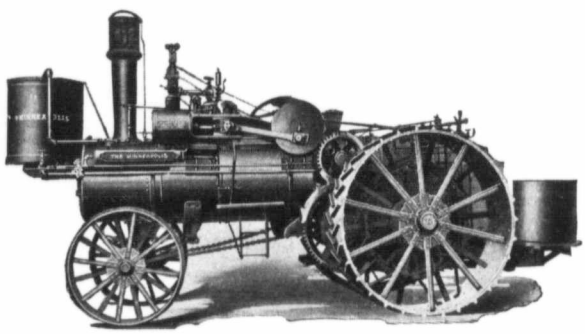
Mr. Thresherman

Do you know that Western Canada will produce more flax this year than ever before—Still more next year and each year thereafter. If you wish to make money you must own a machine that handles flax successfully. The Minneapolis Separator is built in the heart of the flax country. It was perfected on flax years ago.

THE MINNEAPOLIS SEPARATOR

threshed more flax and better than any other machine built. The man who owns a Minneapolis is sure of his run and sure of yours as soon as the farmer discovers it. Ask any farmer who comes from the Dakotas or Minnesota what he knows about the Minneapolis.

DO YOU KNOW THAT A MACHINE THAT HANDLES FLAX SUCCESSFULLY CAN THRESH ANY KIND OF GRAIN ?



The Minneapolis 25 H. P.

Simple Engine on Direct Flue Boiler

(Wood, Coal or Straw Burner, with Heavy Gear)

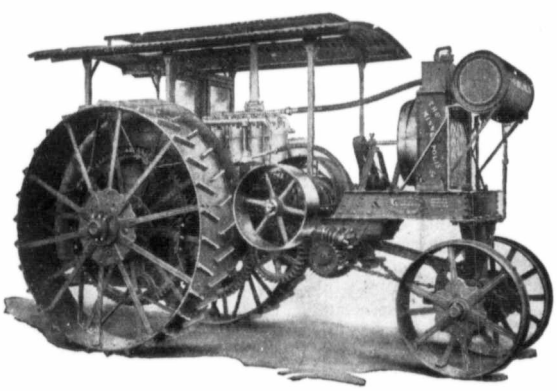
DRIVE WHEELS are made from Steel and have heavy flat spokes. Hubs are made from cast iron and are bored on a lathe so that they make a perfect and a sensible bearing. The hubs are heavier and the bearings much longer than other makes, ensuring long life to the engine. Each hub is fitted with 3 sets of oilers. Driving gears are braced direct to the rim of the traction wheels with a number of heavy steel braces fastened with heavy bolts and lock nuts, which eliminates all torsional strain on the hubs We use high malleable cleats, solidly riveted on the tires. The cleats have bevelled edges, so as to clear themselves from mud and are placed at an angle which gives each wheel an independent tread and relieves the axle from the strain caused by the engine being thrown sideways when propelled over uneven or slippery roads.

The Minneapolis Plowing Tractor

25 Horse Power 4-Cylinder

(Equipped with all Steel Traction Gears)

THE MINNEAPOLIS Gasoline Tractor is the most reliable 4 cylinder engine in business today. Steel parts are used in place of iron at every possible point. The pistons are accurately turned, and finely ground and polished, each fitted with 4 cast iron rings. **Connecting Rods** are made from steel of a high quality, carefully machined and fitted with ample and perfect boxes. **Transmission or Bed Gears** are made from a high grade of steel, have machine-cut oil tempered cogs and run in an oil bath. These gears are the product of the most modern machinery and skilled labor. **For Ignition** the Remy high tension magneto is used, with dry batteries for starting and emergency supply, insuring a most perfect system. **Drive Wheels** are 85 inches high with 20 inch tires. The hubs are cast and the wheels built up from steel with flat spokes and steel tires.



WRITE AT ONCE FOR COMPLETE ILLUSTRATED LITERATURE TO

GEO. E. DUIS CO. **Manufacturers' Agents** **Office and Warehouse cor. Alexander & Yeoman Box 456** **Winnipeg**

be empty or some of your binding nuts that hold ignition wires may have worked loose. It is an easy matter to test for gas or spark.

Another thing is hot bearings. This is caused generally by one of two things: either the bearing is too tight, or it is not getting grease. This can be easily remedied. For grinding in valves I use a little device that works fine and does fast work. I will describe it here and you can make one yourself.

Take a piece of ¼ inch iron about 30 inches long and bend in the form of brace or bit stock. Take a small piece of hard wood and drill ¼ inch hole in centre, about ⅜ inch deep, this is for handle. Flatten the other end of rod out a little and drill ⅛ hole in it near end. Now get a piece of thin iron (an old barrel hoop will do), and cut off piece about 2 inches long by 1½ inches wide. Drill a ⅛ hole in the centre of this (that is 1 inch from end) and about ⅜ inch from one side. Now cut out piece on other side about 1⅝ inches long and ⅝ in. wide. This leaves two short legs. Now rivet this piece to flattened end of rod. Do not make too tight a joint as the object of having this rivetted is that you can use the tool on an angle. Now take the valve and drill two ⅛ in. holes 3-16 in. deep on each side of centre of valve at the right distance apart to correspond to legs on tool. To use, insert legs in holes on valve head, and turn same as you would brace and bit. You will find that this is a dandy tool for this work.

Now, another very important thing is no matter whether you are just working on your own farm or making a business of breaking, by all means, get a good outfit of tools, etc., so that you can work to advantage doing your own work in the least possible time and with the least possible loss of time. Lost time means lost money, and this is just where a great many traction engine owners fall down. Suppose you are breaking 2 acres an hour and spend 1½ hours per day filling your engine gas tank by the method used by a great many, namely with a small tin tunnel and milk pail, drawing the oil out of wood barrels. By this method you are loosing about 3 acres of breaking per day, which at \$3.50 per acre means \$10.50 lost in one day. How long will it take you to lose the price of a wagon oil tank fitted with an oil pump and hose? Yet this is just the way lots of you do not make money with your outfit.

You may say that you cannot afford it, but if that is the case, you are beter off without an outfit. I recommend the following tools, etc., for anyone with an outfit or who intends to buy one. The first cost is not excessive and will pay for themselves in one season.

In the first place, you want some small tools for use around engine, including pipe wrenches, ratchet, drill for square shank drills, and don't forget a meter for testing batteries, also an 8 in. Wescott adjustable wrench, which is one of the handiest tools around an engine. You will want two 2 in. Jack screws, and 4 ft. steel bar for same, and a small blacksmith's outfit if possible. Also stock a few extra parts for engine, including magneto brushes, clutch shoe, extra igniter (of make and break), or a few spark plys if jump spark small springs, wire, electric tape, and some packing for various parts. You want a steel wagon oil tank in the worst way, fitted with an oil pump and a few feet of hose. These tanks hold 12 barrels (320 gallons); are supplied with timbers all ready to set on wagon, and can be bought for \$75 f.o.b. Saskatoon. Steel water tank of same capacity can be bought for \$65. An oil pump can be bought for \$10 or \$15. These things you want, and want badly. Now, regarding plows, they are all good and will do good work, if properly adjusted and shares kept sharp. For changing shares, I seen a device in operation last summer that worked fine. They are sold in Winnipeg at \$1.50 per plow, and a share can be changed in five minutes. Compare this with the old method, and you can see that it will not be long before you save the price of them. I am glad to note that one plow company is fitting their plows with a quick changing device. This is a step in the right direction, and it is to be hoped that the other plow manufacturers will wake up before long.

Now, last, but not least, have you got a shed to put your outfit in, out of the weather? If not, why not? It is to be deplored that so many outfits are left out in all kinds of weather, when, at slight expense, a machine shed could be built that would be one of the best investments you ever made. And while you are at it, make it big enough to house your other machinery.

A Steam Man.

Your letter asking for my experience just received, and will say that my experience has been quite a little; in fact, I cannot find time to write it all. However, I will try and tell you some. I have a 32 h.p. Cross compound Reeves engine, and a 12 bottom Cockshutt plow. I use 8 to 10 bottoms in connection with a large double disc 12 feet wide, one inthrow and the other outthrow. It is of my own make and I consider it much better than the packer, as it is heavy enough to pack the sod down, and sometimes it pulverizes the surface of the plowing, preventing crusting over.

In pulling this outfit it takes 2 tons of steam coal per day and 8 tanks of water, tanks holding 12 to 14 barrels each. Four horses usually do the work and four men, making a cost of about \$2.50 per acre in sod. In pulling the disc, I have a long bar or pipe with a hook melted in one end where the disc is attached by means of a large bale with an eye turned in centre like this. It makes the disc pull even and straight, not running off sideways like the ordinary hitch. The other end is fastened on the plow in the front of the frame, making a pull bar 12 feet, and throwing the disc back so as not to interfere with the turning. The same pull is used without the plow, only it is attached to the drawbar of engine. The plow is not used. I hitch on everything and anything on this hitch. It pulls drills and harrows equally as well by the additions of a long piece of 4 by 6, according to the number of discs required to pull. By the use of the large bail it keeps an even pull on the drills, and the eye and hook permits the engine to turn and not skip the machines like a stiff draw-bar does. A small truck is used to keep the 4 by 6 up as high as the horses usually carry the drill pales.

There are more steam than oil tractors used in this neighborhood. I consider plowing much harder on the engine than threshing, for it is continually travelling over rough surface, and the dust gathers on the gearing, causing a grit that wears quite fast, and there is a rocking motion which is harder on the engine than standing still. In threshing it simply has the pull and no motion to contend with.

Hoping this may interest some of your readers.

Yours truly,

H. Wood, Esq.,
c|o T. F. Bunton, Esq.,
Warner, Alta.

TRACTION PLOWING
AS TOLD BY THE MEN WHO DO IT

On this and the following pages will be found a number of letters from traction plowmen in Canada West, the originals of which are on file in our office. We have inserted the letters just as they came to us and we will, therefore, not hold ourselves responsible for any of the opinions or criticisms contained therein. Should anyone disagree with the statements made, we would be pleased to offer them the use of our reading columns for the purpose of criticism, etc.—Editor.

A Table of Costs.

Yours to hand and noted, and will give you as accurate information as possible. My outfit consists of Case 25 h.p. engine, 8 furrow Cockshutt plow, cook car, sleeping car, two tanks and coal wagon.

During 1910, my first season's breaking, I had two teams hauling water, but during 1911 only used two teams a short time, as water was easier to get.

I have two teams of my own. During the season of 1911 I had one extra team hired eight days only. During 1910 I broke 776 acres and backset 230 acres after first crop, doing this with straw for fuel. Our best work with straw was 10 rounds on one-half mile from 6.55 a.m. to 11.50 a.m., when wind was not too strong, doing the same work with straw as coal.

During 1911 I broke 761 acres, backsetting 240 acres, using Penn. Youghiougheny coal at $11.00 per ton. Wages here are, engineer, $6.00; fireman, who also tends plows, $3.00; teamsters, $2.00; hired teams for this work, $6.00 or $5.00 when found.

During 1911 one team hauled water, one hauled coal, also brought out supplies, plow shares, etc. Always make it a point to see everything is in shape before leaving in the morning, then we are seldom bothered during the day repairing.

We averaged around 20 acres per day. This included moving from field to field, etc., so when at steady plowing we had to do better. Our best work was 100 acres in 3¾ days. We average 100 gallons per acre, depending on depths of plowing, soil, etc. Table below will give you actual cost per acre average of 1,000 acres:

Interest on investment at 8 per cent. per acre....	.25
Wear	.15
Depreciation	.25
Coal, $170 at $11	.93
Coal hauling at $3 a ton..	.55
Plow shares, wear and sharping	.11
Oil and grease	.05
Wages	.80
Breakages and water	.41
Total	$3.50

This table includes cost of moving from place to place, etc.; every expense from start to finish. The average of all work done during 1911 was $3.51 per acre, which did not leave much profit, but beats the band for opening up a new country or getting your work done.

Gasoline here is three to one steam, and when they get making them reliable they will be 100 per cent. Always keep accurate account of everything connected with outfit so everything is accounted for.

Below is a table I use: Monthly Steam Plow Record.

MONTHLY STEAM PLOW RECORD

Date.....

Work	Expense	Repairs	Fuel	Water	Board Wages	Acres Plowed	Income Exp.
Engine	Plow	Eng.& Plow	Weight Cost	No Tanks			

I have not used any of the hitches for any other than plowing so can give you no information on that point.

An American-Abell steam tractor burning straw and pulling an Emerson Engine Gang.

Hoping this will not be too tiresome to you, I will close, as I am no good at this kind of work. I would rather be breaking or threshing, which is far easier on an engine than breaking as the engine does not need to move much at that work.

Yours truly,
Geo. C. Honsberger,
Marriott, Sask.

Started to do Traction Plowing When 18.

We have had some experience in traction plowing, but not very extensive. We bought an eight bottom Cockshutt plow in September, 1910, so after threshing I hitched the engine to the plows and started to plow. I could carry one barrel of water in the tender ,and by placing two empty oil barrels on the platform of the plow and filling same with water, I had three barels of water. I used four tanks one day and five the next, never more than five unless the water was extremely bad. burned wood, most of which was pieces of boards and old fence posts and such things gathered up around the yard that we considered good-for-nothing. I don't think I burned a cord of good sound wood all the time I was plowing (two weeks). Then I had to quit as I could not get good water.

While plowing, I am fireman, plowman and engineer, thus leaving only three men on the outfit, myself, my brother, who does nothing but steer the engine, another man as tankman, who hauled fuel. I am going to put a steering device on the engine so that I can handle it myself with only the aid of the tankman, and also a steam plow lift, so I will lose no time at the end.

We decided that our 60 h.p. Case was not heavy enough to handle the plows properly, as our land is very rolling. We exchanged it for a 75 h.p. Cae plowing engine last spring, and I took it to plow this last spring for oats. My safety valve loosened, so that I could only get 75 pounds of steam the first day, but the engine took the 8 plows up a 40 per cent. grade, and never foamed or I never lifted a plow. I burned coal, so I had more time to give to my engine, thus making good time till we got over to where the hills were too steep and thick to make it profitable to plow with the engine, when we had to quit.

In July I took it to summerfallow, and had good success until we got to a very hilly part of the field, and got poor water along with it. We had to quit, but I done good work while I was at it. I did not get a chance to plow last fall as I was threshing till the 11th of Nov., which was some time after it froze up. The engine we have now burns about 1,600 pounds of coal for every 20 acres and uses four and five tanks of water per 20 acres.

I do not consider plowing any harder on the engine than threshing. When the engine is handled right it moves with a steady swing that neither hurts the engine or boiler, but if it is jerked around with the steering wheel or the clutch it is very hard on engine, boiler and gearing.

I was only a boy of 18 when I started plowing in 1910, which goes to show how easy the Case engines are to handle, and our engine is as good to-day as when it came out of the shops.

The following is my estimation of the cost of plowing with steam:—

Coal per day splint	$6.50
Tank team and man	4.00
Steersman	2.00
Myself, engineer, plowman and fireman	5.00
Total	$17.50

That estimate is my best run or an average run on level land with good water, but our land is very hilly and it is hard to get good water. I would advise anyone who is thinking of getting a plowing outfit to consider the water question thoroughly.

I will send you a diagram or sketch of a hitch or two at a later date. Hoping this meets with your approval, after you have read it. I remain,

Yours sincerely,
Garnet E. Hicks,
Ninga, Man.

Likes Steam.

Your letter to hand re traction cultivation. Probably other people can give you a great lot better ideas than I can, but I will give you mine anyway. I am not running my own outfit at present; I sold it. After it had almost bankrupted me, but expect some day in the future to

own another. At the present time, I am trying to get a new form of engine built, but will probably not succeed; also an improvement on a separator.

My outfit was a Case 32 h.p. I sold her two years ago and since then have been in Bassano, running a 32 h.p. Reeves engine, freighting and grading on the C.P.R. irrigation ditch. I used ten bottoms, Cockshutt make, and will say that they will never bankrupt anybody; they are all they claim. I plowed some very hard land, including brush land, and I never had any trouble with them. I had a lot of trouble with the engine; it was broke down most of the time.

I used four men beside myself. I ran the engine until I got tired of it, then I hired an engineer, and he did no better. I had a fireman, plowman, tankman, and coal hauler. It took about three tons of Alberta coal every ten hours and ten tanks of water. That is an average, sometimes more and sometimes less, according to the land.

I know plowing is a lot harder on an engine than threshing. When it came to threshing with a 36-60 Avery separator we had no trouble with either end. I did not own the separator, but went halves with another man, and we did well. The separator is a good one and so is the engine for threshing. We used our own cook car and boarded our own men, which I think is best, as you have them there when you want them. Feed them and work them well, and if there are any kickers, let them go. Same with plowing. I consider it cost me $4.00 per acre to plow, but do not think that it will next time. I do not think a plowing outfit is much of a money maker, as a rule, unless you have lots of land of your own, and if time do a little outside for your neighbor; but do your own first. I rather think steam is best yet; but the day is coming when it will be a back number for farming.

As to hitches, I have not had a great lot of experience, only at freighting, where I have had as many as 20 wagons behind my engine; tankman, fireman and myself done it all. If a man is not plowing, but wants to cultivate or seed on both, I think a frame made and put on wheels attached to your engine with a tongue is handy. You can have it any length you like, and couple up as much as you want behind. A couple of low steel wheels will do. The whole thing should not cost more than $20. When I get money and time I am going to get out a new idea of my own, which is a new idea, and I cannot see why it will not work. If it does, it will be worth a lot to traction farmers. There are lots of improvements to make yet before it will be all play.

Geo. Muir, Esq.,
Bassano, Alta.

A Good One.

In reply to your letter, requesting some of my experiences on steam plowing for publication, I might state that I've been in the business, threshing and plowing by steam, for the last 25 years, although I've never done any steam plowing until I struck Alberta about seven years ago.

The Avery Undermounted Steam Tractor making its usual straight furrow

My first outfit was an American Abell 26 h.p. engine, and 4 two bottom John Deere plows, connected to the engine by short and long iron rods as required for adjustment. This was a very poor rig, but I thought at the time that it was very good, as I had not seen anything better. Next season I bought two 3 bottom plows of the same make, but found them no better. The third season I bought one 10 bottom Cockshutt engine gang, also changed the gear on my engine by putting on an internal rim gear which increased my traction power almost double, but could not travel near as fast.

I could now pull the ten plows and also a 4 horse harrow, and still had power to spare. The first day starting this outfit I plowed and harrowed 40 acres. I also had some post card photos taken the same day, of which I will enclose one and would like to see it in your paper. I have now two outfits, as I bought one new American Abell 28 h.p. engine of the three type, and a new 40 by 64 separator, also another 10 bottom Cockshutt plow. I have now an outfit that I am really proud of and I think the best all-round on the market. I expect to run this in the spring night and day. By putting on a double crew of men, 12 hours each, I expect to plow at least 50 acres in 24 hours. I also aim to attach one 12 foot packer and then a Harrow, and follow up as close as possible with two drills pulled by horses, thereby getting the seed into moist ground.

Now in regard to cost, steam plowing I think is far cheaper than plowing with horses. Now to do the same work with horses that I can do in 24 hours with my engine it would require at least 52 head of horses and also about 13 men. All I require is three men for each shift running night and day—6 men.

2 engineers	$10.00
2 Firemen	5.00
2 water haulers	5.00
Coal, 3 tons at $4 per ton	12.00
Oil	1.00
Board for men at 75 cents per day each	4.50
Total	$36.50
Horse feed for 52 head at 20 cents per day	$13.00
13 men at $2 per day	26.00
Board for 13 men at 75 cents per day	9.75
Total	$48.75

Another great point in favor of the engine is when not working it don't eat, but the horse eats just the same and has to be attended to or he will die and stay dead, but the engine can die and live.

Now, Mr. Editor, if you think this letter is fit for publication in your paper, then I will ask you to criticise and correct it, take from and add to as you see fit, and as you agree to send the paper for one year for my trouble, I wish to have the back numbers from the first of the year 1912.

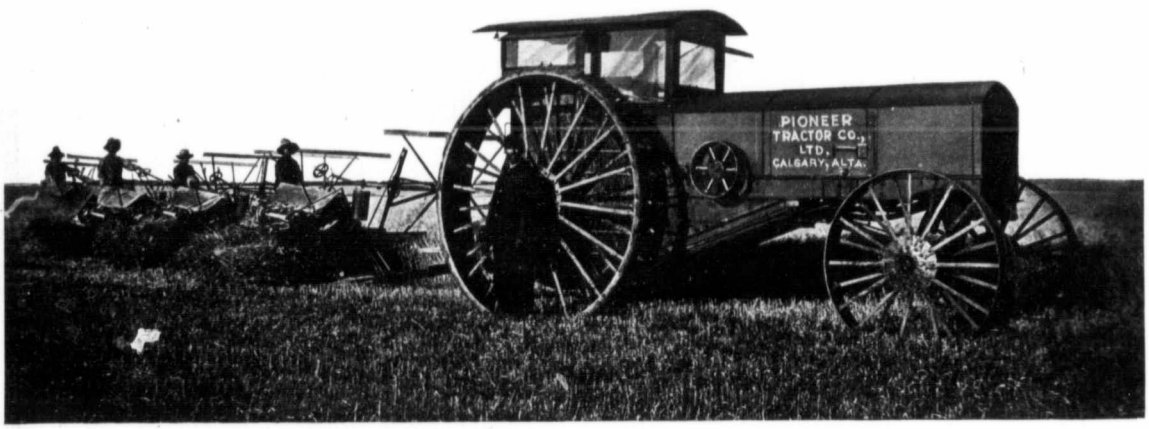
If you wish I might write later on in the season and give more of my experience with my new outfit.

Respectfully yours,
John Smedstad.

Yours of Jan. 15th received and will try and do my best. However, I am a poor writer. My experience has been with steam and I have had ten years of it, but will just give my last year's experience for it would take all the space you have to spare in your valuable paper to tell it.

I used a 32 h.p. double simple Reeves engine and a 10 furrow Cockshutt plow, but only pulled nine plows and a Cockshutt packer, which I think is load enough for that size of engine in our soil here. I employ an engineer, fireman, plowman, cook and one man to haul water, using two tanks, and we use about 80 barrels of water per day. One man hauls coal to the outfit. I try and get my coal up in the winter time as near to the work as I can.

We haul this coal 25 miles from the mines and make a round trip every three days. It is lignite coal and we use about four tons a day. Costs me about $3.50 per ton at the outfit. I do my own work blacksmithing and repairing myself, and can do all the other jobs from engine to cook car if it had to be done. I think a man to run a steam plow or threshing outfit wants to understand all this



MILLIONS LOST

BY CANADIAN FARMERS

In 1911—Because they were short. Short what? Short power—Power for threshing.—"Short of Power"—That's the reason. Had no power themselves—Had to rent power. "Everybody stampeding for power." Everybody—"Power Wanted"—All together. Power short—Short season—Power don't go 'round—Snow comes—Crop Unthreshed—left till Spring—probably lost—**THAT'S THE 1911 RESULT.**

Threshing not done—Plowing delayed—Seed bed not prepared—threshing instead of plowing—plowing instead of seeding—Rush!—Rush!—Rush!—Rush! "It's a heartless, fruitless task—A season's work lost in the shuffle"—plowing rushed—seeding rushed—plowing late—seeding late:—poor seed bed—poor crop—short acreage—Dollars lost—Dollars lost—Dollars lost—and more Dol ars lost. **That's the 1912 Result.**

Insurance From Like Loss Now Available

Every progressive, think ng farmer has certainly decided not to get caught short again. Thousands will buy their own farm tractors and separators and have them on the job for this fall's threshing, and they're mighty wise men too. But

MANY NEVER THOUGHT THAT 10 PER CENT. MORE PROFIT

could be gained by simply placing their farm tractor order just a few weeks earlier. Now let's see—how can this be?

IT'S IN HARVESTING WITH THE PIONEER "30"

Why? Because, if a big crop is harvested with slow going horses, a start must be made before all grain is properly ripened—then shrinkage occurs. THIS MEANS DOLLARS LOST.

And because, if grain is left standing till properly ripened, as it should be, horse harvesting is too slow and much grain is lost from crinkling down. THIS MEANS DOLLARS LOST. Hence—to make a start at just the right time, and to finish quickly, lots of rapid power instantly available is required. Here THE INCOMPARABLE PIONEER "30" comes into play as the greatest economist of modern farming.

The success of the farm tractor in connection with the self-binder and binder hitch has in recent years created a wonderful sensation in the agricultural world.

Think of cutting a 40 or 48 foot swath of grain every swing of the field moving at a three-mile an-hour clip—THAT'S PIONEER SPEED—good speed—good binder motion—slow speed—poor binder motion—Remember, the Pioneer "30" needs no rest at night, and that—**PIONEER SPEED IS ANY SPEED FROM ONE TO SIX MILES AN HOUR OTHER SINGLE-SPEED TRACTORS TWO MILES—NO MORE.**

WHY NOT CATCH UP THIS FALL?

Get your tractor on the ground, get your harvesting done quickly, get your threshing done surely, then get after

THAT FALL PLOWING FOR NEXT YEAR'S CROP.

Surely nothing is so important, nothing so imperative as to have power, plenty of power and so always be prepared for any contingency and always be ready.

"The secret of successful grain farming" is "Ample Power". Plowing calls for power and lots of it; discing, harrowing and seeding call for power, harvesting calls for power, threshing calls for power, hauling calls for power—Power! Power! Power! Power!

Its the same story over and over again. Plow and plow deep to retain moisture. Seed and seed quickly to get your crop in timely. Harvest and harvest quickly to insure against shrinkage and crinkling. Thresh with your own power to insure getting threshed. All require Power! Power! Power! Power! and more Power!

"Ample Power" insures "A Bumper Crop." Get the profits coming to you. Don't cheat yourself by trying to run short of power. Don't work yourself to death with horses—they won't do, they're expensive—they call for too much hobo labor—they don't come and go fast enough—they must rest at night and are not the economical up-to-the-minute power for the progressive farmer.

CHEAP POWER FOR MANUFACTURING GRAIN

The Pioneer "30" first costs half what horses cost and thereafter saves half of every dollar spent for farm power.

THE PIONEER "30" THE ULTIMATE TRACTOR

The following all plow, seed, harvest, thresh and haul with Pioneer Farm Tractors:

THE WEITZEN LAND CO., of Rosetown, Sask. have for some time used cheaper farm tractors, but ultimately purchased and are now using the Pioneer "30."

R. J. BOYD, of Regina, Sask. previously ordered a tractor of another make. It cost less but didn't deliver the goods. He finds the Pioneer "30" ultimately cheaper.

THOS. JACKSON & SONS, Contractors, Winnipeg, Man., after working with a cheaper tractor, ultimately bought the Pioneer "30" and now are perfectly satisfied.

C. H. HENDRICKSON, of Milestone, Sask., owns another cheaper tractor. He ultimately finds the Pioneer "30" more economical.

A. H. CHIPMAN, of Elbow, Sask., has rmed with other cheaper tractors. He fi s ultimately the Pioneer "30" less expensive own and operate.

SPELTZ BROS., Brock, Sask., used other cheaper tractor for farm power. They also find it cheaper to operate the Pioneer "30," the ultimate tractor.

And so on and so on, it is the same story over and over again. The first cost of the Pioneer is a little more, but the eventual cost is a mighty lot less.

Mail the Coupon

EIGHT EXCLUSIVE PIONEER SUPERIORITIES.

1st. Vibrationless four-cylinder double-opposed motor.
2nd. All gears entirely encased run in oil baths.
3rd. All transmission gears machine-cut from solid steel.
4th. No troublesome power losing bevel transmission gears.
5th. All working parts, including the motor entirely housed
6th. Three forward gear shifts providing big speed range.
7th. Non-corrosive sectional radiator of brass and copper.
8th. Comfortable operator's cab can be entirely enclosed.

The Pioneer Tractor Co. Ltd. SHOPS AND OFFICES **CALGARY, ALBERTA**

CUT OUT, SIGN AND MAIL

Pioneer Tractor Co. Ltd., Suites 201-202, Alberta Loan & Investment Co. Bldg., Calgary, Alta.
Kindly mail me your free illustrated bulletins describing your tractor
My name is .....
My P. O. is .....
My Province is .....
I farm .....
C.T.F. 6-12

work if he wants to make a success of it. We start to work at 6 o'clock in the morning and run till 6 and have supper. Then after supper we run three or four hours. I find this the most successful way. At anyrate we turned over and packed from May 15th to August 1st just 1365 acres of Alberta sod, losing two weeks for wet weather. I don't know whether this is good work or not, but I was satisfied.

I figured this season's work cost per acre about $2.50 without depreciation on the outfit. I think plowing a lot harder on an engine than threshing; it stands to reason that it would be. For, look at the position you get the engine from a nice piece of smooth prairie to a mud hole without a bottom. There is no use saying you have never been in a mud hole; if you haven't, you will be, by and by.

I think if all steam and gasoline plowmen would tell the mud hole and dark side of the story it would make just as big a book as the sunny side, and it would be better for us that are in the mud and the party that is coming into it. I have had quite a little experience with disc harrows and drill hitches, and will say the one that gave me the best satisfaction is one I built last year. I took two 4 inches by 12 inches by 24 feet, and one 4 inches by 12 inches by 36 feet, and made a triangular frame. Mounted this on wheels 3 feet above the ground and put my disc on this so as to double disc. It takes nine 8 feet discs to do this and everything together I can turn around and not move the inside disc, which saves a lot of extra turning. Then I take off my disc, put my drills on the 26 feet beam and harrow under the frame which works fine, and one pin releases the engine from the whole works. I will try and send you a rough drawing of it on the opposite page. Hoping I haven't taken up too much space and wishing you and my brother plowmen an abundance of success.

J. H. Hauser, Esq.,
Killam, Alta.

Thinks Price of Farm Machinery Too High.

Replying to yours of recent date, will say I have been operating steam and oil tractors for over 20 years. Starting, of course, with steamers before a practical gas tractor was dreamed of and in that time I have operated for myself and others six different makes of steam engines, and, like most of the boys, whatever one I had was for the time being a world better; able to back the rest of the bunch plump off the boards. With but one exception, they were all very satisfactory engines, and I have no disposition to slam the steamers. However, I am now farming. Water is very scarce, as is also help; and as expensive as it was scarce some five years ago. With doubts that I care to confess, I sold my steamer and bought a second-hand Hart-Parr. It was old style and gave me a lively time of it till I got on to her tricks. I ran it four years, and it more than paid for itself each year.

Last fall I sold it and bought a new one. Before deciding on the kind I would buy I tried to keep my ear pretty close to the ground and learn what was doing in the gas tractor world. I heard amazing reports for and against all the known makes, and from this mass of conflicting reports no man living could hide the winners, so I confined myself to what I could observe personally of the different makes operating immediately around me. I bought another Hart-Parr. I am not saying they are the best, but the new one has been eminently satisfactory, and I could not wish for anything better. If I were to attempt to advise on the clevise of an engine it would be this: Do not buy a little tin wagon type and expect it to do much work. That class is all right to play with, but for results buy a real engine, and there are several now to choose from so that the purchaser should be able to select one adapted to his needs and ideas.

I am going to use a six bottom Cockshutt plow this season, and while it is a very good plow, it could be improved easily if its makers spent half as much effort in the details of construction that they do in devising ways to make their customer pay the longest possible price for the plows. In fact, prices for all farm machinery in Canada seem to be based not at all on cost of production and a reasonable profit, but upon the extreme limit of what its trade will bear. In operating my plowing outfit I run it myself when help is scarce. I employ a helper when I can get one. I burn kerosene when plowing, which costs me 14¼ cents. Cost of fuel and lubricating oil per acre and for breaking is about 70 cents per acre, and 60 cents for stubble plowing. If I had disc plows the cost per acre would be around 50 cents. The water used is almost a negligible

quantity, as I only use 1⅛ gallons per acre.

Without doubt plowing is much harder on engines than threshing, because the load is far greater, and the tendency to rack when plowing over bad land is simply fierce; the wonder is that the engine stands up to it all. I run a 36 by 60 Toronto combination separator, and it makes no load at all for the engine. I have never used my engine for any farm work other than plowing, as I consider this job permanently an engine work, but for seeding, discing and all ordinary farm work, horses are all right and more practical; also one needs horses in haying and threshing anyway. I prefer to let them do all the light work, while the engine does the heavy pulling.

In our territory it was all steamers five years ago, but last year there were ten gasoline engines unloaded at our station for every steamer. I find these tractors very convenient for moving granaries, and enclosed photo of mine on the job.

Your truly,

F. S. Fowler, Esq.,
Kronau, Sask.

Keep Outfit in Repair.

I am an interested reader of your magazine and I like to read the experience of threshers, especially the old-timers. I started threshing in 1898, cutting bands on a Peerless machine. The next three falls I hauled bundles. I began to think that was a hard job, so I decided to try firing. I got a job on Sawyer-Massey outfit. The first fall I put in 51 days. It was pretty cold some mornings when it got late in the season, but I was looking forward for a better job some day. I fired this engine for three falls, and then began to think I would try running one. I got a job on J. I. Case outfit. I did not run it all fall, as I had a dispute with the boss and quit. In the fall of 1906 I ran a Cock-of-the-North engine all fall and got along fine. That finished me working for wages, so my brother and I decided to buy an outfit of our own the next fall. We bought a J. I. Case 20 h.p. engine, and a 36 by 58 Case wood separator, a second-hand outfit.

Our crop was frozen just a few days after we bought the machine, so we had a bad season. We just threshed our own and a couple of neighbors, and moved to the third one. We could not save his grain to suit him, and as the separator was an old one and not working just right, we pulled in for that season.

The next fall we bought a new J. I. Case steel separator with self feeder and straw carriers. We hired an engineer and I ran the separator myself, and everything went along fine, and as we lost no time through breakdowns we had a good season's run. My brother was chore boy up till last fall. I ran the separator the next two falls and another brother ran the engine. We got along very well. Last fall I ran the engine myself and my partner ran the separator. I find it very satisfactory it saves the highest wages and the trouble of watching those who are not interested in our work. I think to make a success of threshing one should fully understand the whole machine. We have put on a new Ruth self feeder and a Case gearless wind-stacker, and are well satisfied with both.

We have threshed as high as fourteen hundred bushels of oats in one day and was shut down for an hour and a half in the afternoon by a small break in the engine. We moved two miles after supper. Our engine has run eleven seasons and runs as good as ever yet. Our outfit has paid for itself.

We never had any breakdowns to amount to anything, as we always have the outfit in first-class shape before starting out. There is enough expenses without repairing when we should be threshing. We board our own crew, and I think it is better for both ourselves and the farmer.

Wishing all brother threshermen success, also your valuable paper, I remain,

Yours truly,

Charles Cox, Esq.,
Browning, Sask.

MAYTAG CO LTD

Do Not Make A Mistake This Year

When it comes to buying a Self Feeder. We believe what you all want is a Feeder that for more than the past ten years has been doing good, satisfactory work in the CANADIAN FIELDS. A Feeder may do good work in South America, Russia, or even in the United States and then fail to handle the Canadian crops right. Without hesitation we refer anyone intending to get a new Feeder this year to any one of the Eight Thousand Threshermen in Canada who are using the

RUTH FEEDER

THE RUTH, has been tried out and proven to be the only Feeder that can make good under any and all conditions. Wheat, Oats, Barley, Rye and Flax all look alike to the Ruth. Millions of acres are being sown to FLAX this year, so be sure and get the Feeder that likes it. THERE IS NO FEEDER IN THE WORLD THAT EQUALS THE RUTH when it comes to feeding flax. Take no chances. Buy the Feeder that has been proven out IN CANADA. If ever one has it is THE RUTH. Do not buy an experiment. BUY A RUTH. Below is the RUTH WARRANTY; please read it carefully. We not only carry a full stock of Feeders and Repairs at Winnipeg, but they can be had of any of our branches as shown below.

THE RUTH WARRANTY

"The RUTH Feeder is Warranted to Feed any make or size of Separator to its full capacity, with any kind of grain in any condition whatsoever, bound, loose, straight, tangled, stack burned, wet or dry, PILED ON THE CARRIER IN ANY WAY YOU PLEASE, without slugging the separator cylinder or loosening a spike, and to do a faster, cleaner and better job of feeding and to WEAR LONGER AND COST LESS FOR REPAIRS than any Feeder manufactured by any other Company in the World. We further Guarantee it to be made of the best material obtainable by the most skilful workmen, and if WITHIN THREE YEARS FROM DATE OF SALE (if our instructions are carried out) any part of the above described Feeder (except webs and belts) should break or in any way incapacitate the Feeder owing to defect in material or workmanship, and not on account of carelessness on the part of the user, we will replace such part or parts ABSOLUTELY FREE OF COST, on return of defective parts F. O. B. Winnipeg, Man."

Repairs and Extras

While it is an undisputed fact that the RUTH FEEDER REQUIRES LESS REPAIRS THAN ANY OTHER FEEDER IN THE WORLD, an occassional piece is needed, and when the accident does happen it is wanted quick. We understand this and in order to make it more than ever to your interest to buy a RUTH, we are doing something that no other Feeder Company has ever done, and that is we will have a good stock of repairs this year and in all the years to come at central points throughout Canada. This year you can get them from

H. A. KNIGHT at REGINA, and INTERNATIONAL HARVESTER at SASKATOON, Sask.
The W. S. COOPER Co. at CALGARY, and GEO. THOMAS & Co. at WEYBURN, Sask.

The above concerns will also carry a full stock of Ruth Feeders and will be in a position to fill your orders at all times.

Do not forget that

Any Threshing Machine Company doing business in Canada can supply you with a RUTH Feeder, and we FURNISH THE ATTACHMENTS TO PUT THEM ON SO THAT THEY FIT PERFECTLY. When we say ANY Thresher Company, we had in mind more especially any of the following, as they have all bought the RUTH of us, and we are not only willing but anxious to fill all orders they may favor us with during the coming season.

Sawyer & Massey Co.	American Abell E. & T. Co.	Buffalo Pitts Co.	Geo. White Sons & Co.	John Goodison Thresher Co.
International Harvester Co.	Haug Bros. & Neilermoe Co.	Canadian Port Huron Co.	Nichols & Shepard Co.	Aultman & Taylor
Waterloo Manufacturing Co.	Gaar, Scott & Co.	The Rumely Co.	Reeves & Co.	Minneapolis Thr. Machine Co.
Fairbanks-Morse Co.	Burridge Cooper Co,	Robert Bell E. & T. Co.	J. I. Case Threshing Mach. Co.	W. S. Cooper Co.

REMEMBER, that should you buy a Separator of ANY COMPANY whose name DOES NOT appear above, that we can and will furnish the proper attachments to equip it with a RUTH FEEDER.

MAYTAG

COMPANY, LIMITED **WINNIPEG MANITOBA**

NO. 1 HARD

Winnipeg, Man.
May 28, 1912.

The month of May is always a crucial one in wheat markets. In this month we have the opening of navigation (this year quite late), seeding in the Canadian West, and the making or unmaking of the winter wheat crop in the United States to a very large extent. Now the latter crop has come through the winter badly, and indications are that even if the American spring wheat crop be larger than usual, they will still have little for export, the spring wheat crop but filling the lack of winter wheat. So if their spring wheat crop should suffer from drought, their prices would be sent still higher.

In our Canadian West the latest reports go to show the wheat seeding finished in fair season, and the crop doing well. Receipts at terminals have been heavy throughout the month, so much so that last week stocks at terminals actually increased slightly in spite of heavy shipments. It is reasonable to expect that the Continental markets will take a little time to absorb the twelve to fifteen million bushels of wheat shipped out of our terminals immediately after the opening of navigation. At the same time our high grade hard wheat is relatively the cheapest in the world to-day, and while Great Britain and the Continent will be heavy buyers of Argentine and Australian wheat, they nevertheless will want our high grade stuff for blending. Sentiment is very much mixed at the present time, some leading Canadian exporters feeling that with wheat 8 cents to 10 cents above what it was a year ago, and "invisible" stocks in farmers' hands large, wheat is high enough, while others just as strongly maintain that when our high grade wheat becomes scarcer by midsummer, prices for the higher grades at least will be better, but probably not for the lower grades. The American "visible" is larger than it was a year ago, but the stocks in farmers' hands are the smallest in years.

The markets for the month of June will be very much influenced by weather conditions, but there seems little in the whole situation to depress wheat, and a little bad weather could easily send it up considerably. Our market is more susceptible to American than to Continental influences, and readily follows American markets despite sometimes opposite tendencies in Liverpool.

Receipts will probably be heavy, and farmers should make it a point to get the very last of their off grade wheat out now, as even tough wheat will not keep much longer. The highest grade wheat should naturally be kept for the midsummer scarcity in July and August.

In coarse grains the market has eased down considerably the past month with the withdrawal of American influences thought to be running a corner in the May oat option, and with heavy receipts of both oats and barley, prices have declined considerably. Receipts of coarse grains are much heavier than a year ago, but the demand is quite large, and oats should hold near present prices in the immediate future. Farmers should watch the course of American corn, for our oats will follow somewhat the same course. Barley is quite dull. only the feed and rejected grades being wanted at all.

Flax has been quite strong and likely will continue so despite exceeding heavy receipts. In the last few days our May flax has been exceedingly nervous because of the corner in the Duluth May option, but it is likely that cash flax will settle down again a little under the July option when the month of May is out. Prices are so good farmers can make no mistake in marketing their flax at their earliest convenience. No flax this year is too poor to ship.

Whoever can make two ears of corn or two blades of grass grow upon a spot of ground where only one grew before, would deserve better of mankind and do more essential service to his country than the whole race of politicians put together.—Jonathan Swift.

Imperial Bank of Canada

Proceedings of the 37th Annual General Meeting of the Shareholders

Held at the Banking House of the Institution in Toronto on Wednesday, May 22nd, 1912

The Thirty-seventh Annual General Meeting of the Imperial Bank of Canada was held, in pursuance of the terms of the charter, at the Banking House of the Institution, May 22, 1912.

THE REPORT

30th APRIL, 1912

PROFIT AND LOSS ACCOUNT

Dividend Nos. 84, 85, 86, 87 payable quarterly for twelve months, at 12% per annum	$ 712,349.22	Balance at credit of account 30th April, 1911, brought forward	$ 833,125.63
Coronation Bonus to staff	33,802.50	Profits for the twelve months ended 30th April, 1912, after deducting charges of management and interest due depositors, and after making full provision for all bad and doubtful debts and for rebate on bills under discount	1,004,340.23
Annual Contribution to Officers' Pension and Guarantee Fund	7,500.00		
Transferred to Reserve Fund	230,440.75		
Written off Bank Premises and Furniture Account	60,036.26		
Donation to Northern Ontario Fire Sufferers	1,000.00	Premium received on new Capital Stock	230,440.75
Balance of Account carried forward	1,022,787.88		
	$2,067,906.61		$2,067,906.61

RESERVE FUND

Balance at Credit of Account 30th April, 1911	$5,769,559.25
Premium received on New Capital Stock	230,440.75
	$6,000,000.00

D. R. WILKIE,
General Manager.

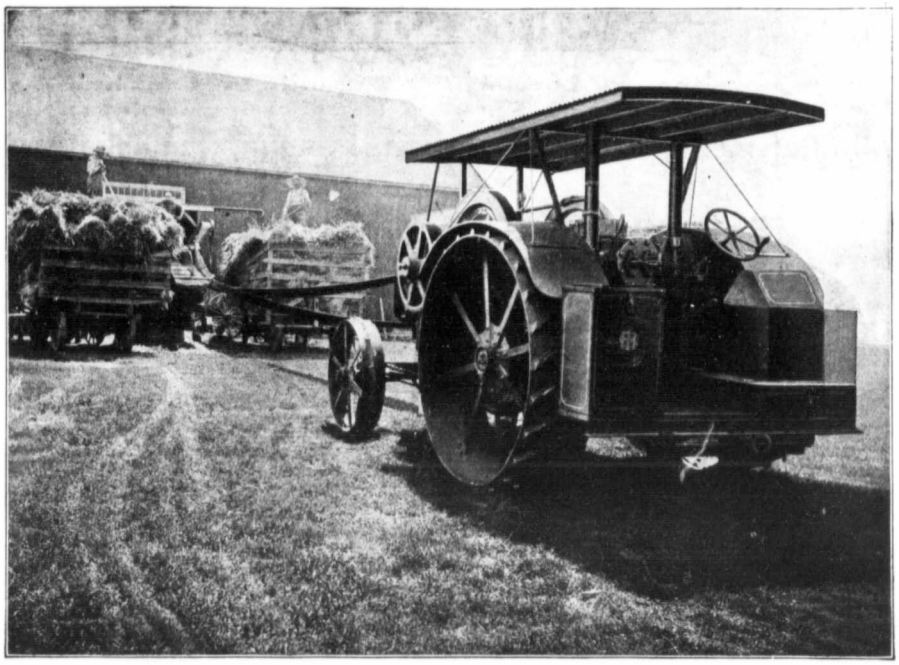
LIABILITIES

Notes of the Bank in circulation		$ 5,303,642.00
Deposits not bearing interest	$11,056,740.44	
Deposits bearing interest (including interest accrued to date)	43,931,238.92	
		54,987,979.36
Deposits by other Banks in Canada		118,610.39
Total Liabilities to the public		$60,410,231.75
Capital Stock (paid-up)		6,000,000.00
Reserve Fund	$6,000,000.00	
Dividend No. 87 (payable 1st May, 1912), for three months, at the rate of 12% per annum	180,000.00	
Rebate on bills discounted	138,648.25	
Balance of Profit and Loss Account carried forward	1,022,787.88	
		7,341,436.13
		$73,751,667.88

ASSETS

Gold and Silver Coin	$ 1,562,879.16	
Dominion Government Notes	10,795,326.50	
		$12,358,205.66
Deposit with Dominion Government for security of note circulation		249,065.03
Notes of and Cheques on other Banks		3,523,469.51
Balance due from other Banks in Canada		932,792.73
Balance due from Agents in the United Kingdom		1,708,049.35
Balance due from Agents in Foreign Countries		2,719,333.33
		$21,490,915.61
Dominion and Provincial Government Securities	$ 517,914.99	
Loans to Provincial Governments	168,159.61	
Canadian Municipal Securities and British or Foreign or Colonial Public Securities other than Canadian	4,348,907.73	
Railway and other Bonds, Debentures and Stocks	737,358.43	
		$5,767,340.76
Call and Short Loans on Stocks and Bonds in Canada		3,277,814.21
Call and Short Loans on Stocks and Bonds elsewhere than in Canada		1,001,378.11
		$31,537,448.69
Other Current Loans, Discounts and Advances		40,171,085.13
Overdue Debts (loss provided for)		47,565.85
Real Estate (other than Bank Premises)		79,451.22
Mortgages on Real Estate sold by the Bank		94,186.49
Bank Premises, including Safes, Vaults and Office Furniture at Head Office and Branches		1,800,000.00
Other Assets, not included under foregoing heads		21,930.50
		$73,751,667.88

D. R. WILKIE,
General Manager



Going to Buy a Threshing Outfit This Season?

If you are, you will want to look over the I. H. C. line of threshing outfits, threshers, tractors, and portable engines, because in most cases, an I. H. C. threshing outfit is the answer to the most important questions that confront every threshing outfit buyer. These questions are: "Can I use that outfit in this neighborhood?" and "Is it efficient?", "Can I make money by investing in it?"

It is important to know the exact conditions under which a thresher is to be used and to take them into account in buying. These conditions govern the size and kind of machine, and number and kind of accessories it would be wise to pruchase. Careful study of conditions before purchasing is almost as important as study of the outfit itself. When you come to strike an average of size, efficiency, and weight, an I. H. C. outfit will score heavily over any competitor.

When the correct size of the outfit is decided and you have settled on your threshing machine, the question of power arises. Whether you want to or not, you cannot settle the question without making a comparison of the only available forms of power; steam, and gaso ine or kerosene.

Steam is reliable—so is gasoline.

A steam outfit is simple, yet it requires an experienced licensed engineer to run it. An I. H. C. tractor is more simple and does not require a licensed engineer.

Steam needs constant attention. An I. H. C. kerosene-gasoline engine needs no attention but an occasional oiling.

Steam costs money whether the thresher is running or not; also it takes time and uses fuel both to get up steam and let it go down.

I. H. C. kerosene-gasoline expense begins when the actual work begins and stops the instant the work stops.

Sparks from a steam engine are a constant source of danger. An I. H. C. kerosene-gasoline tractor throws no sparks. It may be set in the most convenient place to run the thresher, regardless of the nearness of the stack or the direction of the wind.

An I. H. C. kerosene-gasoline tractor will travel safely over many roads and bridges that would be unsafe for the heavier machines.

Every point of comparison shows some advantage on the side of an I. H. C. kerosene-gasoline tractor. We say without hesitation, that you will get more than your money's worth in the purchase of an I. H. C. threshing outfit, because of its convenience, the good work it does, and the length of time it lasts.

See an I. H. C. local dealer for full information or write nearest branch house.

Western Canadian Branches

International Harvester Co. of America

(Incorporated)

Brandon, Man. Lethbridge, Alta. Regina, Sask. Weyburn, Sask. Calgary, Alta. North Battleford, Sk.
Saskatoon, Sask. Winnipeg, Man. Edmonton, Alta. Yorkton, Sask.

Does the Raise in Price of Internal Combustion Fuels Mean Anything?

Continued from page 26

alike more useful articles at a moderate price and within the reach of every wage earner, than any other one discovery ever made.

During 1910 the United States production of petroleum exceeded the combined production of all foreign countries by 97,738,368 barrels.

New petroleum fields have been found and eveloped more rapidly than the production of old fields has decreased, so that the production has shown a rapid increase from 500,000 barrels in 1860 to 218,000,000 barrels in 1911. This means that beginning with 1860 in each period of nine years, as much petroleum has been produced as in all preceding years. It is reasonable to presume that in nine years from now our production will be 2,500,000,000 barrels more or a total production at that time of 4,032,000,000 barrels of oil.

From the above it can be seen that the production of crude oil has increased at an enormous rate yet we find ourselves up against an apparent shortage which makes it more than likely that the price of fuel oil (barring temporary declines) will not be cheaper. There is still another thing that lends weight to this, and that is the marked decrease in the importations of gasoline. While there is an increase in the export during the first four months of this year as against the corresponding months of last year of 33⅓ per cent.

As we said before, the pertoleum industry is one that vitally concerns the farmer at present, especially in Western Canada. With 5,000 internal combustion tractors at work and each tractor handling, say, an average of over a section of land, it means that over 3,000,000 acres are to a certain extent dependent upon oil for fuel.

During the present season the oil companies have demanded more or less cash from the farmer, which, in view of the advance in price, might seem unjust. The advance in price can be acounted for to a greater or less extent by the widening of the breach between supply and demand. The cash propositon is one brought about largely by the tractor itself. Five or six years ago the oil used by each stationary outfit on the farm was so small that the country merchant handled most of the fuel oil consumed. At present, however, the fuel oil consumption on, say, 5,000 farms in Western Canada is so large that in some cases it runs into $1,500 or $2,000 in a single season. The tractor concern who sells the tractor gets a certain amount of cash and well secured notes before the machine is delivered as well as a lien on the machine. The oil companies do not get any such security if they get any at all, and the end of the season usually finds them with a large number of unsecured bank accounts. These accounts may not amount to a great deal in the case of any one farmer, but when totalled up run into millions of dollars and being unsecured, losses are necessarily heavy. It was with the idea of curtailing these losses that the cash idea was put into effect..

It behooves every internal combustion tractor owner, either real or prospective, to watch the fuel oil situation carefully, as it means considerable to you in dollars and cents. It is nothing of which you need be afraid, neither does it detract in any way from the usefulness of the tractor itself, for while the price of fuel oils may rise the efficiency of the tractor is being increased to such an extent that it more than keeps pace with any increase in the price of fuel that may take place.

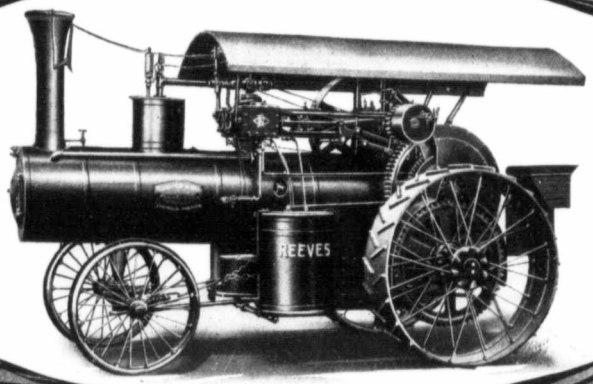
A single lie destroys that absolute confidence which for certain souls is the foundation of love.

The secret of Germany's success is no secret at all to those who know the relative condition of her working population and England's. England has allowed the slum to take care of itself, and the slum has turned upon her and eaten out the heart of her strength. The real strength of a nation is not her banks, palaces, rich men, armaments, guns, battleships, splendors, Park Lanes, royal state, pomp and circumstance; the real strength is her men who work with their hands. That is her only asset worth talking about; her physical condition depends upon their physical condition. England has allowed her working populations to deteriorate in slums; Germany has labored to abolish the slum and to rear her working populations in the full measure of health and vigor. When the two working populations clash in the commercial battle, down goes the English line.

How often it is difficult to be wisely charitable—to do good without multiplying the sources of evil. To give alms is nothing unless you give thought also. It is written not "blessed is he that feedeth the poor," but "blessed is he that considereth the poor." A little thought and a little kindness are often worth more than a great deal of money.

REEVES

CANADIAN BRANCH:



REGINA, SASK.

Durability and Good Working Qualities in a Threshing Outfit Assure Profit to the Owner

Profit is what appeals to the buyer of threshing machinery, and when the qualities necessary to the greatest profit can be found in one machine, that is the one you should buy, even though, as is likely to be the case, the price is larger than on other machines. The following letter is right to the point and tells the experience of an operator of Reeves machinery:

Fullerton, N. D., May 29, 1911.

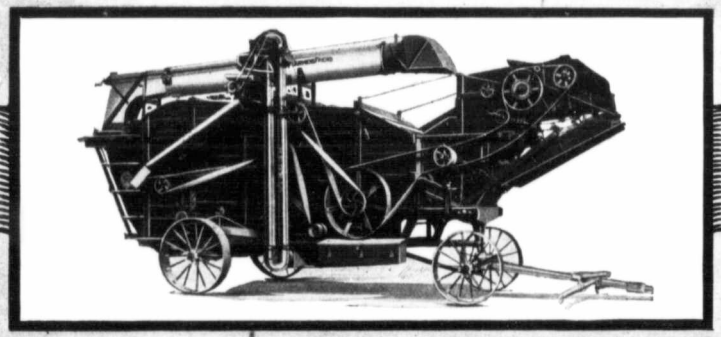
Reeves & Co., Columbus, Ind.

Dear Sirs:—Have you on hand lower pan for 40x60 separator No. 1052 bought in 1900? If you have, let me know and send price. This is the first repairs I have had to buy in eleven falls. I run this separator six falls in Illinois and five falls in Dakota, and it is still in first-class shape excepting this pan, and today, with a new pan, I will put it up along side any new separator and do a better job. I also am using most of the belts that came with it.

Respectfully,

R. F. D. No. 2, Box 25. *Myron McKeague, Fullerton, North Dakota.*

The Reeves Double Cylinder Engine and the Reeves Compound Separator make an outfit that will prove profitable to you, satisfactory to your patrons, and with reasonable care, will last a life time.



Our catalogs are free — ask for them

REEVES & COMPANY

COLUMBUS, IND. U.S.A.

REEVES

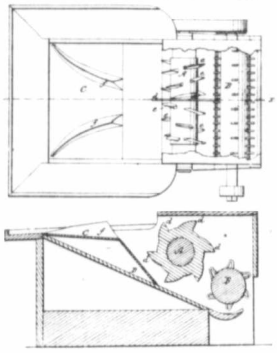
Conducted by Professor P. S. Rose

Practical Talks to Threshermen

Talk No. LVIII.

LESSON LVIII.

The last two lessons have been devoted to an account of Mr. F. H. Darling's difficulties in perfecting and placing the self feeder on the market. They illustrate very clearly the antagonism of the people of that day toward anything new which was liable to disturb existing labor conditions, or which ushered in a new system of doing work. It has taken fully a century to educate the masses in this country to a point where they do not look with alarm upon every new labor saving device. This changed attitude on the part of the people is due to the general diffusion of knowledge through books and the public press, and to the further fact that they have seen that even if a particular industry is given a new machine to work with, the inevitable result is the cheapening of the product to a point where its market is broadened and instead of making labor less needful it increases the demand for labor, though perhaps not in the same field. Such has been the case in agriculture, in printing, in foundry work, and in transportation. Many more illustrations might be cited, but these will suffice to show that the proposition is perfectly general.



It is an easy matter now to introduce a new machine compared with what it was forty or fifty years ago. People have learned that improved machinery cheapens production and stimulates trade. This in turn creates a demand for more labor. It is true, in this country, that labor saving farm machinery has driven thousands of laborers to the cities, but they have found increased opportunities awaiting them in the shops of the great manufacturing establishments at better wages and more reasonable hours than they every knew on the farm. The great mass of laborers have been benefited rather than injured by the change. They have greater social advantages, better schools and steadier employment than they could hope for in the country.

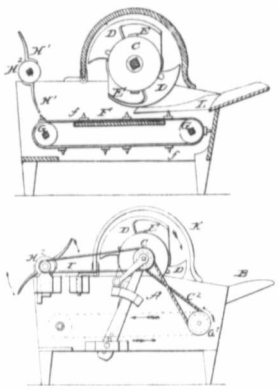
In the thickly settled parts of Europe and in the Orient, conditions are different and it is much more difficult to make the people understand how changes in the methods of production will affect them. They are not so well informed for one thing and manufacturing has not become so well established. Any radical change in farming methods in the Orient would mean starvation for many of the laboring classes. Conditions have been fixed in the grooves of centuries and there is not only the prejudices of ages to overturn, but the difficulty of finding a place where the man in agriculture would fit in if he were forced out of employment. For progress of any particular moment to take place in that part of the world in agriculture, it must first begin in manufacturing to provide an outlet for those whom it is intended to displace on the farms. The cheapest power in the Far East is the power of human muscles.

The industrial era in Europe was ushered in after the terrible social upheaval of the French Revolution and the wars of Napoleon. These events shook up conditions to such an extent that it became a necessity to introduce labor saving machinery to do the work that had to be done if people would eat and be clothed. It was an economic necessity brought on by the changed conditions. Had it not been for these wars it is improbable that the world would have seen such rapid advancement in the direction of science and invention as has been witnessed in the past one hundred years. Another thing that made such progress easy was the opening up of great new areas of fertile lands in the United States, in South America, in Australia, in Canada and in other parts of the world.

All of these things have had an influence and advanced the various industrial arts to their present state, but in none of them has there been greater advancement than in farming machinery.

In some of the earlier lessons of this series we showed that the development of threshing machinery did not begin in earnest until in the late fifties. It was then that the vibrator type of machine was brought out and the idea of threshing and cleaning the grain in a single operation was finally worked out. It is interesting to note that at just about this time inventors first began experimenting with the self feeder. Among the first of these early inventors was a man named Samuel D. Reynolds, of Lane, Illinois, who took out a patent, number 21214, on August 17, 1858. It was a crude device which was intended to cut the bands and feed the bundles to the separator at the same time. The details of construction are clearly set forth in the accompanying drawings, figures 112 and 113, reproduced from the patent specifications. This was probably the first patent granted in this country relating to self feeders and band cutters. The description of the machine is best given in the words of the patent from which we quote as follows:

"In using the threshing machines heretofore constructed, so far as my knowledge extends, the bands of the sheaves invariably have to be cut before their contents can be fed into



said machines, which operation adds very considerably to the amount of manual labor required in operating that class of labor saving machinery. To obviate the necessity for the said preliminary band cutting and enable the sheaves of wheat or other grain to be fed directly into a threshing machine is the object of my present invention. This I accomplish by placing in suitable bearings a cutting and spreading cylinder. A immediately in front of the threshing cylinder B of a threshing machine and imparting a rotary motion to the said cutting and spreading cylinder by any suitable means, either by banding or gearing.

"The band cutting in my improved threshing machine is performed by a series of blades dd, which radiate from the central portion of the cylinder A, and whose cutting edges may be of such a shape as will enable them to perform their work in most perfect manner. The instant after the bands of the sheaves are severed by the cutting blades dd, the spirally arranged teeth ee, of the cylinder A take hold of the loosened stalks of grain and spread them out uniformly over the inclined apron D, which conducts them to the teeth of the threshing cylinder B.

"The platform C, which receives the sheaves of grain stalks as they are fed into the machine, may be combined with the inclined apron D in such a manner that its position may be so adjusted as to bring it within any desired distance of the blades and teeth of the cylinder A. The sheaves as they are placed upon the platform C, are guided as they are pressed forward directly to the band cutting blades of the cylinder A by means of a flaring channel formed by the ledges ff, which rise from the upper surface of said platform as shown in the drawings.

"I do not intend to limit myself to a single series of band cutting blades upon the periphery of the cylinder A, for the reason that I may find it expedient to combine several series of cutting blades and spreading teeth with the periphery of said cylinder. The said cutting and spreading cylinder may be used in conjunction with any description of threshing cylinder."

Figure 113 shows a side view and longitudenal sectional view of a band cutter and feeder invented by Isaac H. Palmer, of Lodi, Wisconsin, and patented January 26, 1864. Here we have one of the arrangements of a modern self feeder in the raddle which carries the grain from the feeding board to the threshing cylinder. Rotary band cutters, of which there are a number, mounted on a horizontal shaft, cut the bands. This device is driven from the threshing cylinder of the threshing machine in the same manner as at present employed by all the self feeders. We have in this machine of Palmer's some of the fundamental principles of the modern self feeder, but the idea is very crudely worked out. There is no governor attachment. The beater HH serves the purpose of feeding the grain from the top of the bundle first, but there are no retarders in the bottom to make this feature really effective.

Meet your fellow employees on the same ground. Spurn familiarity, but be, in a dignified way, a genuine mixer.

The Thresherman's Question Drawer

Answers to Correspondents

R. J. Q. My engine is a 22 h. p. and my separator is a 40 by 62, with a blower of a standard kind, feeder and weigher. Now, in dry grain the engine handles it with perfect ease and yet uses up from seven to eight twelve-barrel tanks in a day of about 12 hours. There is no leak of water and hardly any of steam, except the regular use. The valve is set perfect. I took the cylinder head off to see if the rings leaked, but they leaked just a little on one side of the piston head, but it was so little I don't think it would hurt that much. The valve don't leak either as far as I could judge. Last year we used only three to four and a half tanks a day and the grain was all wet and tough, so the engine had to work harder. This year it was easier, yet she uses more water.

A. If the piston and valve are reasonably tight and the valve is set correctly, the trouble is evidently in the running of the engine. Perhaps you looked up the valve gear last year and this year you run the valve at full stroke. This would make some difference in the water consumption. If your boiler foams this also would cause it to take more water. It may be to your advantage to have a good machinist look over your engine, if possibe a representative of the factory at which it was built. It may be there is something out of place which you do not notice. There is something radically wrong when an engine takes twice as much water as it did a year ago.

J. D. Q. What is the difference in the economy of different classes of engine? Why should it not pay to have a higher grade engine for the traction engine, say a Corliss and condensing engine?

A. The additional first cost of the engine is one thing in the way, although there is room for some advancement along this line. An automatic cut-off engine for the thresherman may not be far off; but as for a Corliss and condensing engine for traction work, this may never come, especially the latter. The water consumption of a single valve simple, non-condensing engine from 30 to 33 lbs. per hour h.p.; a compound single valve non-condensing engine is from 22 to 25 lbs.; a compound single valve condensing from 14 to 16 lbs.; a simple Corliss non-condensing engine, from 27 to 30 lbs.; a compound Corliss condensing engine, from 12 to 15 lbs.; a triple expansion Corliss condensing engine from 10 to 14 lbs. Steam turbine, high grade, 15 lbs.

L. A. Q. What is the reason the crosshead of an engine run one fall the bottom shoe wore over an eighth of an inch and the top shoe about an eighth of an inch? They were slide shoes to take up the wear. I could not keep the shoes from cutting. I adjusted them in all different ways. Maybe the shoes were too rough for the shoes to wear smooth. I oiled them with two or three different kinds of oil, but would not stop it how much I oiled them.

A. Your description would indicate that there is not enough bearing surface on the crosshead shoes. The shoes would not wear three-sixteenths of an inch in ten years. However, you can help them along by the use of graphite mixed in oil. You may be adjusting the shoes too tight. The best way to test the crosshead for looseness is to pry the crosshead up and down with a stout stick; this will show you how much play there is between the shoes and guides. There should be looseness to the amount of the thickness of writing paper. This will allow the oil to work between the shoes and guides, and will be tight enough to keep it from knocking.

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

A. The steel is only to protect and give finish to the jacket. Blocks of magnesia are used to make up a jacket on a locomotive. On some traction engine boilers asbestos plaster is used. In some cases asbestos sheets are wrapped around the boiler and others are covered with wood. Hair felt is the best. In most every case Russia iron or sheet steel is used to keep the material in place. However, in some cases the wood is put on without any outside covering and it is likely the latter would be the most convenient for a "home job." The most convenient way to put on a wood jacket is to take strips of tough wood about ⅜ by 2 inches and put them around the boiler, say about every three feet with ends fastened together so that they hug close to the boiler. The jacket which is made of strips ⅞ by 2 inches is then nailed to these strips, which serve two purposes; one, to make an air space between the jacket and the boiler, and the other, to hold the jacket on while being built up until the outside metal bands can be put on which permanently hold the jacket in place. The dome is treated in the same way

by first bending thin bands around for the purpose of nailing the outside strips thereto. If the boiler is of the locomotive type, a strip of wood the thickness of the jacket can be bolted to the fire box as low as the jacket can be run and the outside metal bands can be nailed to the strip. This serves the same as if the bands went entirely around the boiler.

F. A. C. Q. The flues in my engine have been leaking a little lately. Sometimes they would leak for half an hour and then they would stop entirely for a half day. What do you suppose would cause this?

A. Your leaky tubes should be rolled or expanded. If they get real hot they will close up partly and the excessive heat will dry up the remaining moisture as it comes through the leak. Never leave your fire door open when the engine is pulling hard, as the inward rush of cold air will contract the ends of the tubes and get them loose. If possible never make an unduly hot fire. Your tubes will last longer, if you observe these points.

G. A. R. Q. What is the matter with my Moore pump? When I start it to take water into 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 on the ground, this would indicate that there must be something wrong with the discharge pipe or the pipe betwen the pump and the boiler. There may be a closed valve or one out of order. Examine the check valve and see that all other 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.

H. B. R. Q. 1. Why does a pump only water a certain distance?

2. What is the limit a pump will draw water?

3. Which works the easier, a large or small suction pipe?

A. No pump draws water; a pump can no more lift water than it can lift itself; it lifts nothing below its "barrel" at any time. The plunger or bucket pump displaces the air which is in the barrel of the pump, and exhausts that which is called by custom the suction pipe. After the air is displaced from the pipe the pressure of the atmosphere pushes the water in to fill the vacuum. The pump has no other office to preform than to get the air out of the pipes.

The size of the suction pipe has nothing to do with the action of the pump; it does not make the pump work one bit easier whether it is large or small. The size of the suction pipe has, however, an influence on the efficiency of the pump only, and so far as easy working of the pump is concerned, it would act just as well if it were one-inch in diameter as if it were four inches. The suction pipe should not be over 24 feet verticle from the water.

E. C. R. Q. 1. How would you test an engine with cold water?

2. Will an injector work with 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 fuel pressure is required to make it work well.

S. B. R. Q. What makes a crosshead pump pound and jerk the pipes as though it would jerk them in two? Sometimes hard to get started also. Please advise me what to do for pump and what is wrong?

A. The fact that the water is forced into the boiler by impulses will naturally make a jar in the pipes. The faster the engine runs the more intense the jar. An obstruction in the suction pipes which will allow the pump barrel to become only partially filled with water will make the jar more intense, as the water is started by the plunger when at a higher rate of speed than at the beginning of the stroke. This may be your trouble.

R. M. J. Q. Having had a great deal of trouble with my cylinder lubricator, I bought an oil lamp, and I have found a great deal of trouble to keep the pump working. It is of the valveless type, but has a check valve on the pipe leading from the pump to the steam pipe of the engine. I noticed that it refused to start after it had been pumped dry, and it left stand without working; gets considerable water in the reservoir of the pump. The steam pipe is higher than the pump, but why does it get the water in the pump, and why don't it pump the water back and then start to pump the oil?

A. If steam pipe of the engine is higher than the pump, it will not take long for the discharge pipe from the pump to condense steam enough to fill the pipe with water, and when the pump delivers oil through the delivery pipe to the steam pipe it does not need to displace the water with oil to get oil into the steam pipe, as the oil being lighter than the water, it will rise through the water in the same manner as does the oil in a slight feed lubricator. When the oil is all pumped out of the pump, it is not long before the water gets into the pump, especially if the valve leaks, and as some of these pumps refuse to pump water, the oil being lighter than the water, is forced out at the top of the body of the pump; in other words, the water fills up the body from the bottom. We see no reason why these pumps will not pump water as well as oil if the plunger is a good fit and the check valve is tight.

J. A. L. Q. I wish to ask you what harm cylinder oil which the lubricator feeds while the engine is not running will do?

A. Cylinder oil fed into the steam pipe or steam chest can do no harm to the engine. It is simply a waste of oil.

G. M. C. I have an Eclipse governor and cannot get the speed I need. I understand there was quite a range of speed in this governor. The horizontal spring is not arranged for conveniently changing the tension. I have taken the top

off and cannot see how it can be done there. I have been used to the Pickering & Waters governors, but I cannot see how this one can be changed as either of these are. I wish you would help me out, if you can.

2. The governor runs unsteady part of the time, that is, it runs above its speed, and then shuts off the steam and slows down below its speed and keeps this up for quite a while. I have repacked the stem and don't think the trouble is there. Can you also help me out in this point?

A. The horizontal spring is for keeping the steam up in place and not for the purpose of changing the speed. You will notice the stem is made in two pieces and the two pieces are connected by small castings just above the stuffing box. There is a screw in one of the levers which works against the other lever, and by means of this screw the stem can be made longer or shorter. This changes the action on the large spring and varies the speed. The range of speed on this governor is about 200 revolutions per minute.

2. Take the valve out of the governor and see if it shows signs of sticking. If there are any spots on the wings of the valve they can be dressed off carefully with a fine file and perhaps the disc of the valve may be a little tight and can be dressed off at the spots which indicate its being tight.

G. R. Y. Q. Will you tell me how to babbit the crank pin brasses?

A. You can fasten the babbit in a crank pin box by drilling the inside full of small holes about one-fourth of an inch in diameter; or another way is to heat box and tin the inside with a soldering copper. Put the box into its place, square the rod by the crank discs, have the key out as far as it will go to allow for as much babbit as possible. Make two strips of wood to put between the boxes to keep the babbit from running together. The top strip should be short enough to allow for a gate to pour the metal; about the thickness of the outside flange of the box is enough to admit the metal so the upper stick can be that much shorter. The upper stick also serves to hold the box and rod up to its place. The top stick should be a little thicker so as to leave a little more space on the top side of the pin to allow a free course for the metal to run. The box should be put in hot so that the solder can unite with the babbit. This makes a very solid job. The babbit will wear down to the brass without coming off. When holes are drilled in the box instead of tinning the surface, the box does not have to be heated. The babbit should be scraped to fit the crank pin, due to the shrinkage of the metal. A babbited box will wear longer on a crank pin than a solid brass one.

H. B. Q. What is the value of wood for fuel as compared with coal, or how much wood does it take to equal a ton of coal?

A. One cord of air dried hickory or hard maple weighs 4,500 lbs. and is equal to about 2,000 lbs. coal.

One cord air dried beech, red oak or black oak, weighs about 3,250 lbs., and is equal to 1,450 lbs. of coal.

One cord air dried poplar (white wood) chestnut, or elm weighs about 2,350 lbs. and is equal to about 1,050 lbs. coal.

One cord air dried average pine weighs about 2,000 lbs. and is equal to about 925 lbs. coal.

From the foregoing it is safe to assume that 2¼ lbs. of dry wood are equal to one pound average quality of soft coal, and that the full value of the same weight of different woods is very nearly the same—that is, a pound of hickory is worth no more for fuel than a pound of pine, assuming both to be dry. It is important that the wood be dry as each 10 per cent. of water moisture in the wood will deduct about 12 per cent. from its value as fuel.

E. E. R. Q. We have a Crosssteam gauge on our engine. When we pulled in and cleaned out the pointer stood at 0, but since then the pointer has travelled completely around the gauge, stopping within one-half an 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.

Genius without energy is an exquisitively wrought engine without steam, an object of admiration without use, where the highest capability of speed is motionless, and unfitted by peculiarity of structure for all practical purposes.

The Phenomena of Heat and Work

By Walter Hodgson.

The steam engine converts heat, which is latent in the form of fuel, into useful energy and work. Heat and work are convertable and a given amount of heat will result in a given amount of work, and by the expenditure of work, heat can be formed. It matters not whether the fuel be coal, wood, straw, or oil, etc., it remains a question of converting the latent heat in the fuel into work by the consumption of the fuel. The common means used to obtain useful energy from the fuels, do not produce all the equivalent of the heat into work, a large percentage is lost owing to many causes. The amount of work obtained from the convertion of a given quantity of heat may be termed the efficiency of conversion.

Up to the present, the steam engine is a very useful means of obtaining work from fuels, and with perhaps the exceptions of suction gas and engines using the crude oils, it is the most economical method of obtaining energy by the consumption of fuels.

Heat in fuel is estimated in units, known as B.T.U., viz., British Therminal Units. A unit of heat, either latent or active, is equivalent to 778 foot lbs. of work, and if we divide the h. p. factor of 33,000 by this 778, we obtain the factor 42.42. Therefore, the approximate number of units to equal a horse power is 42.

It should not be overlooked that although 42 units of heat equal a horse power of mechanical work, it must be remembered that if the steam engine and boiler is used to obtain work from a fuel, that considerably more than 42 units will have to be consumed and converted to equal one horse power.

One pound of coal may contain 12,000 heat units, which divided by 42, gives us 285 as the number of horse power contained in one pound of the coal. Yet in the average steam engine we only obtain about 5 per cent. of the quantity of the heat contained in the fuel, in the shape of available energy or work.

The boiler of an average steam engine will only obtain about 60 per cent. of the heat in the fuel, and of this 60 per cent. of heat in form of steam, only about 7 per cent. perhaps of this energy is obtained in form of work from the engine itself. A large percentage of this loss in the boiler and engine is from condensation and radiation in the engine.

To find the efficiency of the engine and boiler, find the value of the fuel consumed per minute and divide same by the work developed per minute by the engine. It is necessary, of course, either to get the equivalent of the energy of the fuel in foot pounds, or to get the equivalent of the work developed in units of heat, before a percentage can be arrived at. In other words, it may be summed up as energy expended and energy received, and the percentage received is the therminal efficiency of the engine (engine and boiler).

Assuming that a steam engine developed an indicated horse power of 60, which is 60 h. p., that is developed every minute, or 3,600 horse power units per hour, or as is more usually termed, 60 h. p. hours, viz., 60 horse power maintained per hour. Now, as 42 heat units equal one horse power, 60 by 42 gives us 2520 as the number of units required per minute. If the quantity of fuel consumed was, say, 3¾ lbs. of coal per hour per horse power developed, then with a heat value of 12,000 B.T.U. per lb., we get 45,000 units contained in the fuel, and as only 2520 units are obtained in form of work, the balance of 42,480 units is lost as far as obtaining work is concerned, and in the above example, the therminal efficiency is approximating 5 per cent. — as $2520 \times 100 \div 45{,}000 = 5$ per cent.

The above is illustrative of an ordinary steam engine with ordinary boiler. But the triple and quadruple expansion and condensing engines give better results, as also do water tube boilers, such as the Babcock & Wilcox boilers, which give 80 per cent. efficiency. The ordinary steam engine may require 4 lbs. of coal per h.p. per hour, while a triple or quadruple engine may only require 2 lbs. to develop the same power, or, in other words, the latter use less steam.

One should never set one's heart on things that are unobtainable. Common-sense teaches one not to do so but how many sensible people spoil the enjoyment of life by indulging in dreams of impossibilities. They become so much wrapped up in such dreams that they overlook the good things that do come their way. Indeed it becomes a habit, and a very bad one, too, because it not only renders the individual miserable, but associates also.

THAT FORTUNE UNDER THE SOD

QUICKLY REALIZED BY THE USE OF

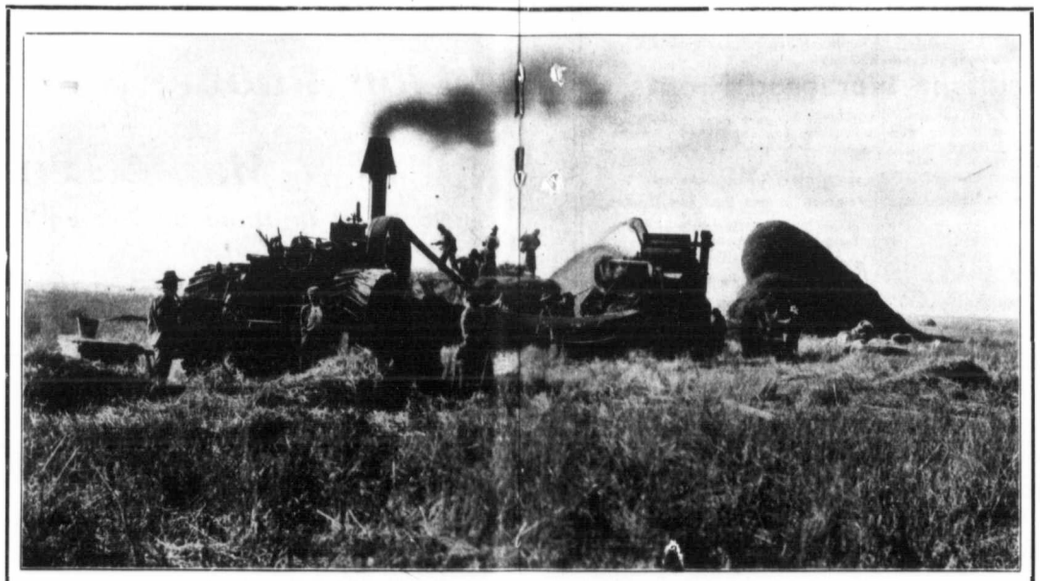
American-Abell and Canadian-Advance Lines

RUMELY POWER FARMING MACHINERY

American-Abell Steam Plowing Engines are celebrated for economy, strength, durability and simplicity. Our **26 h.p. Bracket-Mounted, Steam Plowing Engine** is just the thing for that job of breaking. It is what you want for plowing of any kind. It will pull a big engine gang without any of that fuel waste—without that wear and strain that comes from overloading. It always has ample power in reserve for every emergency.

Our **20 h.p. Rear-Mounted Steam Plowing Engine** is another good tractor—the easy-running, easy-starting, easy-to-handle kind.

Both the 26 h.p. Bracket-Mounted, and the 20 h.p. Rear-Mounted Steam Engines are exceptionally well adapted for all kinds of belt work as well as for plowing, grading and hauling. They will do your threshing, hulling and shredding, with entire satisfaction. Both tractors comply fully with every requirement of Canadian Boiler Laws, and are rated accordingly.



A CANADIAN-ADVANCE OUTFIT AT WORK IN EASTERN CANADA

A Profit-Making Threshing Combination

is an **American-Abell Steam Engine** and a **Canadian Advance Separator**. If you have **one** of these, lose no time—complete your money-making, money-saving outfit by buying the **other**.

The long and successful record of the **Canadian Advance Separator** is well known. It is a fast, clean thresher—easy to set and easy to operate. There's no grain in the straw, nor dirt nor chaff in the grain that leaves a **Canadian Advance Separator**. It runs easily, in all kinds and conditions of straw, with the minimum of power, requires but little attention to keep it in perfect order, and always does uniformly good work. **Canadian Advance Separators** are built in a wide range of sizes. The **Line** provides the size you need.

THE CANADIAN ADVANCE SEPARATOR

The Universal Gas Tractor

now sold by **Rumely Products Co.** is as handy on the farm as a "pocket in a shirt." It is an engine of medium weight, but with big power possibilities—a general-purpose, all-season engine, high class in every detail of design, material and construction—an engine that will do easily and quickly every conceivable kind of farm work.

The OilPull Tractor is an inexpensive power plant for all traction and belt power needed on the farm the year round. It is a real kerosene-burning engine. It burns cheap kerosene at all loads, under all conditions.

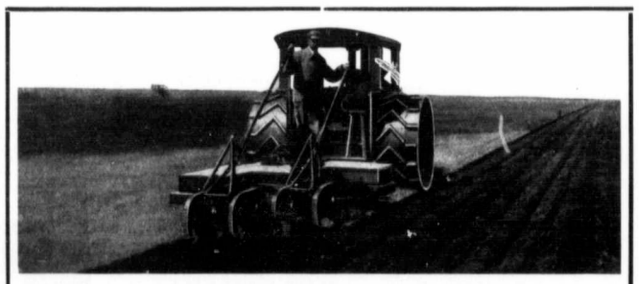
The OilPull Tractor can be had in a size to meet your needs at a price to suit your pocketbook.

Write for Catalogs—a postal will do

State whether you are interested in Gas Tractors, OilPull Tractors, Steam Engines or Separators. Catalogs will be sent by return mail.

Rumely Products Co., Inc.

2961 Dufferin Ave., Winnipeg, Man.



PLOWING WITH A RUMELY UNIVERSAL TRACTOR

How to Get the Good Cow.

By H. D. Griswold.

The most beautiful and interesting of all things on the farm are the things that live and breathe. The more we study them, the more interesting they become, and the better we feed and care for them, the more profitable they are.

One of the things most necessary to man's life and happiness, and yet one of the most neglected and despised, is the cow. She is fed grudgingly and cursed because she does not give more. We boast that we are forging ahead in dairying; that we have so many cows that have made large records. True, but we have also a great number that do not even pay for the food they eat.

In every case, if you trace back to the source, you will find a man back of the cow who has studied her breeding, her feeding, and her care; a man who has taken time to study type and form, the proper mating, the proper development, and knows how to feed and care for her; has taken the time to weigh and test the milk, in short, has made this work his business, and the result has not been chance, but a natural result of business methods properly applied. Many a cow has lived and died in obscurity that could have made a great record, because her owner did not know enough to feed and care for her properly.

What are we going to do about it Let us go to Farmer A's place and look over the situation. Farmer A says, "I know my cows are not first-class, but I cannot afford to buy high-priced stock and I have not time to do this weighing and testing that you talk about." Now, we all have the same amount of time, twenty-four hours each day, no more, no less, and when we say we have no time, we mean that we prefer to spend the time in some other way. The farmer says, "Sometime I intend to have better cows." My friend, life is short, why not begin to-day? But he says, "What can I do to-day?" You can put up a milk sheet and a scale in your stable and begin to weigh the milk. You can send for a tester and begin to test the individual cows, so you can cull out the poor ones. It is the indifference and neglect of these things that keeps the poor man poorer. The farmer does get up early and work late, sometimes, but when it comes to business and business methods, he is the most shiftless and lazy of any man on earth.

The cow is your machine, to consume your crude farm products and turn out a finished food product for man. The good cow can make for her owner a double price for his hay, his grain and his corn. It can be done and is being done, by so many men now, that there is no question about it.

Another thing you can do to-day is to sell that scrub bull, sell him at any price you can get; get rid of him before he does any more mischief; he is a curse to your herd and a blight on any future improvement.

The sire is more than half the herd and it is to him that you must look for all future improvement. We have good breeds and good animals in all the leading dairy breeds. Choose the breed that suits your fancy and your conditions, and then stick to it as long as you live. Our farmers are not so poor to-day that they cannot afford a good sire for the herd.

The more I study the dairy business, the more I am impressed with the value of the good sire, and it is important that we pay strict attention to his selection. Of course, we want a full blood and one that has a good mother. We are after production and we must have a line of good producers behind this animal on both sides. Look this up carefully. If there are no records let them alone. Not all full bloods are good, some are worthless, so insist on the records.

He must be well grown, strong and healthy, and have the dairy type. That is, a large, deep body, well sprung ribs, soft mellow hide, a strong back, a clean cut head, wide between the eyes, and a full bright eye, small horns and a small neck where it joins the head, and a neck of good length. See that he comes from a line of regular breeders; avoid a shy breeder.

If you can get a mature sire that has heifers of his own getting, you can judge his worth by them. The best test of a sire is the stock he gets.

Mate this sire with your best cows, which you have found by weighing and testing, and when the calves appear take care of them with the object always in view that they are to be the future herd; always feed them well to develop the best there is

in them and have them come fresh not less than two years old, and older is better. Select these again by weighing and testing the milk, and while you are doing these things, study the feeding and care, and you will find a pleasure and profit that you have never known before. And every man who takes care of these domestic animals as they should be, develops in himself a better citizen, a kinder heart, and a more lovable man in his family; he has the satisfaction of a well filled pocket-book, a clear conscience and the knowledge that he is a public benefactor.

The Scale on the Farm.

The scale is just as important on the farm as in the grocery store. How would the grocer succeed, who, in selling sugar, should put in a few scoopfuls and say, "I guess that's about right," or in selling nails should drop a few handfuls in the bag and say, "I guess that's about it?" The farmer who guesses at how much he is feeding his cows or hogs, who guesses at how much milk or gains he is getting is doing just the same kind of business as the merchant who should guess instead of weigh.

The cows and the pigs, etc., are the farmer's customers. They take his feed and roughage. Now, the farmer needs to know what he gets in return in the way of pounds of milk, butterfat, pork, etc. No successful business was ever built on guessing—farming is no exception.

This brings to mind a case. A boy who was learning to test milk at school, tested his father's herd. He also weighed the milk from each cow morning and evening and kept a record of it. He also kept record of the feed given the cows. After a while the fourteen year old informed his pa that Brindle didn't give enought butterfat to pay for his feed. Pa looked at him kind of funny. The idea his boy telling him that. Yet he did not attempt to contradict the boy. He knew the boy had been weighing and figuring. The boy also informed him that Spot was paying a splendid profit and Rosy was not paying for her feed, and so on. What was to be done? The boy's information was taken and acted on. At the end of the year the herd had been reduced from 21 to 14 cows by selling the poorest and buying some more good ones. The 14 gave more profit than the 21. That was what a fourteen year old boy could do by weighing and keeping accounts. The time the boy spent in doing that weighing and figuring, only a few minutes a day, brought more profit than the day after day of work put in by his father. And these few minutes of work a day made it possible for that farmer to increase his returns year after year.

If one is feeding pigs, the only way to know what is going on is to weigh the pigs from time to time and to weigh the feed. The horses should be weighed that their condition may be the more accurately known. The load of grain or hay that goes to town should be weighed. But there is no need of enumerating further.

The scale is necessary on the farm—just as necessary as in the grocery store or the coal yard.

Preserve your conscience always soft and sensitive. If but one sin force its way into that tender part of the soul and dwell easy there, the road is paved for a thousand iniquities.

VENTILATING THE COW BARN.

Continued from page 58 last month.

The milkers can see when the cows' udders are clean; the stableman can see better in his work of keeping the stable and cows clean.

It is easier to feed along one central feed-way as both rows can be fed at one time. There is less waste of feed than when two passages are used, and where there is a silo it is much handier to bring the silage in at one place in the centre than at two places on the sides.

There is less confusion in letting the cows in and out.

The supporting posts can be placed in the line of the head rail which is at the narrowest part of the cow, but when the cows stand heads out the supporting post comes in the centre of the cattle stand, taking up considerable room and making it impossible to tie as many cows in the same row.

The ventilating system being at the side of the barn, the odor from the manure will not be so great as when the cows are arranged heads out.

The feed passage being the highest part of the floor and the gutter and walk behind the cows being the lowest, you have a drainage out to the sides of the barn rather than in towards the centre, and it is easier to make it effective.

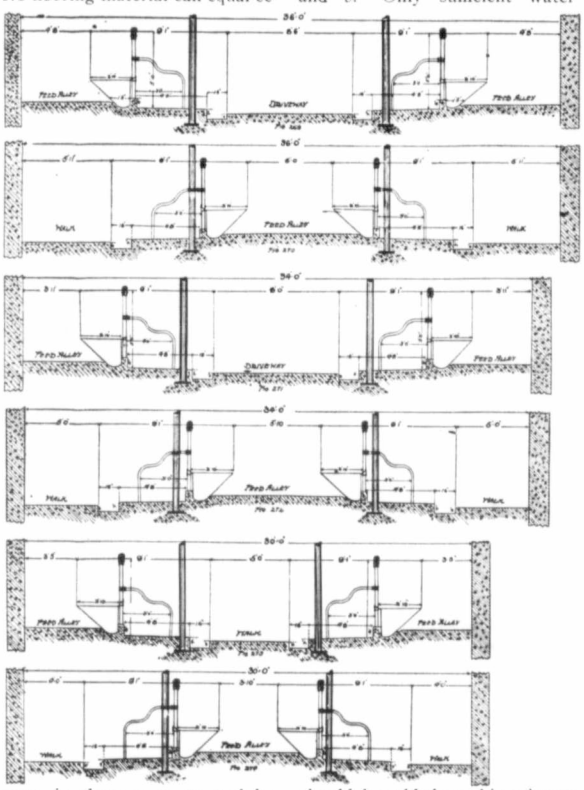
It is better for the cows not to stand directly facing the windows through which the sun at certain times of the day will be shining very strongly.

The cuts on page fourteen, however, show the best measurements for either system with varying

widths of barns. They show where the supporting posts should come for either arrangement.

Flooring.

Stable floors must be tight, non-absorbent and well drained. They must also be comfortable for the cows, easy to clean and durable. No flooring material can equal cement in these respects, and besides, when well laid, it is almost indestructible. Materials for cement floors are easily obtained, and any intelligent farmer can lay his own. Cement floors will not harbor mice or rats, and will not absorb stable liquid like wood does, and so are sanitary in every respect. If sand and gravel are close at hand, even the first cost will be less than the wood floors.



Materials for Cement Floors.

The materials should be of the best grade obtainable to insure a hard, durable floor.

1st. First-class Portland cement.

2nd. Coarse, clean gravel, free from loam and clay, which prevents the cement from binding the sand and gravel.

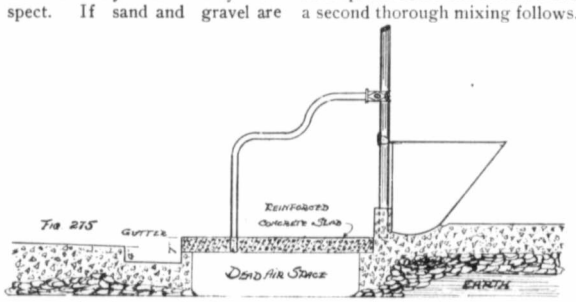
3rd. Sharp, coarse, clean sand.

Proportions.

For the whole body of the floor thoroughly mix cement, sand and gravel in the proportions of 1, 2½ and 5. Only sufficient water should be added to this mixture to form a stiff paste which will show water when tamped.

Mixing.

The cement, sand and gravel are measured in correct ratio on the mixing board and thoroughly mixed before any water is added. The correct amount of water is then sprinkled on this mixture and a second thorough mixing follows.



Laying the floor.

Level off, wet and tamp the earth thoroughly to prevent settling after the floor is finished. Lay rows of cement drain tile with the correct fall to ensure a dry foundation, and arrange for direct cemented connections to the traps which will be in lower

ends of mangers and gutters. Then prepare for the laying of the concrete by setting on edge, at the correct distance from one stable wall straight boards or scantlings 6 inches wide, supported by stakes firmly driven into the ground on the sides of the wall. With spirit level and grade line see that the top edges of these boards are perfectly level or evenly sloped in the manner in which you wish the finished floor to be. In this space tamp in sufficient gravel to even off all irregularities in the ground surface but leaving sufficient space for a

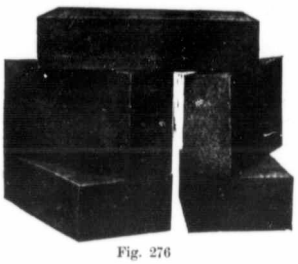


Fig. 276

floor of solid concrete 5 inches thick. Tamp the concrete into place, level off with a straight 2 in. x 4 in. scantling, and finish the surface with a wooden float or wire brush, leaving a rough floor surface to prevent the cattle from slipping.

An objection is sometimes made that cement floors are cold for the cows to lie on. If the ground beneath the floor is well underdrained so that there will be no absorption or moisture, there will be little reason for complaint from this cause.

Fig. 275 shows how some stable floors are constructed with a dead-air space below to keep the

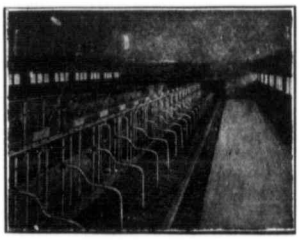


Fig. 277

standing platform dry. A reinforced concrete slab 4 in. thick is used. Such a floor has to be very carefully constructed.

An ideal floor is made by a combination of cork, brick and cement as shown in cuts, Fig. 276 and Fig. 277. The cork brick consists of finely granulated cork and a special grade of tough asphalt, heated and thoroughly mixed, then made under pressure into brick form. They are easily handled by any workman, being laid either in Portland cement, mortar or in a thin layer of asphalt or pitch.

Iron Columns.

Nothing adds more to the appearance of a stable than iron columns. They occupy less space than wood posts, and they interfere less with the light and air. They are much more durable and will not become saturated with manure. In the long run they cost less than wood.

By filling a 3 in. column with concrete it will carry as great a strain as the 4½ in. unfilled column. We will be pleased to give estimates of the different sizes of columns necessary, either made of cast metal or steel tubing, for different sizes of barns and their relative cost.

Walls.

The stable should not be over 9 feet high. A ceiling of great height calls for more heat to keep the stable comfortable and is of no special advantage. To insure that the walls will be dry there must be an air space used in their construction. Where cement or stone walls are used, it is preferable to only bring the cement or stone up to the window sills, as is shown in diagram, and the cement or stone should be sheeted over, leaving a few inches air space. In his article on "Ventilation," Prof. Grisdale gives information as to the construction of proper walls.

Ceilings.

Whenever there is to be a loft or storage barn above the stable, the floor should be perfectly tight so that no dust can sift through to the stable. In addition, close fitting, tongued and grooved lumber should also be nailed to the undersides of the joists to make a plain, smooth ceiling which will harbor little dust and can be easily cleaned. The ceilings and walls as well should either be painted white or whitewashed, as in this way the intensity of light in the stable will be doubled. The ceiling should be eight feet high, and if there are sills overhead the distance from the floor to the undersides of them should be at least 7 feet 6 inches. The undersides of the lintels or fanlights over the door should be on a level with the undersides of the main beams, so that the overhead track for feed and litter carriers may be kept well out of the way.

The Stalls

Modern methods and modern barn equipment not only make it possible to keep the cows cleaner and the barn in a more sanitary condition, but make it possible to accomplish this with less labor and at less money cost. The following illustrations and brief description show how various kinds and types of barn equipment effect great saving of time, feed, labor and money. With the

most of these classes of equipment the actual money saving in the course of a year is sufficient to pay the entire original cost.

P. B. Tustin, Associate of the Royal Sanitary Institute, who has done so much in the West for the betterment of dairying conditions, in the preface of this book strikes the keynote of the superiority of steel stalls, viz.: "They do not soak up the manure as do wooden ones nor obstruct the light and air in the stable and are easy to keep clean. They reduce to a minimum surfaces for collecting dust and dirt."

The cost of steel stalls is very little greater than of wooden ones. They are practically indestructible. No expensive carpenter is required to set them up, but any one who is laying the cement floor can quickly bolt

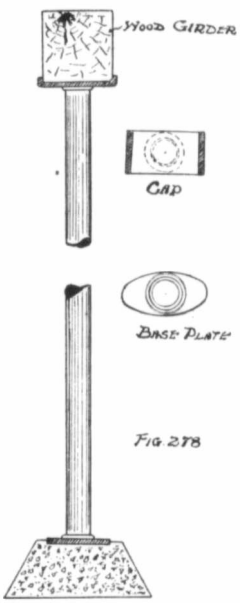


FIG 278

them together. It enables a farmer to remodel his own stable or to put in a new stable without the necessity of expert help.

Nearly all dairymen now use the swinging steel stanchion for tying their cows. The cow's comfort is of great importance since it has much influence on her milk production. In a good swinging stanchion your cows will have the greatest freedom of movement, consistent with the restraint necessary to keep them lined up in their stalls. They stand in the centre of the stalls and so are free to lie down on either side, to rise up and also card themselves. There is no weight on their necks. There is no possibility of injury to the cows or of their getting loose.

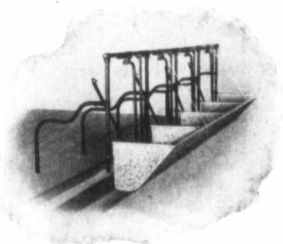
The great advntage of the swinging stanchion tie is that while it gives the cow almost as much freedom as when outside, still it prevents her from moving backwards and forwards in her stall, so that all the manure is confined to the gutter and the cow is kept clean.

Stall Partitions.

Fig. 279 illustrates the best in stall construction. A partition should separate every pair of cows. Note the shape of these partitions. The double curve allows the cow to turn out of her stall in a natural manner, and is long enough so that the milker and the next cow are fully protected. Many a valuable cow has been ruined while lying down, by the next cow stepping on her udder, which a proper partition would have saved.

Mangers.

The manger can either be constructed entirely of concrete as shown by Fig. 280, or built with concrete bottoms and galvanized fronts and divi-



sions as shown by Figs. 194 and 200. The latter has the advantage of great capacity, thus preventing waste of feed, and because of the manger divisions each animal will get its proper share.

With mangers of this size and design each cow's feed is held where she can easily reach it to the last morsel. Shallow cement mangers allow the feed to spread out over the feed room floor so that the cows must strain and push to reach it, with the result that they often slip and fall heavily upon their knees, thus causing big knees and suffering.

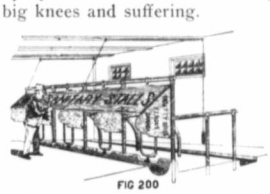
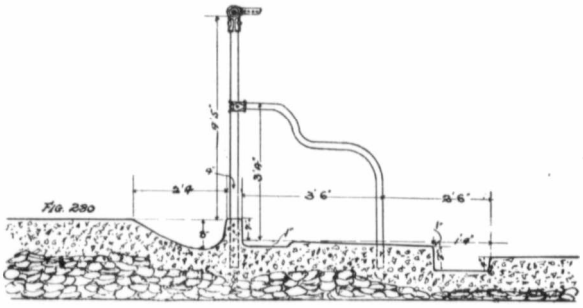


FIG 200

Mangers similar to those illustrated above are self-cleaning. When the manger is raised as in Fig. 200 the cement trough offers the most convenient and sanitary means of watering the cattle. The manger bottom should be laid with a fall of one inch in forty feet. This system of watering may be used whenever a continuous cement manger is installed, and thus save the cost of water bowls and consequent repair bills.

Fig. 280 shows a cross section of a stall with the best measurements for gutter, cattle stand,

manger curb where all-cement manger is used. The walk behind the cattle is better placed 3 or 4 inches below the level of the cattle stand so that the cows will look larger and show off to better advantage in the stalls. A square gutter is, on the whole, better than those of other shapes, as it retains the manure and is not so liable to cause the cows to slip as a gutter with one side sloping.



The cattle stand will vary in length from 4 ft. 6 in. to 5 ft. 6 in. according to the age and breed of the cows. It is a great mistake to have it too long. The above cut shows the aligning device by means of which the lengths of the stalls can be adjusted to suit each cow, and long, short and medium cows can be lined up evenly at the rear so that the litter falls in the gutter.

The cattle stand should have a fall of about 1 in., and it is well to lower the stand a little where the cow's front feet are, as is shown in the above cut. This keeps the cow standing level, and helps to retain the bedding from working into the gutter.

A single post stall is much preferable to any form of double post stall, as it allows the cow to turn her head freely to card herself and to lie down naturally.

Where it is desired to have some stop to prevent the cow from putting her head in on the wrong side of the stanchion, the post should be made to swing back out of the cow's way after she is tied.

Motor Power on the Farm.

Farmers as a rule have not in the past given much attention or study to questions of motive power, other than the quadruped with its gallon of oats. As mechanical power in form of steam and oil engines are so largely used now, it would be to the farmer's advantage to devote a little attention to the motive power as applied to the farm. Especially so, when owing to the rapid and extensive development of Northwest, it is often difficult to obtain competent men to handle engines and machinery used in threshing and cultivation purposes, to say nothing about the minor uses for power upon the farm.

Most farmers endeavor to maintain the condition of their work horses as good as possible, both by regular and adequate feeding, and also by good grooming. Yet the condition of the average engine or threshing outfit upon the farm indicates anything but care or attention.

Expensive outfits are left to depreciate, hardly ever cleaned, adjusted or overhauled, and it is little wonder that results are not as good as might be desired Highly paid men are hired to operate these outfits and the average do little or nothing in the way of taking care of the valuable machinery under their care. Pull a lever or two and as long as the wheels go round we are threshing. Hustle is the order of the day; it matters not if the outfit depreciates to the tune of six or seven hundred dollars per year.

Buy a book on steam (with questions and answers) for a dollar, memorize a few questions and answers, and shove straw into a fire box for 60 or 70 days (or less) and a qualified engineer is the result. He has government papers to prove his efficiency.

Rome was not built in a day and is it at all reasonable to expect that the average fireman on a threshing outfit can, in a matter of two or three seasons' threshing, be fully qualified to operate and handle any troubles which are likely to occur during a threshing run, without some considerable study of the principles and knowledge of the practical matters assimilated in such a manner as they are fully understood to a reasonable extent.

All practice and no theory is as bad as the reverse. What is required is a combination of the two; the theory to explain the why it is so, and the practice to learn how it is done. Development of the young mind is what is desirable, not craming which is so much in evidence in our modern educational systems. And there is no better school to learn than right upon the farm where things are under actual working conditions. To start and study steam from a text book is much too dry for the boys. Start them at the engine and then they will be interested to go back and find out the principles.

Farmer Up-to-Date—Farmer Good Intention

Their Farms adjoin. Both of these Farmers live in your neighborhood. You know them and they know you. Are you one of them? If so, we sincerely hope you are the right one.

FARMER UP-TO-DATE — JUNE 1912 — FARMER GOOD INTENTION

HENRY—(home from the Agricultural College): I've been having a look round the place, Father, and as you've got your field work so well in hand, there's very little of a job left for me. But if you don't mind I should like to buy a few planks of lumber and start a real business like poultry plant for mother. It's a pity to see such nicely bred Rocks and Wyandotts with such a poor shanty. They deserve something better and it's due to mother as well. You and Jack I suppose have your heads so full of the gas engine and running the "heavy guns" of the farm you just seem to think that mother's birds are "only hens." She let me into a secret, however, last night and in spite of the poor accommodation I believe she has done as well with her side line in eggs and the dressed poultry she has sold as you fellows have with your wheat and steers. Yes sir, there's big money in a well managed poultry run.

FATHER: There comes the rain again. I wonder whenever we're going to get any plowing done. By gosh but this has been a wet spring and no mistake. Well, well, we can't fight against fate. We're in the hands of the Almighty and must just take what He sends us without grumbling. Only it's precious hard to see what He sends the other fellows sometimes and the everlasting downpour of ill-luck that seems to come our way. I'm sure no man deserved his ill-luck so little as I do, for my faith has never wavered and I've done my part, God knows, little though it may be in lending a helping hand where it was needed. Ah well! There's no good purpose can be served by repining. The dispensations of Providence are too deep for us. "He sendeth the rain alike upon the just and upon the unjust;" and "Whom the Lord loveth, He chasteneth." I have had a strong desire all my life to do what's right by everything and everybody but——

FATHER: All right, boy, you can have your way. It's a good idea and the job will keep your fingers out of mischief. Besides, mother's chickens are becoming a big family and they certainly want better house-room. I'm glad to see her protege taking such an interest in the hens. She evidently has a fairly intelligent idea of how to manage them, and if I'm not mistaken I have an idea that I either dreamt or actually heard mother making a proposal to her the other day to split the profits with her. That's the sort of thing to make any one take an interest in their job. If some of our neighbors would treat their help a little better than they do they wouldn't always be on the hunt for fresh hands. There's Smithers who spends half of his time in watching his men and the other half in suspecting them and the consequence is he is constantly in hot water while old Ring never has to look for a man simply because he puts his boys on their honor and treats them as men.

CHARLES: That's your favorite resting place, Dad, and you don't seem to be able to take us any farther. Now what's the use of whining like that. Do you mean to tell me that our next-door neighbor has had anything worse—anything different, in fact—in weather than we've had? Not a bit, only he's got the equipment and he spends half the time we do in making plans, but his are **working** plans and he is putting them in practice all the time. We've got a power equipment of six-horses-and-a-half (for you can't count the old cab-horse chesnut as anything more than half-a-horse). Watkins has a 45 horse power tractor and four teams of the best bred and fed Clydesdales in the province. Watkins started plowing as soon as the frost would let him; ran his engine by night shifts and kept all the teams busy during the day. He had all his seed in twenty-four hours before the rain came. We hadn't got half of our plowing done when the ground was as dropsical as old Aunt Hannah who died last spring.

MOTHER: Did I hear any one mention a new hen house? Well it's nice to get what you want in this world but what a far nicer thing it is to get it without begging for it. I am sure the chickens will be as sensible of the comfort of their new quarters as I will be and I believe will show their appreciation at once by beginning to lay better. And you were quite right about my profit sharing idea with our young widow friend. She's a most capable girl and seems to be very happy with us but I want to give her a sense of independence. I don't want her to think that she is under any obligation to us beyond the fact that we simply gave her the chance; and that's no more than any right thinking person would give her and find it a real delight to do it for a well-meaning soul like her in her bereavement. She is certainly making good and her cooking experiments were greatly enjoyed at our last Home Economics meeting. We never tasted a cake like the one she made for our afternoon tea.

MOTHER: No, I have little to add to what I said last Sunday. Oh it does seem a pity to look around this place on a bright sunny Sabbath like this and think that we haven't an acre of our seeding done, while our neighbors have got all of theirs in. I wonder to hear you speak about Providence in the way you do, father. I have as strong a belief as I ever had that we are in the hand of God, but I don't think we can blame Him, since he has given us brains and a pair of hands, if we fail to make use of them in a common sense way. I am trying to do my part, I assure you. I will not complain. I get lots to encourage me. Our neighbors are kind, and, indeed, none of us have any reason to find fault with anything that is not within the four walls of our home. Of that I am persuaded, and the more I think of it the more confident I am that our first business is to get at the root of our trouble, and that we can discover without the help of anybody.

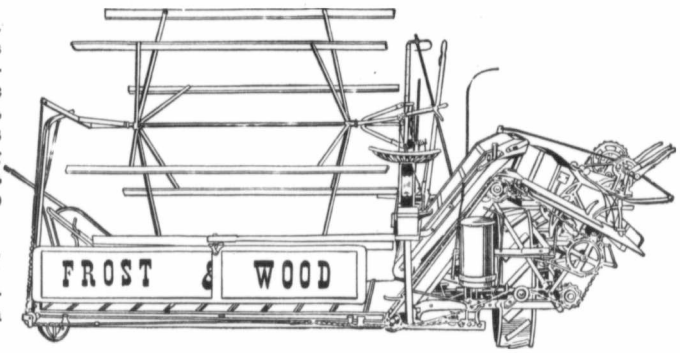
JOHN: Phew! My, but it's hot! I've just been over that bit of summer fallow with the cultivator. I thought we had got the last old rascal of a sow thistle out of that ground but last Sunday's rain and the sunshine we've had since has fairly started everything that isn't "heremetically sealed" and forbidden to live. There's quite a bunch of new growths and it's on the side of the field nearest old "Good Intent's" place. I'm persuaded he's to blame, the old humbug, for he had a rare crop of them in the lower end of his wheat crop last year, and one day in a high wind I saw them sailing aloft in our direction like a cloud of hungry immigrants driven out of Siberia. If that old fellow doesn't wake up and mend his ways, I'm afraid I'll take the law into my own hands and do what the weed inspector seems unable to do with his "law." But for old "Good Intent" I'd have had an easy first in the "Good Farming" contest last year.

LETTER FROM BOB: Dear Mother,—I am writing this to you, and you can show it to father and Charlie if you think fit. I am getting along fine in Winnipeg, but I get "the blues" every time I think of home, and especially since Jim Watkins tells me you have got no seeding done. I heard a preacher this morning on the subject of "Rousing a good man out of a rut," and I'd have given a lot if father could have heard it. You have been a brick of a mother—Charlie and I both say that, and you will have your reward from us one of these days, never fear. We have everything to thank you for, and you don't know what we would like to do for you. . . . Father is a good man, but I know he has got into a rut, and we want to get him out of it. He hasn't been in Winnipeg, on any kind of a holiday for ten years. Now, the first thing I would suggest is that as soon as he gets the spring work a little forward he should leave the rest to Charlie and come to me for a week at least.

FROST & WOOD
Farm Machinery
Has Been on the Market 73 Years and Still Holds First Place

The **FROST & WOOD BINDER** operates Knotter and sheaf-ejector with an eccentric sprocket instead of a standard sprocket. This saves **POWER** by using leverage instead of extra power to tie and drop the sheaf.

As a consequence, your horses do not slow down at each sheaf delivery, but maintain even speed. This means larger acreage covered per day and less wear and strain on horses and binder.



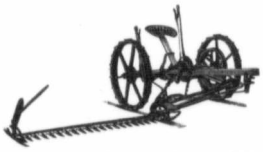
The long spokes of the eccentric sprocket tie the sheaf with **INCREASED** compression, making a **TIGHT** sheaf that **SAVES** twine, and is **UNHULLED** by gentle ejection.

The **SHORT** spokes of the eccentric sprocket carry the needle **SWIFTLY** back below the deck, allowing the packers to bring down the next sheaf. This prevents clogging and threshing of grain on the deck, prevents choked elevators.

For **HEAVY** cutting the **FROST & WOOD** is **PERFECT**, and **LIGHT** running, thus it meets the hardest conditions of cutting.

Bearings are permanently aligned in a strong main frame. Roller bearings of large size mean **EASIEST** running under **HEAVIEST** load—impossible to **BIND** by rough usage.

For this **FROST & WOOD** Binder, see the Cockshutt Dealer, or write us for the Binder Book.



FROST & WOOD MOWERS give longer service and cut better than others. This is because the power is taken from **INTERNAL** gearing on the main wheel. With this internal gear, **THREE** teeth on main wheel rack and **TWO** on the pinion are in contact, and **DIVIDE** the load.

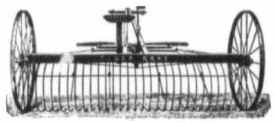
A FROST & WOOD MOWER never chokes. The moment the mower is moved, the knife **CUTS** because the internal pinion has no lost motion.

The long pitman saves wear of knife at knife connection and saves broken knives.

Roller bearings save draft. A rigid alignment of bearings in a strong frame saves draft. Large, broad-tired wheels prevent slipping in mushy ground. An easily operated foot-trip lifts **ENTIRE** cutter bar over rocks, ant hills, etc., without stopping the mower. At a small extra charge we can supply an attachment to convert the standard No. 8 Mower into a vertical lift, for cutting among stumps. Wear at knife connection is taken up by a special device.

Combined, these things mean a swift-cutting, dependable, long-wearing mower, and you are certain of cutting your hay in the quickest possible time, without delays or accidents. And this service is yours, year after year.

Write for the Mower Book, or see the Cockshutt Dealer.



The **FROST & WOOD RAKE** is strain-proof and time-proof—built of steel throughout, except shafts, on a steel axle running the full width of the rake. Has heavy staggered spoke steel wheels, the most substantial built. It has an easy-acting ratchet foot dump, with positive cleaner-bar arrangement and high lift to teeth. As a consequence it is especially adapted to bunching, and takes a full load before dumping.

Teeth are set in iron sockets. They spring back or sideways over or around stones, and always come back to proper position because they cannot distort socket out of proper shape to hold tooth right. As a consequence, work is always first-class.

The teeth are made of the best spring steel, properly shaped to gather and lift rakings by sliding under them, instead of digging and scraping the ground and throwing grit into the hay being raked. This saves breakages of teeth on stones, saves repair bills, and gives cleaner and better hay than any other type of rake

SIMPLICITY, POSITIVE ACTION and **STRENGTH** are always found in **FROST & WOOD** Tiger Rakes.

Cockshutt Plow Co., Limited

Branches

Winnipeg Calgary Regina Saskatoon

Distributing Warehouses

Red Deer Lethbridge Edmonton Brandon Portage la Prairie

Can Dry Weather Injure the Farmer?

BUY a binder? No; if we got another season like the last two, I won't need any farm machinery. If you were selling a reliable rain-making machine, I might be interested."

Campbell, the dry-farming missionary

"Hire a man? No; I'm going to do what I can alone. It's enough to risk seed and my own work, without risking two or three hundred dollars' worth of hired labor besides, on what the season will be. Where'd I be if we got another dry year?"

That is the way some farmers are talking; others are just listening and taking plenty of time to think. Suspicion has fallen on the weather man, and in farm homes from the Atlantic to the Pacific curiosity is open-eyed as to what this summer's weather will be.

More or less the farmer is gambling with the sky and the winds. He does his work as well as he can and awaits results that depend on many conditions. It is a big game to play, but we are gradually getting a grip on facts that make the winning surer. There will always be a little doubt—there is in anything—but science has lifted agriculture pretty well out of it, brushed the dust from the young giant's clothes, and said, "Trot along now, sonny, you're getting big enough for your job of feeding a hungry world."

The drought still remains a menace, not so much because we do not know how to prevent its ravages as because we do not know when. We have been perhaps a little too willing to take chances on rain coming when it was needed. It was pleasant to believe that June rains were a climatic fixture, but the two seasons past have certainly been a shock to any such optimism. We will profit by the lesson, though, that it took so much burned grain and withered corn to write. Standards of farming must go up; soil preparation is going to mean more than it used to.

Said a farmer to me the other day: "We need irrigation. It's getting so we can't depend on rain any more, and a crop won't do anything when it is standing in a red-hot brick for the most important month or six weeks of its growth. If we had a system of irrigation, we could turn on the water when it was needed, and there are mighty few years when a dose of it wouldn't be of benefit at some time."

Campbell's sub-surface packer

I asked him why he did not irrigate.

"Irrigate!" he exclaimed, "why it costs money to irrigate; one man can't do it alone."

Every Farm Should be Irrigated

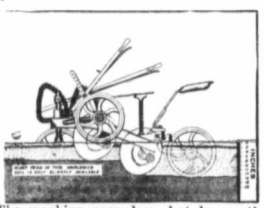
"Depends on how you do it," I told him. "If you run water over the soil and let it soak down, why, that certainly will cost; if you get all the moisture that falls into the soil, and arrange for it to soak up, it will not cost so much."

He scratched his head for a moment as a man will when a new idea is itching his brain. Then he began to hand out objections. Our soil wouldn't take water as it should; it washed, leached and baked; three weeks of rain in April wouldn't make any difference in July.

I talked humus, and when I got pretty well along with it, brought in deeper plowing and thorough cultivation as "chief aid and first assistant." He finally admitted the essential fact that soil will neither take nor retain water satisfactorily unless it contains something other than the basic rock grains.

That something is humus. A soil will resist drought in proportion as it is supplied with well-decayed organic matter. If this be lacking, the tendency to lumpiness when disturbed, or to baking from the heat, is difficult to overcome; and it is just those two conditions which make the drought dangerous. If a soil is mellow and crumbly, we can fit a preparation to it that will protect the crop against an ordinary duration of dry weather. If not, we are working at a decided disadvantage.

Mellow soil is just another way of saying a soil is rich in humus; either way the fact is unchanged that it is the ideal soil—a root pasture permitting free circulation of moisture. That is the important point, and it is only attained when the soil grains have contact, not cohesion; humus secures this structural arrangement which more than any other thing marks the difference between a productive and an unproductive soil. We would not be much in error if we viewed the tendency of soil to bake and lump as a sort of soil disease; but error or not, it would be excusable if it led us to apply the prime remedy—humus. The methods that must be employed to save soil moisture are most easily carried out on a humic soil. It responds to treatment better because you are strengthening a natural tendency. There is moisture in it to save; rains and melted snows were absorbed; there simply remains the necessity of a few careful methods to keep them there. On humus soil much less rain is needed to break a drought, because the same porosity which brings moisture up to the roots will take it easily and quickly down to them. A soil without that porosity tells a tale, with its little drains washed on every slope after the rain, of where surface soil and moisture both went to. When a man's farm goes down hill with the rain, his farming is always up-hill work. That is the contrariness of things. Humus for the soil—let us make a slogan of it. Clover and cows point the way; the two seasons past point the time—now.



The machine goes deep, but leaves the sub-surface soil underneath

I have in mind a farm which a few years ago was running low on humus and fertility. Persistent cropping had brought the soil very near the state where commercial fertilizers and ideas of going to Canada step in. But the owner thought a way through his difficulties that seemed promising enough to try—just as the clover-and-cow path to rich acres and independence. He went into cattle and clover as fast as limited means and a horror of debt would allow him to, and supplemented that wise move with the fine-as-a-flower bed method of tillage. Did he succeed? Sure. A man does not often fail who looks his difficulties between the eyes and hands them the swat of scientific methods. He has brought his yields steadily up to something profitable. Last season, and the season before, his fields came through the dry weather with a yield good to look at. Humus and cultivation worked the wonder—and a little grit that had some thinking behind it.

Persistent cropping without free use of green and stable manures will certainly leave soil in poor condition to endure dry weather. Every stray bit of humus has been searched out by millions of hungry roots. The fertility may have been maintained by mineral fertilizers, but in this soil game we are playing with nature, whereby we expect a golden multiplication of what we give; fertility alone cannot win. The plant must have its food in a liquid shape, and that requires water, not at intervals, but every day from seed-time to harvest. We are careful by tillage and manure to supply the plant-food a crop will require. Why are we not equally careful to conserve the moisture that will be needed? It is just as important and not any more difficult. That immense tank, the subsoil, is under the farm we

The deep-tillage machine in the field

Continued on page 64

*This article was written for American farmers, but it contains so much that is good in soil tillage that we cannot refrain from giving it to our readers.—Editor.

6 GREAT BOOKS FREE 6

To mark the advent of our third year in business we are giving away free of charge, postage paid, (but to farmers only) a series of six agricultural works. It was a task of no small magnitude to carefully select these books from hundreds of volumes of more or less merit. We required books of unusual merit and called in a small army of agricultural experts to pass upon them. In the judgment of these men the books we are offering fully cover the field and are the very best that can be obtained for the farmers of Western Canada. We are calling this our SPECIAL SUMMER EDUCATIONAL OFFER.

More than one thousand farmers have, over their own signature, or by personal visit, advised us of their intention to enroll as students this fall, and the number is daily growing. To **our book** offer we especially desire to draw their attention and the attention of others to plan to enter this fall.

Of several hundred alert farmers who took advantage of our School last year there is not a single man who has studied our course but freely declared it to be worth a great many times the cost. The mention of a few taken by chance from scores of similar letters is sufficient to indicate the kindly feeling that exists in this country towards the service that we are rendering.

Geo. F. Wright, Canora, Sask. on completing his course wrote as follows, "If I only had this course in scientific farming a few years ago I would be worth to-day a $100.00 for every $10.00 I am worth now. I will feel lonesome now that the course is finished and truly hope you will soon have some other courses ready for me to study." Dan. Stewart of Cairns, Alta. says "I would not be without the course for five times the price asked. Every intelligent farmer would profit by taking it." J. J. Schluttenhofer of Strome, Alta. remarks in a letter to us "I think it would be cheap at double the price you ask for it." W. H. Hill of Halstead, Man. says "I consider the money invested in your course will pay me a perpetual dividend."

These men are farming in widely separated parts of Western Canada, operating under different climatic and soil conditions. Their testimony comes unprompted and is the result of the genuine satisfaction they

have derived from the study of the lessons. Can you doubt the value of our instruction when hundreds of the West's best farmers have declared it to be worth so much? Is it good enough for you when your fellow farmers say it has been worth many times the price to them? Are you prejudiced against finding out more about your business?

Those who enroll during the summer months enjoy many advantages and more readily graduate than they would if they delayed entering. This was the experience of a small army of farmers who were far-seeing enough to enter during last summer. The others "who waited until they saw how their neighbors fared" were not so far advanced. The season was too far on before they got a good start, as a result, the bulk of our graduates this year were among last summer's enrollments. July, hot and busy though it was, was our banner month.

By enrolling during the summer you get immediate possession of the first division of the lessons and while you are not called upon for regular examinations until the fall, you have a chance to familiarize yourself with the work, and so plunge into it whole-hearted after harvest.

Then again, you have ready access to our consultation department where you may obtain expert advice on all farming problems that worry you, but best of all, you unite yourself with a body of progressive, intelligent farmers, you become a factor in the better farming movement. As a student of the School our little paper "Better Farming" is sent to you free of charge every month, and through it you keep in touch with a host of your fellow farmers who are making more money for themselves and exerting a splendid influence on the country. As W. J. Boughen, Valley River, Man. one of our students, says, "The teaching of the School of Farming put into practice would mean many millions per annum to the prairie provinces."

We have a special proposition in connection with our library offer and it costs you nothing to investigate it. Cut out the attached coupon and return it immediately. We will then forward descriptive matter and further particulars. Do it today.

THE HORSE BOOK by Johnstone, a standard, reliable work dealing with the horse, breeding as allied to the farm. Fully illustrated.

HORTICULTURE IN THE NORTH by D. W. Buchanan, one of the few distinctly Western Canadian books. A treatise that will prove invaluable to many a Western farmer.

FARM BUILDINGS by Sanders. This is a large book containing upwards of 500 illustrations of plans of general barns, farm gates, portable fences, sheds and handy devices. The plans alone are worth a lot of money.

DRY FARMING Dr. Widstoe is the author of this popular and instructive book which is gaining ground rapidly in Western Canada. Those who have read it say that it is the best thing yet written on the subject.

THE FARMERS' VETERINARIAN by C. W. Barkett. A book that every farmer should keep handy, deals with the nature, cause and treatment of common ailments and the care and management of live stock when sick.

FARM WEEDS IN CANADA by Geo. Clark, seed commissioner and the late Dr. Fletcher. A large book containing 89 full page colored illustrations of weeds. The popular English name of each is given and the methods best employed to get rid of them.

Correspondence School of Scientific Farming of Western Canada, Limited.

Bell Block, Corner Princess & Cumberland Sts.
WINNIPEG

Please send me full particulars regarding your special Summer offer.
Name .....
Address .....
C.T.F.

Hay and Haymaking

Continued from page 9

for haymaking. The fork was used for bunching, for pitching on to the load, and from the load to the stack. At the present time, however, the hay loader does the trick from the ground to the load, and the fork is used in the case of unloading only to straighten out the rough edges of the load. Nearly every farmer at the present time who handles hay to any extent uses either the unloading outfit or the swing stacker. The swing stacker is not a modern implement, although its use is almost modern, and it is used by the farmers almost exclusively in the field. Connected with it is the dump rake used to gather the hay from the swath and to deliver it to the stack to be put on the swing stacker, which in turn deposits it upon the stack. This is a very convenient apparatus where hay does not have to be hauled any great distance and where the stack can be made in the field, it furthermore saves any pitching of the hay and there is also very little handling to be done where the farmer draws the hay to the barn and deposits it to the mow. This is at the present time invariably done by the hayfork. Of this there are two kinds, known as the sling and the harpoon. The sling hayfork consists of a series of rope baskets that are placed at intervals upon the load, the ends of the rope being gathered up and attached to the hayfork, the same hauling the hay until such a time as the operator chooses to dump it upon the mow.

The harpoon hayfork, of which there are two types, single and double, is driven into the load of hay, and is made to hold a considerable portion of it, lifting it from the load and depositing it upon the mow. This is the better style of hayfork, and if the load is properly built it can be lifted from the rack in three forkfuls. This form of stacker can also be used in the field by means of a wire cable and four poles the apparatus being the same otherwise as that which issued in the barn. This method of stacking hay is far superior to the old method of handling by hand, as the hay is deposited in large quantities upon the stacker or mow and is then thoroughly settled. If it is pitched from the load to the stack by hand, there is a tendency to make that side which is next to the load heavier than the other, and unless the greatest precaution be used, the stack will lean towards that side, and will thus leave a place for the rain to enter and cause the stack to rot.

The haymaking industry, especially in Canada West, is one that is in its infancy, but as the country becomes more thickly populated and the urban becomes large in proportion to the rural population, there will be more of a demand for hay, and this demand must be supplied from the farms of Western Canada. In some localities quite an industry is carried on in the way of baling hay, and in many cases the engine owner can turn his engine to profit by using it to operate a hay baler. Great care must be taken in the baling of hay to have it in the best possible condition, otherwise it will mold and spoil in the heart of the bale, and will thus loose a great deal of its value. The farmers to-day should see to it that there is no marsh land that is lying idle, for if sown to a small quantity of domestic grasses it can be easily made to yield a large quantity of valuable hay.

There should never be a guest in the house whose presence requires any considerable change in the domestic economy of one's household affairs. However much the circumstances of business or mutual interests may tend to the entertainment of a stranger, he should never be taken into the family circle unless he is known to be worthy of that high social distinction; but, when once admitted, he should be treated as if the place had been his always.

Live for something. Do good, and leave behind you a monument of virtue that the storm of time can never destroy. Write your name in kindness, love, and mercy on the hearts of thousands you come in contact with year by year; you will never be forgotten. No; your name, your deeds will be as legible on the hearts you have left behind as the stars on the brow of the evening. Good deeds will shine as the stars of heaven.

THIS IS ABOUT YOUR TIME

The little two, five or ten minute shut-downs that are caused by stopping to make some little change or adjustment in the working of a separator do not seem to amount to a great deal, but, should a thresherman figure the minutes lost every day in bushels that could have been threshed, had the outfit kept running, he will quickly begin to see how his profits are slipping away from him.

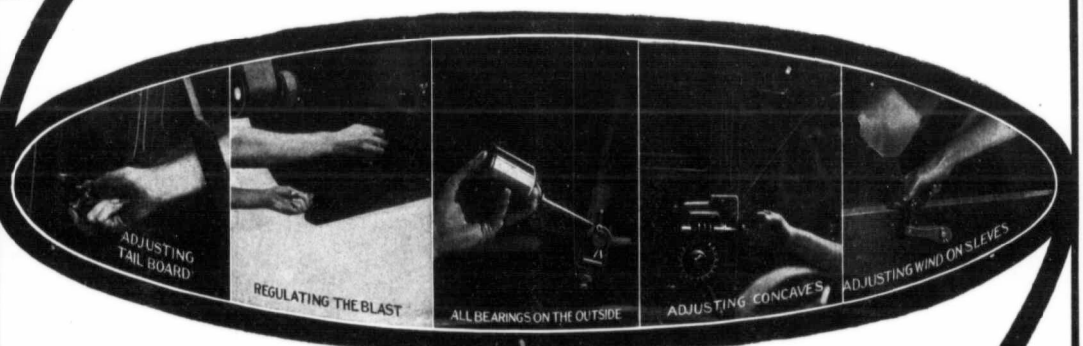
Think of the time taken in climbing around over the separator giving each bearing its daily oiling, the time lost in changing or regulating the blast, setting the wind deflector, adjusting the concaves, tightening belts, pulleys, etc.

Bearings ***must*** be oiled, all of these adjustments must occur several times during each setting as conditions of the grain may warrant. Belts are bound to stretch.

Some separators are built with all these parts that require daily adjustment in such out-of-the-way places that making a change necessitates stopping the outfit.

Not So with the RUMELY Ideal Separators

Every part is on the outside, pulleys, belts, bearings, even the parts that require frequent adjustments,



changes in the concaves, the blast, and even oiling the bearings can all be accomplished while the machine is in motion.

Aside from this great degree of accessibility there are other advantages in the RUMELY Ideal Separator that insures more profits, greater success and better satisfaction for the customer.

There's the smooth-working, automatic Feeder, Gearless Wind Stacker, six sets of Agitating Fingers, over an extra-long Straw Rack, Screening Section in the Grain Pan, the Shoe and the Traveling Chain Rake just back of the cylinder. This construction at the cylinder in the RUMELY Ideal Separator provides for a straw travel of nearly 7½ feet from the time the straw touches the first cylinder tooth until it reaches a point ***three feet from the cylinder.***

This Chain Rake is the greatest separating device found in any machine. It increases the capacity of the machine to such an extent that ***19 out of every 20 kernels*** are in the Grain Pan before the straw even reaches the Straw Rack.

The RUMELY Ideal Separator is a profit maker and time saver for the thresherman. These features will put lots of extra dollars into ***your*** pocket. You can get one yet this year in plenty of time for threshing. Write us at the nearest office.

M. RUMELY COMPANY

1961 DUFFERIN AVENUE, WINNIPEG, MANITOBA

EUROPEAN FARM MACHINERY

BY R. DOUGLAS-VICKERS

It is said at the annual show of the Royal Agricultural Society of England, which this year will be held from July 2nd to 6th, that one sees the largest and most representative collection of British built farm machines. Traction engines and threshers, with all the smaller apparatus incidental to these, are magnificently staged, and attract buyers in large numbers from Russia, France, Germany and countries even much further a-field. The other agricultural exhibition ranking next in importance to the Royal, is that of the Smithfield Club, London, and, compared with its lengthy run of 113 years, all the rest are very modern affairs.

The Predominancy of Steam.

So far as numbers are concerned, the steam motors at the various shows on this side predominate, but when it is remembered that in Great Britain the steam traction engine makers have had many years of success in the provision of this form of power for farm and general haulage and the driving of fixed machinery, the fact is not surprising. These steam productions are so well standardised and are so reliable and highly efficient that few of the older firms have given any attention to the internal combustion type of engine—at any rate for farm purposes. A good deal of this is also due to the innate conservatism of the British manufacturer, but this quality is neither so great as is believed by outsiders, nor so objectionable to their many patrons as would on first consideration be expected.

The smaller sizes of steam tractor that are made are nearly always for home service where age is a vital necessity. The makers of these motors are not however losing sight of the fact that for work abroad the internal combustion engine is offering the greatest possibilities.

Examples of the Internal Combustion Type.

This type of tractor for farm purposes is a comparatively new departure on the part of British designers, but already there are a number of excellent specimens at work, and these give promise of others to follow when sufficient experience in their operation has been secured. One of the first gasoline tractors turned out in England was the joint product of one of the oldest firms of steam traction engineers, Messrs. Clayton & Shuttleworth, Ltd., Lincoln, and a modern automobile engineering concern, the Daimler Company, of Coventry. This machine was designed for use in South America, and though very much of an experiment, it gave a good account of itself, both for plowing and threshing operations. That was but two or three years ago, and now there are the Daimler, the Ivel, the Universal, the Petter and other farm tractors, all of which work along modern lines.

Marketed.

Considerable and exhaustive tests have been carried out with the Daimler Company's tractors, and they are likely to find a ready market in large and ever-increasing numbers not only in Africa and Australia, but in Argentina. To what extent they will find their way into Canada remains to be seen, but no doubt exists as to the large field offered there for the farm motor, and if the British manufacturer does not take full advantage of this fact it will be because he already has a steady trade, and not because he is unaware of Canada's possibilities.

The British Trade in Farm Machinery for 1911.

I have before me as I write the official returns for agricultural machinery exported from Great Britain for the year ending December 31st. In these I find that the value of the demand for this class of farm supply has risen for the eleven months from £1,387,863 to £1,497,182, and for the single month from £85,004 to £124,730. It might be noted that the trade with South America has been a little below what it was for 1910. The requirements of the other markets and notably those on the continent of Europe have been of much greater value than before. The orders from South Africa, India, Australia, and New Zealand have also shown a decided increase during 1911, and the indications are that satisfactory business will be obtained in 1912. Indeed, all the agricultural engineering firms are speaking well of their position and prospects, and in one report I see the statement that traction engine orders in hand are considerable, whilst the popularity of light tractors is steadily increasing. One of the big English traction engineering firms has, however, found it advisable to sell its continental works, in order to concentrate management at the parent concern in England. I refer to the well-known firm of Clayton & Shuttleworth, Ltd., of Lincoln. The manufactory which this company had established at Vienna some years ago has been taken over by a powerful Austrian syndicate, but it is not considered that the interests of the Lincoln firm will in any way be impaired. This firm produce an exceptionally fine type of threshing machine, probably the best turned out on this side, though there are a number of very excellent designs handled by other concerns, which meet with well deserved favor wherever they are used. Chief amongst them are Ruston, Proctor & Co., Robey & Co., Ransomes, Sims & Jefferies, and Marshall, Sons & Co., whose oil tractor is making some headway in Canada.

Selfishness mars the loveliest actions; it stains the fairest beauty; it dims the brightest lustre; it blotches the most munificent charity.

Can Dry Weather Injure the Farmer?

Continued from page 58b

are working for that purpose. Let us make use of it. The eight or ten inches of surface soil we till must be made a handy arrangement for the raindrops to pass through, if they are going to be put away in the subsoil for future need. Raindrops, like many larger things, follow the line of least resistance. If it is easier for them to run over the ground than into it, they will do so, but if the soil is rich in humus, myriad pores will stand invitingly open. The moisture will drop down through them to be caught up by that same humus and circulated around among the soil grains. It will come back to the surface again though, however deep it may have penetrated. Nature was just yankee enough to devise some scheme of getting fertility that might be four or five feet down, up to the roots that could go only half that far. So she got out a cast-iron law that water must pass from one soil-grain to another; it must never remain at rest; and it never does except when it comes up against the particles of a soil mulch. They were invented after Nature quit making laws, consequently she did not provide a way for moisture to get through them into the sky. If capillarity be free and if clover roots have left humus in the subsoil to make it better, that moisture which returns to the surface will bring considerable plant-food with it. The same humus that helps it to climb makes some fertility available for it to carry. In these soil processes there are always two birds to kill with one stone, and sometimes a whole flock. In this case, the more humus there is in the soil, the more water will be taken in, and the more soil-grains it will be circulated over. The result is a larger amount of a stronger solution of plant-food. That means larger yields, an abundant reason for doing all we can to help the thing along.

I saw an excellent illustration last summer of what humus does for the soil. It was a field of rye, about seven or eight acres. An acre or so of it had been manured two years previously; all of it has been cropped continuously for a number of years. From the first the rye on that manured portion showed up a little better, but the dry weather in June set up a difference that could be seen a quarter of a mile away; the grain on the manured strip being so much taller and greener. Harvesting showed the real difference. On that strip which had been previously manured there was a big load of bundled grain, more than any other strip of equal size in the field, and every bundle heavier. It could not have been the fertility which the manure added to the soil that made the difference; two crops before the rye must have pretty well exhausted that. Of course, the humus of the manure had an effect on the soil fertility in helping to make it available, but principally that humus influenced the water content of the soil. Its physical condition was improved, and there was freer absorption and circulation of moisture. A crust did not form with the first hot days, to hand out the soil water to every hot wind looking for it. If that farmer, or any farmer, had only gotten this humus effect on more of his acres, even if he had to farm less of them to do it, harvesting would have brought more of the golden glow that poets rave about.

With humus, deep plowing surface cultivation complete the conquest of the drought. I know that statement has a familiar sound, but there is still need of its repetition.

Advocation of shallow plowing has not yet entirely gone the way of the sickle and cradle. In a limited sense it never will; there are some light, leachy soils that require shallow plowing, but soils like that are the exception which plenty of organic matter would gradually prepare for the deeper furrow that brings crop results. Continued shallow plowing of heavy soils is an error still practised occasionally and always punished; nothing makes the drought so much at home as a field of grain starved down to the insufficient water supply of a four or five inch furrow. The field that is going to carry a profitable crop through four or five weeks of brassy skies and hot winds must be plowed as deeply as the nature of the soil will permit. It is not wise, of course, to drop from shallow plowing to deep, all at once; things that are done well are always done by degrees. Some implements, such as the disk plow, are always needed for this work. Cutting the furrow an inch deeper each year is keeping well on the safe side; that will provide after a while the nine or ten inch furrow, which takes those quick, heavy rainfalls in the good old-fashioned way the soil used to, when it was virgin and new.

"Plow deep?" I heard a farmer ask. "What sense is there in that? Spoil a farm, that's what it will do. What are you going to do with that raw subsoil when you get it to the surface?"

There is just this sense in it; every inch added to the furrow depth is about one-fifth inch

added to the water content of the soil. A six-inch furrow will take about one inch, perhaps a little more, of rainfall. A ten-inch furrow will take two inches easily. With four hundred pounds of water required to grow the average pound of dry matter, that extra inch of moisture is a prize worth capturing; it represents a few bushels of grain that will come mighty handy around threshing time. As for "spoiling a farm," I know of nothing that will help to do it more effectively than shallow plowing. I can see a picture now of a field that I do not think has ever been plowed more than six inches deep. The owner did not believe in bringing up "raw subsoil." What have the heavy rains of years past done to that field? I will tell you. There is now a rock ledge showing through it in places which were covered with eighteen or twenty inches of soil a few years ago. That man is farming "raw subsoil," and the dry weather hits it pretty hard. Deeper plowing a few years back, and a rotation in which manure, clover and sod played a larger part, would have kept that field in proper tilth and in the location nature gave it. Shallow plowing of soil, compact and heavy from lack of humus, is a swift way of getting in the midst of some difficulties that make farming a near misfortune.

Make Room for the Surface Water.

The fresh subsoil brought up each year on land that is kept familiar with clover is not very raw. Frost, sunshine, manure and tillage will soon fit it for plant growth; accompanied by occasional subsoiling and the growth of crops that will carry the mellowing influence of humus into the subsoil, drought will not seem so big a word.

Surface water and free water are two forms of moisture to get rid of. We can usually make room for the first, in the soil, with the plow and humus. It should never be allowed to run off over the surface; it always takes some of the surface soil with it, and we want to keep the farm where the deed will cover it. There are soils which require artificial underdrainage to carry off surplus moisture. There is always something wrong when even a pretty heavy rainfall lays long on the surface; if shallow plowing or lack of humus are not the fault, then it is apt to be a hardpan, or layer of impervious clay, through which the water will not pass. The hardpan, perhaps, may be broken up with dynamite, followed by some deep-rooted crop as clover or alfalfa to keep it so; in other cases tile drainage may be necessary. It is positive that an oversaturated soil, or one in which the free-water level is too high, both need remedial treatment. Under either disadvantage, plant growth is slow and roots are developed only near the surface until evaporation and slow seepage have restored favorable conditions. By that time the dry weather may be setting a hot crust close enough to the roots that the crop is injured before it can adjust itself to changed conditions. Deep roots and steady growth early in the season prepare the plants to endure the dry, hot weather that may follow. That requires an aerated, mellow, moist soil; conditions not attained unless melted snows and rain are absorbed.

The moisture that goes into the soil is just a visitor; its home is in the sky and the sea, and it will go back there if the soil door is not closed, locked and barred with a dust mulch. That is the last step in beating the drought and so important that we hardly dare put it second to anything. But like many other good things, it may be overdone. Cultivation should not be so frequent nor so shallow that the surface is too much fined; the rains following a drought are usually hurried and heavy affairs, and will not be readily taken up if the soil particles are too much fined and lay too close together; I have found that after weed growth is killed, just enough surface stirring to maintain about two to four inches, depending on the soil, of dry, loose earth is effective in checking evaporation—say a cultivation once in five or six days. One ought to cultivate as soon as a crust forms under the mulch. That cultivation, if given across the natural drainage, will assist in giving each acre a just share of the rain when it comes.

We must declare war on the surface crust wherever it forms; it robs the soil of water that may be highly precious before harvesting. It is estimated that an inch of water will evaporate every week from soil, once the surface has baked. That inch of water may be just the difference between a good crop and a poor one. There are very few years when the total rainfall is not sufficient to produce a normal crop; there are also very few seasons when enough of it will remain in the soil to grow

the best crop we could, if cultivator, disk and smoothing-harrow are not freely used. Where there is chance for intertillage, keep the cultivator-teeth bright; the corn, or whatever the crop may be, will look that way, too. On stubble land use the disk; a crust steals just as much moisture there as anywhere, and it takes some long-distance-ahead moves in dealing with dry weather. For the fields of young grain use the smoothing-harrow with teeth well slanted back, if hot weather begins to lay a crust on the surface. The grain will not be damaged if it is six inches or even a little more in height. I have seen some good results from dragging grain that was pretty well along. Last year a neighbor had some oats sowed on a piece of pretty stiff, clayish soil. The crop had failed on that field a number of times; the owner knows why, now. When June came with its dry days, those oats seemed to forget all about growing; they just stood still and began to turn a discouraging yellow. The crust was beginning to get in its work, but my neighbor went on to the field with a smoothing-harrow and stirred the surface up pretty thoroughly. "They're not going to amount to anything anyway, so it's a good time to experiment," he said. The experiment was certainly a happy venture; every day the oats looked a little thriftier. They left grain fields that were not similarly treated, but on much more fertile soil, away behind. When threshing time came, they yielded about thirty-two bushels to the acre, while oats that had simply been left to take care of themselves fell below twenty bushels.

This dry weather has been setting lessons for us anywhere we happen to look; the more of them we get right, the less we are apt to get left. The danger is not in the dry weather, it is in the dry soil.

Some One Will be Lucky.

The Northwest Development League has arranged to give the world's greatest prize for wheat at the Northwestern Products Exposition to be held in Minneapolis, November 12 to 23, 1912.

By arrangement with the Gas Traction Company of Minneapolis and Winnipeg, and the Emerson-Brantingham Company of Rockford, Illinois, one of the Big Four "30" farm tractors and a set of Emerson plows will be given to the grower of the best five bushels of wheat grown in the Northwest during the present season, the five bushels to be exhibited, together with ten sheaves of wheat from the same field, at the Northwestern Products Exposition. The wheat will be judged by threshed grain alone, but must be accompanied by the ten sheaves. Judging of the wheat authorities on wheat judging in the United States, and a certain part of each sample will be milled and baked into bread, a given number of points being given on the result of the milling and on the baking test.

Rules for the contest will be completed shortly and sent to anyone on request. This preliminary announcement is made that commercial secretaries, agricultural societies, county commissioners, state officers, bankers, newspapers and business men may take steps to interest the farmers of the Northwest in this great prize.

It means a great deal to a farmer or a ranch owner to win a $5,000 prize. It means a great deal more to a community or a state to have the world's greatest prize for wheat won by a grower of that community or state.

Wheat prizes have ranged from a few dollars in cash to a $1,000 trophy cup. One Canadian prize was worth $2,500, but it has been left for the Northwest Development League to offer a prize twice as large as the Canadian prize and five times as large as any prize ever offered in the United States, making this award the greatest ever offered for wheat in the world.

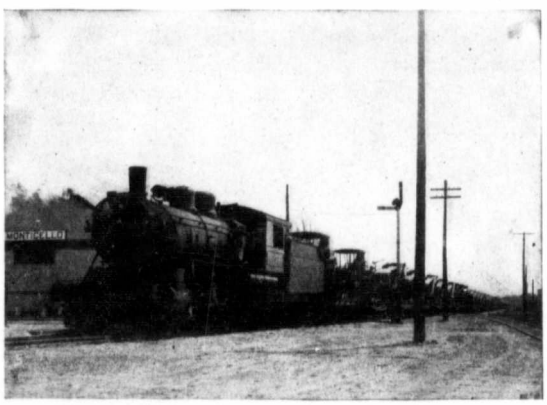
The Northwest Development League could have secured any farm tractor manufactured on the terms offered, but the officers selected the Big Four "30" because of its merit, because it is giving satisfaction in all parts of the United States, in Canada, Russia, Cuba, Poland, Austria-Hungary, Australia, Argentina, Mexico, Germany, South Africa, and wherever such a "giant horse" is needed. It has twice won the gold medal in the world's agricultural motor competition.

Full information will be sent to anyone on request as soon as the conditions and the rules for judging are agreed upon. Full particulars about the prize itself will be sent free on application to Will A. Campbell, General Manager, Northwestern Products Exposition, Minneapolis, Minn.

Two and a Quarter Millions of Bushels More Wheat for Canada.

The American invasion of Canada received reinforcement early in May when the Great Northern Railway opened up a new line from the Canadian border into Winnipeg, running through its own equipment and its own crews, and being the first American railroad to have its own means of access to the Chicago of Canada.

The Great Northern already had 630 miles of railway in Canada, and this step marks the possible beginning of a new Canadian railway development on par with the Hill system in our own Northwest.

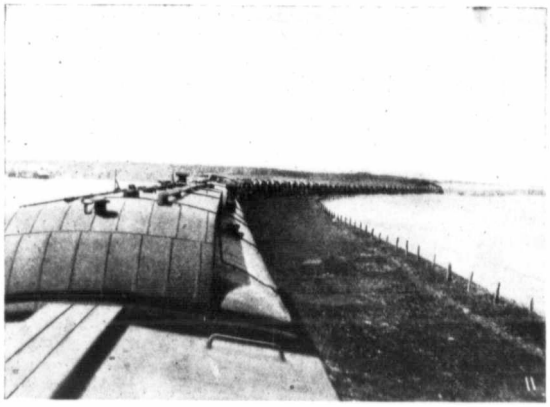


The Rumely "Oil-Pull" Train Headed for Canada's Wheat Fields.

It is significant that the first freight train over this line should be one of farm tractors, which are so closely identified with the opening up of the Western provinces, that in 1911 $4 worth of tractors were sold therein for every man, woman and child. This trainload, however, had another importance in being the longest train of agricultural machinery ever put together. It was composed of 102 brand new flat cars, four locomotives, and the necessary cabooses for the crew and cars for the officials who accompanied the train.

The shipment consisted of 101 Rumely Oil-pull tractors, 61 Rumely separators, and 139

Rumely kerosene tanks, the total weight on the cars being about 1,700 tons. The value of the shipment was approximately $500,000 when it left the factory, duty and freight increasing this materially by the time it reached its destination. The Canadian Government was richer by $62,000 in customs duties as a result of the passage of the shipment across the border. The train itself was a gay spectacle, being covered with banners and carrying a military band which entertained the 100,000 people who are estimated to have witnessed its movement along the route from St. Paul to Winnipeg.



101 Cars of "Oil-Pull" Tractors representing over 3,000 Horse Power. This means Thousands of Acres More Wheat in Western Canada.

Western Canada is taking enormous shipments of tractors to take the place of horses which cannot be produced rapidly enough. Each tractor in this big train had capacity equal to preparing from 640 to 1000 acres of raw land this year and handling every step of the process of production from plowing to threshing and hauling to market. They would equal the total power of 2,500 horses, even if worked only 8 to 10 hours a day instead of 14 to 20 hours as frequently happens. For running the separators shipped on the cars with them, these 100 engines would be equal to the power of 5,000 horses. Two hundred million acres of land lie in a virgin state in Western Canada waiting for power and the plow, and enormous quantities of tractors and engine gang plows as well as separators are being required for the opening up of the country. The tractor solves the problem of cheaper, more enduring, and more reliable power, and puts into the farmer's hands the capacity for handling large acreages.

While this shipment and the opening of the new line of railway are a combination of events deserving of unusual interest, at the same time the western part of the United States is also taking its full share of such machines. Shortly after the shipment of the big train to Winnipeg, the same company shipped three trainloads of machinery to Lincoln, Neb., one from each of its three plants, bringing a total of 120 carloads more of engines and threshers to the farmers of Nebraska.

When you see this gentleman coming your way you may rest assured that the subject of conversation will be Garden City Feeders. He will introduce himself as W. C Barker, and it will be feeders first, last and always. When your name has been affixed to the dotted line, you will find him a capital fellow to meet in a personal way.

W. C. Barker.

The Garden City Feeder Co. have opened up offices and warerooms in Regina, where a full and complete stock of feeders and repairs will be kept. Mr. Barker, who is sales manager of the Parent Company, at Pella, Iowa, is at present devoting his entire time and attention to the opening up of the Canadian trade. Garden City feeders will be exhibited at all the leading fairs this year, and you will have an opportunity of meeting Mr. Barker in person. We wish him every success in his new field of work.

It is the common mistake of childhood, of ignorance, and superficiality, to suppose noise and violence to be the heralds of power; but it is a mistake which advancing reason and intelligence are continually correcting. By slow degrees we discover that it is weakness, not strength, that takes refuge in a storm of words, in noisy declamation, in violent threats or abuse, in loud boasts or fierce denunciations, and that conscious power has no need and no desire to resort to any such means of self-assertion.

Politeness and a cheerful disposition are precious coins current in every country, and they stand at a high premium with the young and the old, with men and women; and he who has them at his disposal may very well call himself rich, although his purse be empty.

The best parts of human qualities are tenderness and delicacy of feeling in little matters, and the desire to soothe and please others—minutiae of the social virtues. Some ridicule these feminine attributes, which are left out of many men's natures; but the brave, the intellectual, the eloquent, have been known to possess these qualities—the braggart, the weak, never! Benevolence and feeling ennoble the most trifling actions.

* * * *

If we find that our time passes slowly and heavily, we may be sure there is something wrong within. Either we have not enough to do or we work mechanically, without heart or energy.

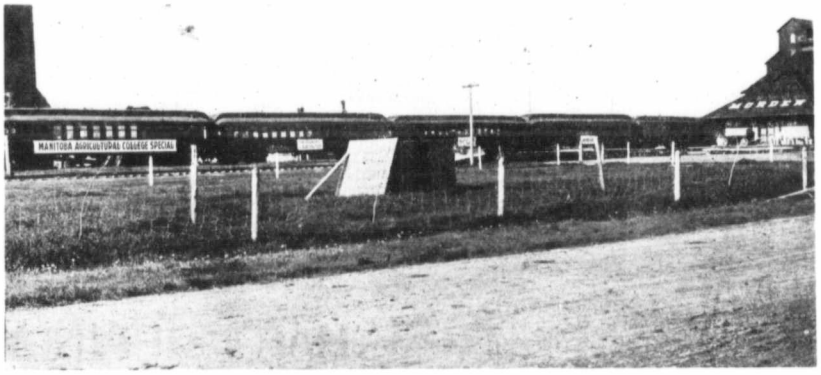
* * * *

When all the scaffoldings which surround the Bible are taken away, by which men have tried to prop it up, the world will begin truly to recognize its real glory. Kingdoms fall, institutions perish, civilisations change, human doctrines disappear; but the imperishable truths which pervade and santify the Bible shall bear it up above the flood of change and the deluge of years.

Manitoba's Better Farming Specials

Provided by the Provincial Department of Agriculture and in Charge of The Manitoba Agricultural College

Will Visit Every District in the Province Between May 28th and July 6th



Before Breakfast at Morden, Man.

C.P.R. TRAIN LEAVES WINNIPEG, MAY 28th.

C.N.R. TRAIN LEAVES WINNIPEG, JUNE 10th.

Each train will be out for a month or more, and stops will be made at nearly every point in the province.

See Posters for Dates

Practically every department of the Agricultural College will be represented on board the train. Almost the entire staff of professors and instructors, as well as a number of leading outside authorities, will give talks and demonstrations upon every phase of farm activity.

This Train is for every farmer, farmer's wife, son or daughter. We want you to be at the station when the train pulls in and to stay until it leaves.

Something for Everybody

The Agricultural College will be on wheels for seven weeks and will be directly available for every man, woman and child in the Province.

Special Lectures and Demonstrations
On All Phases of Country Life

LIVE STOCK Judging, Care, Feeding and Management.
FIELD HUSBANDRY Weeds, Cultivation and Farm Crops of All Kinds
DAIRYING in all its phases.
POULTRY-RAISING, Housing, Breeding, etc.
FARM GARDENING and Horticultural Work.
HOME ECONOMICS A special car is being devoted to the Home Work. The lectures and demonstrations in this car will interest every woman in Manitoba.

Prof. Bedford has an attentive audience while he discusses the weed problem of Manitoba

Prof. Peters and Prof. Mitchell give interesting discussions and demonstrations on dairy cattle

Eight Coaches

EVERYBODY WELCOME

Every speaker on the train will have something to say that is worth while. If you miss this train you miss an opportunity for improvement. The "Better Farming Special" is the most unique educational undertaking ever attempted in Western Canada.

Don't Forget the Better Farming Specials

Do not exaggerate in your advertisements until people will consider you a fool for disposing of so good a thing.

Types of Successful Western Farmers

Men who are Raising the Standard of Farming by Using the Better Methods

The crop history of the last two years, which is quite likely to be repeated this year also, has demonstrated with remarkable clearness the advantages of employing the best methods. Of

W. H. Hill, Halstead, Man.

two farms equally favored in richness of soil and enjoying the same climatic conditions, one, under different methods of treatment, will produce far more than the other. One will run out while the fertility of the other remains unimpaired. Every farmer knows this to be true because he has seen many actual cases.

The different results do not arise from chance or luck, but come in obedience to, or disobedience of, great natural laws governing the conservation of the soil. Few men are fully acquainted with these laws. Those who are following them are in partnership with Nature. Some farmers achieve success because they follow many of these laws unconsciously, or as a result of experience and advice, but without knowing the why or the wherefore. Others fail because they are not so observant or because they have not had the benefit of the experience of other successful farmers.

The study of these laws that govern the best results in handling grains and soils is one of the most practical and interesting in which men have engaged. Many a farmer is apt to go on year after year in the tradition-

A. H. Finch, Lidstone, Man.

al rut, doing things as they have been done for decades back. But the new day that is dawning, puts into the possession of even the uneducated farmer a knowledge of his business that a few years ago could only hope to be attained by the well-to-do as the result of a long and expensive sojourn at some seat of

Geo F. Wright, Canora, Sask.

learning. Things now seem to be coming the farmer's way. We find men of the highest character and attainments in every part of the world devoting their entire lives to a study of these laws as they relate to particular districts and as they operate under peculiar conditions.

Nowhere in the world perhaps has so much attention been given this subject as in Canada and

A. S. Rain, Ninga, Man.

the United States. Canadians have been quick to take warning from the older country, and the best brains in the Dominion are being devoted to conserving the Canadian farm lands, the richest in the world, from suffering the fate of the farm lands in the States.

Only last month an announcement appeared in all the daily papers that a certain Chicago house had given the magnificent sum of $1,000,000 to be spent in aiding agriculture, more particularly in improving quality. Millions of dollars have been given away by wealthy men to libraries, universities and other thing that work towards the advancement of civilization, but this is the first time that so large a sum has been used for agricultural purposes. True, the governments have awakened to their responsibilities, and along many lines are making important contributions.

Geo. H. Richardson, Dovedale, Sask.

The magnitude of the work done by the agricultural colleges and the important results achieved by the experimental farms are well known. The recent appointment of Prof. C. C. James, formerly Deputy Minister of Agriculture for Ontario, as Agricultural Commissioner for the Dominion, shows clearly the attitude that is being taken towards agriculture in this country. In part Prof. James' work will consist of studying agricultural methods that are now being followed in each of the provinces and recommending improvements. It is becoming more and more apparent that efforts from all sources are being directed towards the improvement of farming conditions along educational lines, as it has been proved that as much brains and business ability is needed in the conduct of farming as in any other business or profession.

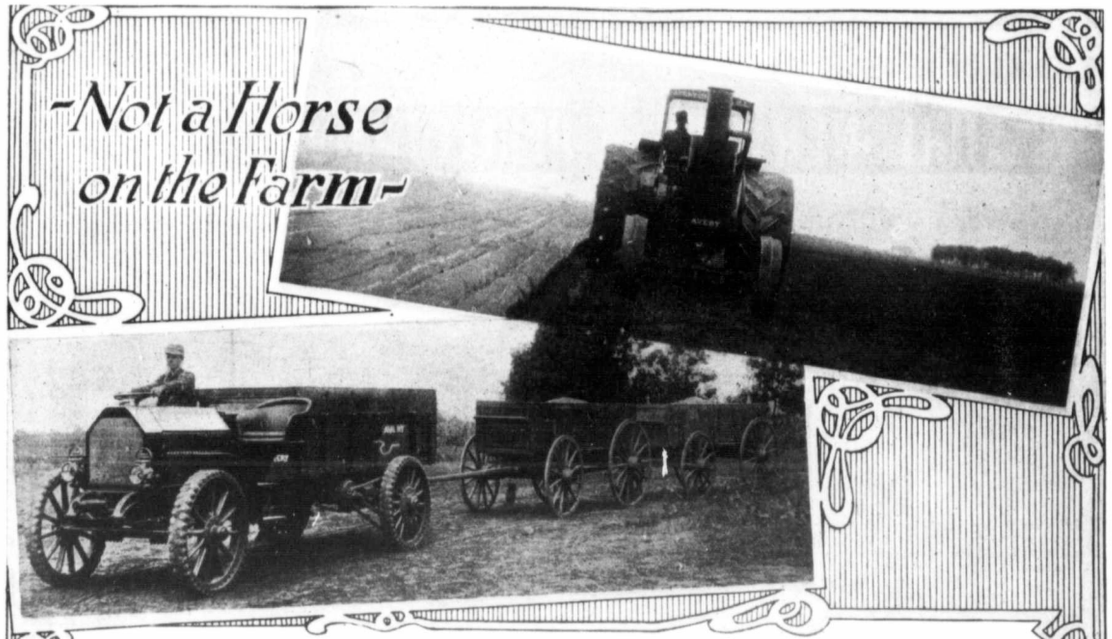
John Meikle, Naseby, Sask.

Perhaps one of the most potent factors in this work of spreading the gospel of better methods is the Correspondence School of Scientific Farming, of Winnipeg. This school's method is designed to carry the latest and most successful methods of farming down to the farmer on his own farm. Back of the instruction stand fifteen men, everyone of whom is devoting his life to some phase of agricultural work, and everyone is an outstanding success in his particular line. Perhaps nowhere in the world could there be gathered together another group of men whose store of knowledge on this subject is so widespread and exhaustive. The School of Scientific Farming was able to secure these world-renowned authorities not so much through the expenditure of large sums of money, but because these men realized that through the agency of the school they might spread broadcast the precious information which they are spending their lives to procure.

The school is now entering on its third year. In commemoration they are offering free, to farmers only, a series of six carefully selected agricultural

Dan Stewart, Cairns, Sask.

books. They have no string attached to this; it is a straightforward offer.



You Can Have a Horseless Farm with this Avery Gas Tractor and Truck

You can do plowing, discing, seeding, hauling, threshing and other traction and belt work with either machine.

Or, by using both machines, you can do your plowing, threshing and other heavier work with the Tractor, and your hauling and lighter field and belt work with the Truck.

You can do your work at less expense, do it at just the right time and in the right way to raise the biggest crop save the heavy cost of feeding idle horses through the winter and save yourself a lot of hard work.

Study over these facts about the construction of the Avery Tractor and Truck and what they will do for you.

THE AVERY TRACTOR—HOW IT'S BUILT AND WHAT IT DOES

Just take a good look at this Avery Tractor. Isn't it a dandy looker. It certainly takes everybody's eye. Not a lot of cluttered up parts, but everything simple and right down where you can get at it so easy.

This Tractor weighs only about 11,000 pounds. Think of it—only about 5½ tons and yet it pulls 5 to 6 plows and drives separators up to 32 x 54.

Not a lot of useless dead weight. Doesn't pack the ground like the heavy weight machines. Travels over softer ground. Doesn't waste fuel moving itself around.

Here are some other improved features: No fan—no intermediate gear or travelling ahead—no deafening exhaust—governed by a standard 2 inch Pickering Governor—only one clutch—double opposed, perfectly balanced motor. Rated 20 Traction and 35 Brake H.P.

THE AVERY TRUCK—THE HANDY ALL-AROUND FARMER'S MACHINE

There is no other machine built that will do so many different kinds of work on the farm as this Avery Farm Truck. It is built for Hauling, Pulling and Belt Driving.

It travels at speeds of from 2 to 12 miles per hour. Will carry 3 tons on its own bed and pull a load behind. You can haul your grain to market quick with this Truck.

Has special Avery Cast Steel Rim Wheels. No expense for new rubber tires.

For your threshing you also need one of

THE FAMOUS AVERY "YELLOW-FELLOW GRAIN SAVER" SEPARATORS

We build separators in smaller sizes, to just fit this Gas Tractor and Truck.

They are equipped with I.X.L. Grain Saving Devices, Jumbo Tool Steel Teeth, Heavy Avery Cylinders, Steel Axles and all the other original and improved features of the larger size machines.

These Avery Tractors and Trucks are selling like hot cakes. They're certainly just the thing a whole lot of men have been looking for. Only a little about them can be told here. Write for complete catalog and find out all about how they are built and what they will do for you.

Get All the Facts About

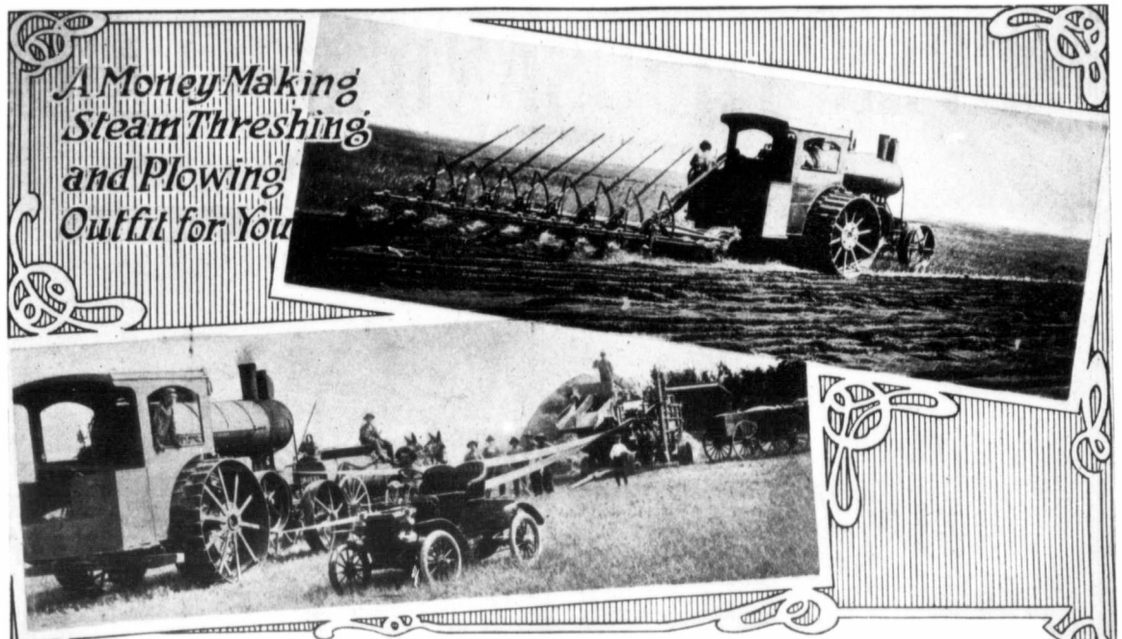
About how they are built—how we guarantee them what they are doing in the field what others say who own them. Our complete catalog tells all about them. It's free. write for a copy at once.

Address

AVERY COMPANY, 675 Iowa Street, Peoria, Ill.

HAUG BROS. & NELLERMOE CO., Ltd. WINNIPEG REGINA CALGARY

Western Canadian Distributors



These Avery Outfits Pay for Themselves Quick and Make You Big Profits

There are three principal things that every man who buys a Threshing R g is looking for:

The most money in his pocket at the end of the season after all bills are paid.

The easiest work in running the outfit.

Square treatment from the company from whom he buys.

We want to tell you this time particularly why Avery Outfits are **Money Makers.** All we will say now about the other two features is that Avery machines have a great reputation as being easy to handle and the policy of this Company and its Representatives is to deal squarely with its customers.

WHY AVERY "YELLOW FELLOW-GRAIN SAVER" SEPARATORS ARE MONEY MAKERS

If a thresherman makes money he must satisfy his customers. Now, what does it take to satisfy them? Saving the grain, cleaning it well, fast work, no breakdowns—these are the principal things.

One of the greatest reasons why Avery separators are Money Makers is because they are Wonderful Grain Savers. We don't just claim that they are. We back this up by definite proof. During the past three years 27 Field Tests have been made on Avery Separators to find out just what they do in Grain Saving. The results were truly wonderful. The average saving in the 27 tests was 99 9-10 per cent—practically perfect. Just think of it. Only one-tenth of one per cent wastage.

That's one of the reasons why Avery Separators suit the farmers and why they are Big Money Makers for Threshermen.

We guarantee a saving of 99 52-100 per cent. We guarantee grain cleaned in condition for the local market. We guarantee castings and shafting for one year against breakages. And they say that an Avery Separator certainly does eat up the grain.

Pull one of these Avery "Yellow Fellow-Grain Saver" Separators with an Avery Double Cylinder Undermounted Engine and you've got a fine Money Making Outfit.

AVERY UNDERMOUNTED STEAM TRACTION ENGINES

Avery Double Cylinder Undermounted Engines are built from the ground up for all kinds of work, threshing, plowing, heavy hauling, etc. The most Improved Steam Engine built. Undermounted— like a railroad locomotive. All shafting and gearing guaranteed for one year against breakage.

This engine won First Place in its class and the Sweepstakes in the 1911 Winnipeg Motor Contest. Also received highest points of any in design and construction.

You should certainly get all the facts about these Money Making Avery Outfits before you buy. Full information is given in our catalog. Write for a copy. Ask any Avery owner. Find out just what an Avery Rig will do for you.

the Avery Machines

SEVEN THOUSAND DOLLARS
For a Name

You may become the owner of a $4,000 furnished house or secure one of other eleven valuable prizes—given absolutely free to purchasers of Winnipeg suburban lots who participate in the following unique **Naming Contest.** There are twelve prizes of the value of $50 to $4,000.

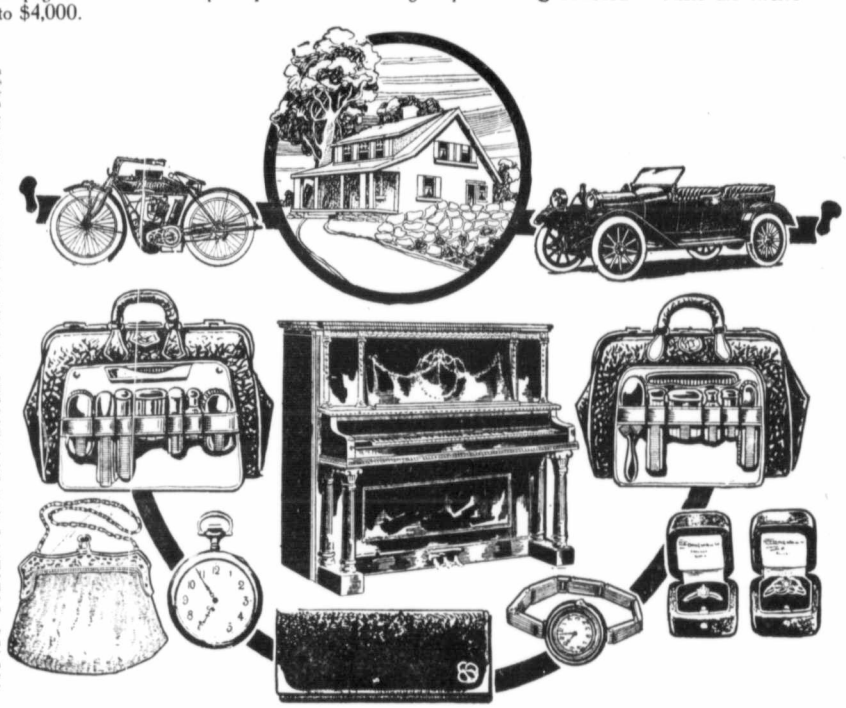
Conditions

The permanent name for this subdivision will not be selected until at least three-fourths of the 197 lots in it (a very small division) have been sold. Every purchaser of a lot, as soon as his first payment is tendered and accepted, will receive a coupon for each one hundred dollars in value of the lot or lots purchased. That is, if you buy a thousand dollar lot, you will receive ten coupons, and if a two thousand dollar lot you will receive twenty coupons. Upon each coupon the owner of the lot will be entitled to place one name in the competition and suggest the name which will permanently mark this district.

These names will be deposited in a sealed casket, kept publicly on view in this office and the key of which will be held in trust by the Chairman of the naming committee. Each coupon as it is received in this office will be numbered by an automatic numbering machine and these numbers will establish priority in determining the result of the competition. As soon as the required number of lots have been sold the contest will be closed and all of the coupons in the box will be turned over to the naming committee, who will open the box, examine the coupons and select their choice as a name for this division.

If two or more coupons carry the name finally selected, the distribution of prizes will go to the first coupons bearing this name as their numbers indicate priority. Suppose six competitors selected the name "Assiniboine Park", the coupon whose number indicated it was the first one received will have the first prize, the next the second and so on. In order to fill out the full list of prizes as given, the Committee will also select their second, third and fourth choice of names for this division, and these will be entitled to prizes exactly the same as the first choice name. Should one or more people select the same name, they will receive consideration exactly the same as in the case of the first one selected. Thus, if, as we have supposed, six people should hit upon the first prize name and two submitted the second choice, then the latter would receive the seventh and eighth prize respectively, and the first two people submitting the third choice name would receive the ninth and tenth prizes in turn.

The coupon upon which these names will be registered will not carry the name of the person who submitted them, but will be merely identified by the number of the lot upon which they were given, so that the judges will have no way of knowing who submitted the choice names.



These prizes will be given to purchasers of lots in the residence division formerly known as "Crescentdale"

1st **PRIZE** Handsome new 8 modern **Bungalow,** valued at $2,500, completely furnished at a cost of $1,500; total value $4,000.

2nd PRIZE—Completely equipped **Automobile**—4-passenger touring car, "Hupmobile," supplied by Joseph Maw & Co. Value $1,175.

3rd PRIZE Solid silver lady's **Chain Purse,** supplied by D. R. Dingwall & Co., and **$500** in new Canadian gold pieces.

4th PRIZE—Elaborate **Wallet,** supplied by D. R. Dingwall & Co., and **$500** in currency.

5th PRIZE—Newest model **Piano,** supplied by Nordheimer Piano Co. Value $400.

6th PRIZE—**Indian Motor Cycle,** cash price $280. Supplied by the Consolidated Bicycle and Motor Co.

7th PRIZE—Lady's solitaire **Diamond Ring,** value $100, supplied by D. R. Dingwall & Co.

8th PRIZE — Gentleman's solitaire **Diamond Ring,** value $100, supplied by D. R. Dingwall & Co.

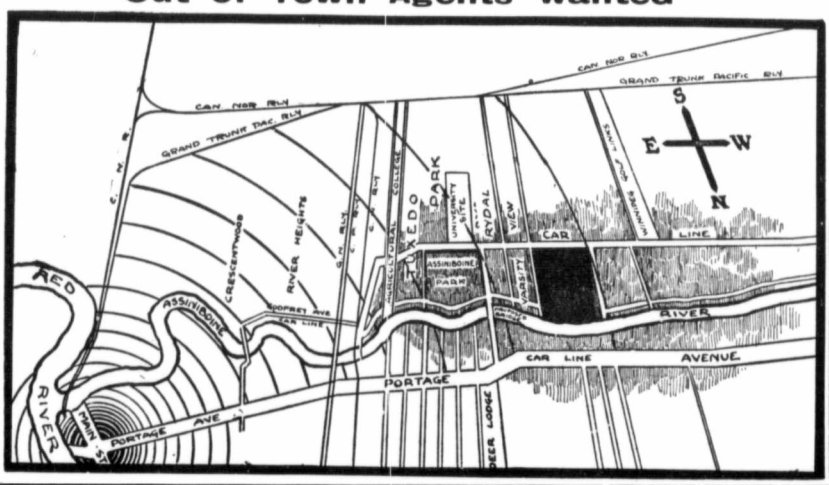
9th PRIZE—Lady's **Travelling Case,** fully equipped, value $50; supplied by D. R. Dingwall & Co.

10th PRIZE—Gentleman's **Travelling Case** fully equipped, value $50. Supplied by D. R. Dingwall & Co.

11th PRIZE—Lady's **Bracelet Watch,** value $50, supplied by D. R. Dingwall & Co.

12th PRIZE—Thin model **Gentleman's Watch,** value $50, supplied by D. R. Dingwall & Co.

Out of Town Agents Wanted



Prices of Lots

$18, $20, $22, $25, $28 and $30 per foot for Inside and Boulevard Front Lots. $50 per foot for River Frontage only. One-fourth cash, balance 1, 2 and 3 years at six per cent.

Titles Guaranteed

Suburban Estates Co.
402 Trust and Loan Building
WINNIPEG, CANADA

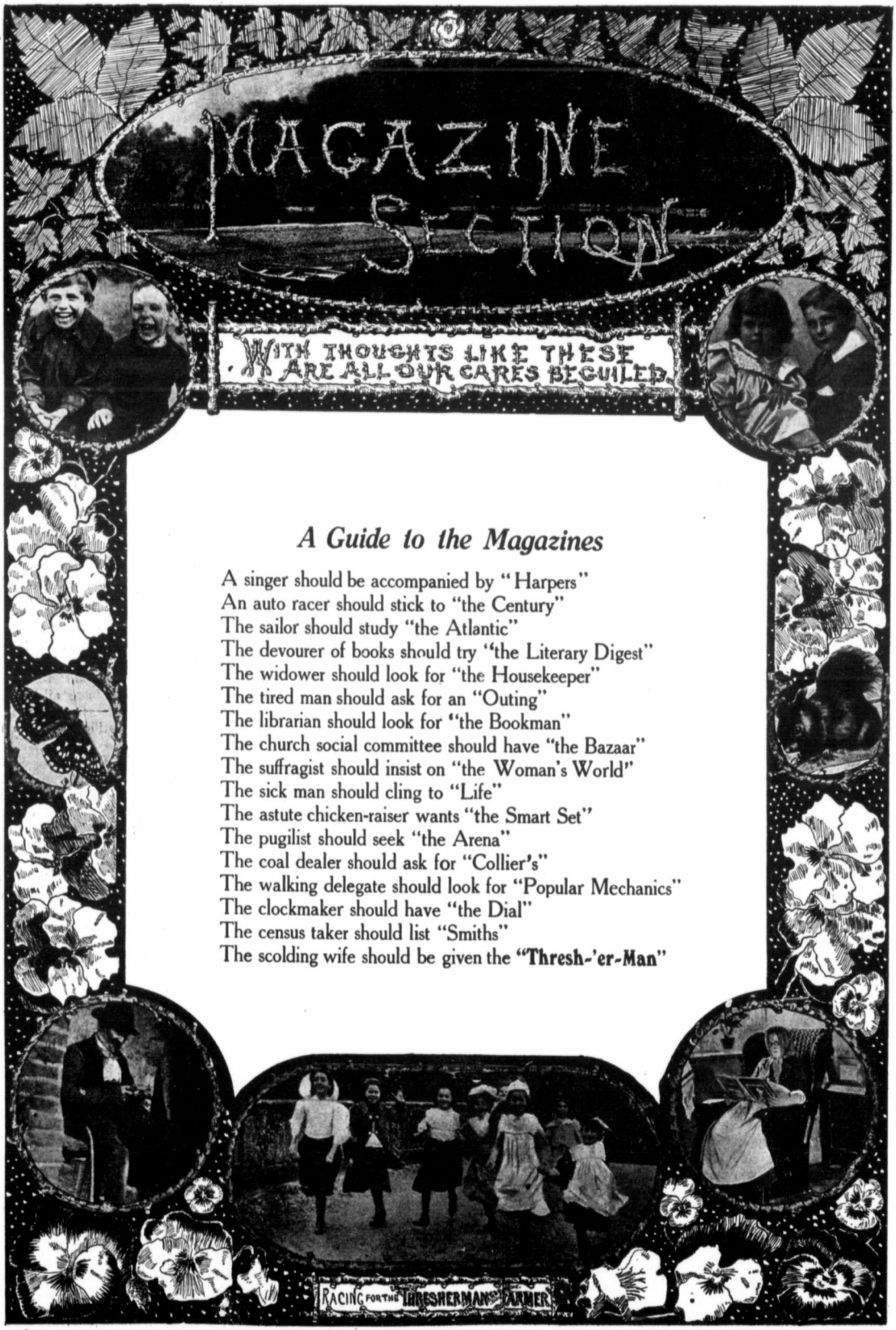
Please send me plan and folder and full information regarding your $7,000 naming offer.

NAME .....

ADDRESS .....

.....

C. T. F. 6-12



A Guide to the Magazines

A singer should be accompanied by "Harpers"
An auto racer should stick to "the Century"
The sailor should study "the Atlantic"
The devourer of books should try "the Literary Digest"
The widower should look for "the Housekeeper"
The tired man should ask for an "Outing"
The librarian should look for "the Bookman"
The church social committee should have "the Bazaar"
The suffragist should insist on "the Woman's World"
The sick man should cling to "Life"
The astute chicken-raiser wants "the Smart Set"
The pugilist should seek "the Arena"
The coal dealer should ask for "Collier's"
The walking delegate should look for "Popular Mechanics"
The clockmaker should have "the Dial"
The census taker should list "Smiths"
The scolding wife should be given the **"Thresh-'er-Man"**

The Professor and The Jewel Theives.

How They Were Caught.

MY wife nearly wept over the breakfast table.

"Do you think, George, we ought to put the dance off?" she said.

"I don't see how we can, dear. The invitations have been out for a month. We've arranged for half a dozen of our friends to spend the night here. Unless you choose to have a breakdown in health, I see no way out of it."

"Well, I can't bear to think of people coming to our house to be robbed."

"But we don't know that they will. There was no robbery after Lady Hartle's dance."

"You know that at every other dance that has been given this winter the house has been burgled the night after the dance, and the guests have lost their jewellery. There have been four robberies already, and I'm so afraid that our house will make the fifth."

"Well, you see what the Chief Constable says — he'll have special men on duty round our house that night. But it would be wise to tell the members of our house party not to bring any valuables."

"How can I, George? They'll only think I want to outshine them."

"For that matter you could tell them that you are sending all your diamonds to the bank. You're pretty enough to be able to dispense with jewels."

In spite of the compliment, my wife shook her head.

"No, I'm going to wear my own diamonds in my own house —thieves or no thieves. What is the good of having beautiful things if they are always locked up in the bank?"

"Well, I've done all that I can do, and the Chief Constable seems to be doing all that he can do. We shall have to take the risk."

"George, I want you to go and see your uncle."

"The Professor!"

"Yes, if he would come, I'm sure that everything would be safe. The old gentleman is acute enough to outwit any thieves. Don't you remember how he told me right away that that person, who called herself Mrs. Francillon, and rented the Grange, was not a widow as she pretended, and you know what a disreputable adventuress she proved to be."

I laughed.

"Yes, I think the old gentleman took her in to dinner once. And his deductions were solely founded on the fact that, though he gave her every opportunity in conversation, she never once alluded to her husband's funeral. The Professor has a theory that widows love to talk of their husband's obsequies."

"But he was right anyhow. Do go to him. It will flatter him so to be consulted."

he's interrupted in his work."

"He'll swear like a trooper if

"If you tell him I want him he won't mind much. The old gentleman is fond of me in his queer way. Don't you remember how last Christmas Eve he told me I was a chattering minx with a mind solely given up to clothes and jewellery, and yet he sent me a lovely diamond pendant on Christmas morning."

I argued the point, but my wife as usual had her own way, so immediately after breakfast I motored across to the Professor's house.

His butler looked surprised to see me.

"I don't know whether the Professor will see you to-day, Mr. George," he said. "He's got something special on hand, and was up before daylight this morning to work at it. I took him his breakfast three hours since, and he hasn't even touched it yet."

"Well, tell him I want to see him on most important business."

"If you will just wait a minute in the library, sir."

I heard the butler step towards my uncle's laboratory. The next minute I heard a loud shouting—

"How dare you intrude, Vickers. My servants are not to dictate to me at what hours I am to have my meals. What! Mr. George! What does he want? Didn't I tell you, you ass. Oh, important business — he never had any important business in his life. Bring him in, and if he keeps me more than two minutes I'll kick him out."

I chuckled as I heard these rather personal remarks. My worthy uncle was slightly deaf and spoke in the loud voice common to deaf people.

The next minute Vickers returned. He is an admirable servant, but I fear that sometimes his courtesy masters his truthfulness.

"Professor Barnes will be very pleased to see you, Mr. George, if you will kindly step this way."

I went to the laboratory and found my uncle bending over some test-tubes.

"Ah!" he said, "I am engaged in the investigation of the spotted fever bacillus. The result of my research may mean the saving of countless lives. Now, what is the important business that you have interrupted me in my work for."

"Well, uncle, Maud wanted you to come to our dance on the 29th."

The Professor was so staggered that, for the first time in his life he dropped a test-tube. Luckily it was an empty one.

"That is what you call important business," he cried. "I wouldn't go to one of your wretched social functions for twenty thousand dollars. I'm a worker in the human hive, not a drone."

"But, uncle, Maud wants you to come so that you may apply your trained scientific mind to a problem."

"A problem," cried my uncle, "tell me the facts."

Rapidly I gave him the details of the robberies.

"And in the last two cases there were policemen on duty outside the houses?"

"Yes."

"What windows were found open?"

"At the Verrinders' the library window, at the Groves' an upper bedroom window, at Savage's the smokeroom window, and at the Gordon's I think it was one of the lower windows."

"You think," ejaculated my uncle, "I can respect the man who knows, and the man who has the good sense to admit that he doesn't know, but I've no use for the man who thinks. Have there been any dances after which no robberies took place?"

"Yes, there was one at Lady Hartle's."

"Ah, now we begin to get at facts. Who has the case in hand?"

"The Chief Constable of the county has taken up the matter himself."

"Oh. You have your car here? I'll see him at once. Vickers, get me my hat and coat at once."

In a moment Vickers appeared with the desired articles.

"If you will excuse me, sir," he said respectfully, "your breakfast is still waiting for you in the morning room."

The Professor just glared at him fiercely, and the butler promptly vanished out of sight.

"It is a characteristic mental defect of servants," remarked the Professor, "that they think that meals should only be taken at certain times. It is seldom that I am engaged in something interesting but Vickers there expects me to put it aside for a meal."

"He means well," I said apologetically.

"If you had any knowledge of history—of course you haven't—you'd know that the man who means well has always been the curse of the universe. We can checkmate the man who means ill, but the man who means well is uncontrollable. Now I'm ready. Let us go to this Chief Constable. I have helped him in one or two analytical cases, and I think we shall find him reasonable."

In an hour we were at the headquarters of the County Police, and the Chief Constable was a little startled to see the Professor march unannounced into his private room.

"Good morning, Professor Barnes, what good wind blows ——"

"I've come about these jewel robberies at these country houses," interrupted the Professor. "Never heard of them till just now. The only things I notice in the daily papers are the barometric readings — they at any rate are to be relied on. But it is time these robberies were stopped. My niece is giving a foolish entertainment next week, but the fact of her and her husband's folly is no reason why they should be robbed. Now let me have all the facts in your possession and I will draw a scientific deduction from them."

The Chief Constable seemed a little doubtful, but the Professor had such a masterful way with him that in a moment the Chief Constable had produced some official reports from the pigeon holes of his desk.

"Of course this is strictly confidential, Professor," he began.

The Professor snatched the papers, put on his spectacles, and read the reports through with inconceivable rapidity. Then he threw them down on the table.

"Useless, useless — there are only half the facts here. A man may make a lucky guess without any facts to guide him, but if he tries to reason from half the facts he almost invariably goes wrong. Now listen to me. These robberies evidently have a common origin. The facts that windows were found open in the houses on each occasion I am disposed to ignore. In the last two cases there were police on duty in the grounds. The most reckless burglar would not venture to break into a house whilst the police were within a few yards of him. Therefore the robbery must have been committed by some one in

the house at the time. Get me a list of the guests at each ball, all the residents in each house at the time of the robbery, the names of all the decorators, caterers and hired waiters — in fact of all people who had access to any of the houses on the day of the ball. And I want the same details regarding the dance at Lady Hartle's house."

"But there was no robbery there," said the puzzled Chief Constable.

"That's why it is so important. Why wasn't there a robbery there? Aren't Lady Hartle's jewels worth having? If we can gather why that house was not robbed we have a clue at once."

"Well, the road past her house leads to the police station. Perhaps that is why the burglars feared to make a raid there."

The Professor snorted disrespectfully. "Just the house I should choose if I were a burglar. People in the immediate vicinity of a police station often have a touching confidence in the force and neglect to fasten their doors and windows properly. But let me have the facts—all the facts mind — and I'll settle this little affair for you. Good morning."

When I got the Professor into the car again I said to him, "Even if you get all these facts I don't see what use you will make of them."

"I don't suppose you do," he replied sarcastically.

"Well, how do you propose to go to work?"

"You know what the postal authorities do when a letter is missing. They draw a line on the map from the letter's starting place to its destination. When several of these lines coincide at a certain place they know that an employee there is robbing them. Then it is simplicity itself to bait a trap and catch him. That is what I propose to do. I want to see where the facts in these cases coincide, and where in the case of Lady Hartle's dance they differ. Can't you drive a bit faster. You've wasted half my morning already."

As I recklessly exceeded the speed limit in obedience to his bidding I had no further opportunities of talking to the Professor. Only when I put him down at his house I said, "We shall expect you at our dance on the 29th then, uncle."

He grunted ferociously as he rushed into his house, but I understood that he assented.

My wife was quite relieved to hear that the Professor had taken the matter up. In spite of my remonstarnces she would not send her diamonds to the bank, and as for writing to the guests who were to make up our house-party she would not hear of it. Her confidence in the Professor was absolute.

At last the night of our dance came. Amongst the earliest arrivals was my uncle. I saw a twinkle of amusement in my wife's eye after she had welcomed him, and whispered to her, "What's the matter?"

"Your uncle's dress is perfect," she said, "but for one thing. He's wearing the oldest pair of carpet slippers I ever saw."

"Well, he won't dance, so don't worry about it."

"Yes, but don't say anything to him about it. He'll never know unless some one tells him. He's gone to have a quiet game of billiards with Major Grant till the dancing starts."

Half an hour later the Professor, still unconscious of the carpet slippers, strolled into the ball-room. I saw him watching the dancing and dancers keenly, and scrutinising the room with the greatest care. Then I caught his eye and he beckoned me.

When I went across to him he said, "Have you a servant you could send with a note to the Chief Constable?"

"There are three policemen on duty outside. One of them will do, I suppose. Have you found the thief?"

"Send me one of the policemen to the library. No, I have not found the thief, but I have co-ordinated the facts of the case and made a logical deduction."

He spoke with such an air of confidence that I was staggered, but my duties as host kept me so busy that I hardly had time to reflect on what he had said. Between one of the dances my wife came to me. "What do you think your uncle wants now?"

"I don't know."

"He has just asked me quite seriously to get some cayenne pepper from the cook."

"Cayenne pepper! What the deuce does he want that for?"

"I don't know, but, of course, I sent for it. You know he isn't a man you can put off in any way. Really, I begin to wonder whether he's quite——" she paused for a moment.

I completed the sentence for her—"Right in his head."

Then the music struck up, and I had perforce to go and seek my partner for the next dance.

Directly the dance was over the Professor walked calmly into

the ball-room. He had a paper tube in one hand and a tin of cayenne pepper in the other.

Most of my guests knew the old gentleman, and one said, "Well, Professor, are you going to try one of your scientific experiments?"

"I'm going to catch the jewel thief," said the Professor casually.

There was a stir, and people followed him curiously as he walked across the room. The Professor looked round as if he were once more giving a lecture at his old University.

"Now, regarding these robberies," began the Professor, "the obvious thing was to find out what I may call the common denominator of the cases, the point in which all four dances were alike and in which Lady Hartle's differed from them. The point is there."

I stared in the direction in which he pointed, and thought he had gone mad.

"Lady Hartle for her dance engaged an orchestra. The other dances were held in smaller houses. Very sensibly, the givers of these dances hired a pianola for the occasion. If you will observe this instrument you will see that there is room for a very slight man to be concealed inside. He could be carried in on the day of the dance, let himself out and loot the house at night, leave a window open to give the impression of a burglarious entry, and be taken away the next morning without any one having the slightest suspicion. We will put the matter to a practical test. I fill this tube full of cayenne pepper and blow it amongst the works. If there is no sneeze in a moment or two, then I have made a false deduction."

The solemnity with which the Professor uttered the last sentence was something appalling. There was a silence that could be felt for a moment, and then there came a violent sneeze from the interior of the instrument. Then a panel slid aside and a little shrivelled man came out.

"It's a fair catch, boss, but give me some water. That beastly stuff's all in my nose and eyes."

"Ah," said the Professor, "this is the actual thief, but I don't think he is the master-mind. I understand that a certain Morristein, a German Jew, recently took over Selby's old-established musical instrument business in the neighboring town. Directly I had looked at the pianola and satisfied myself that it was so exceptionally large that a man could be concealed within it I sent a note to the Chief Constable asking him to detain Mr. Morristein. I think if you give this person in charge of one of the police officers your jewellery will be perfectly safe. Now, this sort of frivolous entertainment is not congenial to me, so you will pardon me wishing you all good night."

"Oh, uncle, thank you so much," exclaimed my wife.

"Thank me, because I happen to know that two and two make four. If your husband had devoted more time to the cultivation of his mental powers instead of developing the muscles of his legs on ball-room floors, he would not have had to take me away from most important duties to settle trifles like this. Good-night."

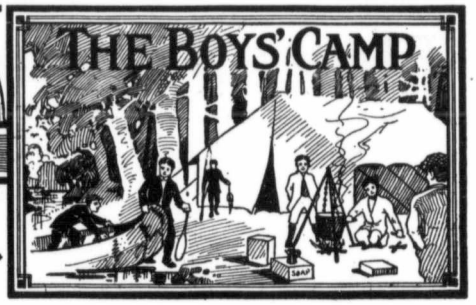
And before we could detain the old gentleman we heard his voice in the hall demanding his carriage instantly.

Keeping House by System.

Some one has said that keeping house without system is like sailing a boat without a rudder. No business man would expect success if his affairs were not conducted in a systematic way. System in our housekeeping lightens a great many labors. Don't start to do one task, suddenly begin on another, and before either of these are finished, go to a third. Confusion and a doubly tired feeling are the result. I have found it a good idea to plan my meals for a whole week. When one gets at it and really gets started they can accomplish wonders in a short time, and by referring to your plan every morning you do not have that awful thought harassing you all morning of "what are we to have for dinner to-day?"

Of course farmers' wives are subject to many interruptions, but if the work is planned for the week it will only be the easier done even though the interruptions do come.

Everybody is bound to some kind of service; everybody is dependent upon his fellows. The veriest recluse must have food, clothes, and a shelter; and, if he can make these himself, he is still dependent upon the courtesy of his neighbour to let him alone. It is impossible to be wholly independent, and the attempt might as well be abandoned. But it is possible to be reasonable; that is within the reach of every one.



The Girls' Cosy Corner

A CHANGE OF HEART.

"I care for nobody,
And nobody cares for me,"
Sang Tommy at play, in the sweet new hay,
Where nobody could see.

So his mother made the fire,
And searched for the old hen's nest,
While the sun from his place high overhead
Went sliding into the West.

She filled the water pail,
And picked the berries for tea,
And wondered down in her tender heart
Where her little boy could be.

Alone in the dim old barn,
Tommy grew tired of play,
When the cows came home and the shadows fell
Over new mown hay.

So into the kitchen he ran,
With a noise hi! yi! yi!
His mother had made him a frosted cake;
She had made him a saucer pie.

So he gave her a loving hug!
"I will help next time," said he,
"I care for somebody,
And somebody cares for me."
—Northwestern Christian Advocate.

Ringwall, Alberta, Feb. 26, 1912.

Dear Cousin Doris,—This is my first letter to the Cozy Corner and I like it very much. I read the letters every month that the paper comes. My brother takes the paper and likes it very much. I like this country very much, although it is cold in winter and hot in summer. I have read quite a few books. Their names are: "Daisie's Visit," "Fishers and Their Nets," and many others. We live on a farm; we have 7 horses, 1 colt and over 20 head of cattle.

I go to school every day and am in the seventh grade. I like to go to school very much. My studies are arithmetic, grammar, geography, Canadian and English history, reading, composition, nature study, spelling, agriculture. There are over 30 children in our school. Our school is called "Star school." I have three brothers and four sisters.

As my letter is getting long, I will close, wishing the club success. Hoping to get a prize, I remain your new member. Good-bye, Gerda Bolstad.

Maymont, Feb. 28th, 1912.

Dear Cousin Doris,—This is my first letter to your lovely club, in which I am very much interested. I was ten years old on the 14th of November and am a big girl for my age. I am fonder of horses than doing house-work; I would rather ride horse-back than wash dishes, which I do sometimes. I have a big yellow cat and call him fatty. I have a doll and a lot of patches and I try hard to make dresses for it. I am hard on thread but then I like sewing. I sometimes give my doll to my little sister, Jean, to play with.

We are having cold weather just now, but hope it won't last long. I wish the Corner every success and would like to get a button. Roberta Walton.

Langevin, Man., March 19, 1912.

Dear Cousin Doris,—This is my first letter to the Girls' Cosy Corner. My father takes the Canadian Thresherman and Farmer and I read the letters of the girls and boys. I have four sisters and two brothers, the youngest of them is ten months old. We live on a farm one mile from school and eight miles from town. We have seven horses, three colts, four cows and two heifers. One of our cows is my own.

I am not going to school now, but two of my sisters and one brother are going to the school. I have now only one grandma as the other died last February. She was 77 years of age. I don't know anything more to write. Wishing your Club every success, I remain,

Your Loving Cousin,
Tena Brown, Altona P.O., Man.

Prize Letter.

Strome, Alta., March 29, 1912.

Dear Cousin Doris,—This is my second letter to the Girls' Cozy Corner. My father takes the Canadian Thresherman and Farmer and I like to read the girls' and boys' page. I am very fond of reading letters. I go to school and I am in the fifth grade. I have one sister and one brother that go to school with me. We drive to school every day. I live on the farm three miles from school.

I have two little sisters that don't go to school. Their names are Thelma and Eva. For pets we have two cats, we have no dog. We have about twenty-eight head of cattle and thirteen head of horses, ten pigs, about seventy-five hens, six geese, eight turkeys and three little calves. We live nine miles from town. My grandpa lives four miles east and one mile south from our place.

I made myself a top skirt about two weeks ago and now I am going to make the waist. I have another blue skirt to make and waist too.

Well, I am going to send some recipes for cakes: Currant cake—one and one-half pounds of flour, one pound sugar, three-fourths pound butter, seven eggs, one-half teaspoon saleratus, one pound of currants. Coffee cake—One cup of sugar, half a cup of butter, half a cup of strong coffee, two cups of flour, one cup of raisins seeded, one cup of currants, half a cup of citron, two eggs, one large teaspoonful of baking powder. Now, girls, try and get something more in your letters. Try these two cakes. I have made these cakes already, they are nice.

Well, as I have nothing more to tell, will close. I hope to see my letter in the next paper. I remain,

Your Loving Cousin,
Denage Ponton.

St. Agnes, Dundee, P. Q.

Dear Cousin Doris:—I have read so many of the boys and girls letters, I thought I should try to win a prize.

This is my first letter to the club. I am twelve years of age. I go to school every day. In bad weather Papa drives us.

I have two sisters and three brothers. My oldest brother is travelling for the Sawyer-Massey Co. and spends most of the time in and near Hamilton, Ont.

One sister teaches a St. Regis Indian school, and the other is a dress maker. My brother of fifteen years attends Ft. Cvington High School. My little brother Peter and I go to a country school. Teacher's name is Miss Moody.

My brother has taken the Canadian Thresherman and Farmer for a long time, and I read all the letters. He used to have all of the outfit for threshing. He got his thumb taken off in the engine. He was not making much money, as something was always breaking down, so he sold it. He went away and is getting good pay now. He has just been home once. Hope he may come at Christmas. must close. Hoping to see my letter in print, I am, your affectionate cousin,

Leona Dinneen.

Stoughton, Sask.

Dear Cousin Doris:—This is my second letter to your club. My father takes the Canadian Thresherman and I like it fine. Our school has stopped and the teacher has gone away. I am eight years old and I am in grade three at school. Our teacher's name was Miss McCausland and she is pretty kind.

I am going to tell you about an accident that happened at our school in the summer. One day one of the boys stepped on a match and a fire started. We ran for the teacher and by that time the fire was nearly up to the school barn and very soon we got it out. I think my letter is getting too long, so I will close wishing your club every success.

Edna Dodge.

Sweet Valley, Alta., Can.

Dear Cousin Doris:—As I have notwritten for a long time I thought I would try again.

I am like many other members of our Girls' Cozy Corner, I am a book-worm. I have read many nice books, I would not like to give the names of all I have read, if I did I would fill up our G. C. C. I also like cooking. I am 14 years of age. We are two miles from our school. It is a new school, it is all ready but we cannot get a teacher.

A while ago I went to town. I got up at half-past one in the morning. I got up and dressed and had my breakfast and we got started about two o'clock: we stopped and had another little breakfast and then started again. We got to our nearest town, Carmangay, at 11 o'clock: then I went to a hotel and got washed and had my dinner, by that time the train was ready to start for Lethbridge. My two sisters were there to meet me. We had just got home when a big hail storm came. Well I stayed in for the fair and then I came back to Carmangay. My father was there to meet me and the next day when we started for home it was raining hard, but we got home that night. I caught a cold and had a tooth ache for three weeks after.

We threshed yesterday; it turned out better than we expected. They were supposed to have started early in the morning, but owing to the darkness stopping the threshers the evening before from finishing our neighbors wheat they had to finish on the following morning.

Now I will close wishing the paper every success.—Blue-Bell.

Pilot Mound.

Dear Cousin Doris:—I have been just reading the Girls' Cozy Corner and I thought maybe I could take up a little room in the page.

I see some of the girls can sew and cook. I can cook a little. I made a cake for my birthday; I will send the recipe.

Chocolate Marble Cake.

1 cup butter, 2 cups sugar, 1 cup sweet milk, 4 eggs, 2 cups of sifted flour, 4 level teaspoons baking powder, 1 tea spoon vanilla.

I hope this cake will be good if someone tries it. I am not fond of sewing. My mother does all that. I sew for my doll some times. I have 1 sister and 6 brothers I live on a farm 4 miles from Pilot Mound

In the month of August is my birthday. I had my 2 little nephews down. We played all sorts of games. I have a set of dishes and we had a tea party. I had candy, nuts, etc.

I have three kittens and a pet lamb. They are all the pets I have. I am eleven years of age and do not go to school, but I will go next summer. I will close wishing to receive a prize also wishing the club success.—Grace Gorrell.

Oakland, Man.

Dear Cousin Doris:—This is the third letter I have written to your club. I am going to tell you about the accident mother got this spring. She went to see her mother who was sick. While she was gone my brother took the measles so my sister sent for mother as she did not know what to do. The roads were bad at the time. She did not want to send home for a team as she thought we would be busy. There happened to be a neighbor in town so she got a ride home with them. When they were near home the sleigh upset and they all went over in the water. When mother tried to get up she said "her arm was broken." They all got in the sleigh and when they came to the nearest house that had a phone they phoned for the doctor. Mother went to the neighbor's place and stayed there over night. When the doctor came he said her arm was put out of joint. He put it in joint again and bandaged it up. Mother came home Sunday morning. The same week six of us was down with the measles. This was pretty hard lines.

I go to school now. I am in grade VIII. My studies are arithmetic, writing, literature, geography, grammer, history, agriculture, spelling, composition drawing and music. I will close now as my letter is growing long. I remain, your cousin, Eva Blair.

Dear Cousin Doris:—This is my first letter to your Cozy Corner. I go to school and I am in the second grade. I am eight years old. I have a sister and two brothers. I have a dog named Collie. My father has taken the Thresherman for a number of years.—Eva Wight.

Dauphin, Man

The Canadian Boys' Camp

Dear Campers:—You are letting the girls get ahead of you. They have sent in a great many letters this month. I hope I may hear from many boys this month. Sincerely, C. D.

Prize Letter.

Arnaud, Man.

Dear Cousin Doris:—This is my first letter to the Canadian Boys' Camp. My father has taken your valuable paper for nearly four years and we all like it fine. I am very fond of reading the letters in the Boys' Camp, and when the girls are getting ahead of the boys I thought I would write and help to get ahead of the girls.

I have read a great many books much too numerous to mention I like Ballantine's books the best. I am very fond of coasting and horseback riding. I have a pair of skates, but I have not learned to skate yet.

I walk three miles to school, I am in grade six. My favorite studies are, reading, writing, drawing, history and geography.

My father has seven horses, four cattle, two pigs and about a hundred hens. I will tell you how I killed a blue hawk, a species of the Eagle.

I was coming home from school one evening and had to go through a small ravine; on the opposite side I saw a large bird, evidently a young one as it could not fly. There was some breaking near where the bird was standing. I picked up a large piece of sod and threw it at the bird and missed it. It began to approach me with mouth open and wings flapping. I threw a second piece of sod and hit it on the breast and felled it to the ground, then I ran to where it was lying on its back kicking and scrambling to get up. I started to hit it on the head with the first thing that came to hand, which was my dinner pail, until I thought I had it killed. I then picked it up and started for home. I had not gone far, however, when I found that it had only been stunned. It started to kick with its feet and open its mouth. I held it tight by the feet and hit it on the head with a stick until I killed it. It measured thirty-six inches from the tip of one wing to the tip of the other.

I will give you a recipe of how I make toffy.

Three cups brown sugar, one cup water, after it comes to a boil, let it boil twenty minutes, then flavor with vanilla, pour on greased plates and let it cool; then pull.

Well, as I do not know what else to write I will tell a story. --

Where Tom found his manners

One morning Tom was playing with his dog on the beautiful and well kept lawn that surrounded his home. His father was wealthy and Tom had every comfort in life. But he was very proud and selfish and felt superior to all others on account of his good clothes and fine playthings. He was near the front gate when a ragged barefooted boy came down, carrying a bucket of blackberries. He politely asked Tom for a drink of water, but Tom very rudely refused and called him a beggar. He threatened to set his dog on him if he did not go away at once.

When the boy had gone, Tom thought he would go for blackberries, so he went into the house and got a basket. To get to the blackberry patch he had to jump a ditch. In doing so he fell in and sank to his knees in mud.

He called for help and directly the boy whom he had insulted came along. Tom asked pardon for his rudeness, and offered him money if he would help him out. The boy refused the money, but kindly helped him out. Tom felt ashamed and had to confess that fine clothes do not make fine children. He took the boy home and gave him a ride on his pony.

After that Tom was more polite and kind, and often said he found his manners in the ditch.

Well, I must close or Cousin Doris will be thinking I am trying to fill the paper up.

Wishing the Club every success, I remain, Clarence Brunton.

Harris, Sask.

Dear Cousin Doris:—Although I take the Canadian Thresherman and Farmer, I have not written to your charming club for a long time. I am (13) thirteen years old and I am in Grade VI at school. There is no school now, as the weather is too cold. Our teacher was Miss Stewart. We all liked her fine. I am (5) five feet high, weigh about (100) one hundred pounds, and I have black hair and grey eyes. I can dive well, although I am not a very good swimmer. I am just learning to skate.

I like reading very much. The chief books I have read are Oliver Twist, The Specimen Hunter, The Red Mountain of Alaska, and By Sheer Pluck. I like Henty's and Ballantyne's books best.

Well, I guess I will close now, or I will be filling up your whole page. Hoping your club will continue to grow and prosper, I remain, your cousin, Ed. Ferris.

Oakland, Man.

Dear Campers:—It is very cold now and it is storming. I have not been to school since summer-holidays. I passed into grade VIII before holidays. I helped put up the hay, stook and other things. When I was stooking I saw a large broad striped skunk; he looked fat. I, for the first time, saw a live ground mole then. There are snow gates along the track where the trains used to get stuck last winter. I set a trap for a weasel in a pile of poles at a close siding and the weasel stepped on it and set it off but did not catch him as the spring did not come up. I set some more traps north and caught five weasels. I have six traps. I think size O trap is the best. I caught the largest and the smallest weasel in the same trap. A large one got away by chewing out and left just the hind foot to tell he was there. I caught a bird and three or four mice. I like our teacher fine. It was 48 below Thursday. I froze my face yesterday. There is only about 3 feet of snow in our bluff. I received my book last spring and thought it fine. I will close now, my pen is no good, yours sincerely, John Blair, Jr., Oakland, Man.

Tomalta, Alta., May 4th, 1912.

Dear Canadian Boys' Camp:—This is my first letter to your camp. My father takes the Canadian Thresherman and Farmer. I like to read the letters in the boys' camp and girls' cozy corner. I live three miles from Tomalta and fifteen miles from Lacombe. We have sixteen horses and twelve cattle. I am ten years old. My birthday is on the fifth of March. I, like many others, am a great book worm. I like riding horseback. I have one sister and one brother. I see you are giving a prize for the best letter so I thought I would try for one. I would like to correspond with any boy or girl my own age. For pets I have two cats and a calf. I am in the fourth grade. I study arithmetic, reading, writing, drawing and spelling.

Well, I guess I will close for now, hoping to win a prize. I remain, yours truly Lester L. Dobbs.

Tezorton, Sask.

Dear Canadian Camp:—This is my first letter to your club. We will have a school next spring. I will be glad when we can go to school. I have a pair of pigeons. They are very pretty ones. I have two brothers and one sister.

I will close now, hoping to see the letter in print. I would like a book. Yours truly, Joseph Boerjan.

Roseisle, Man.

Dear Cousin Doris:—This is my first letter to the Boys' Camp. My brother takes the Canadian Thresherman and Farmer. I go two miles to school. I drive a horse and cutter and leave the horse at my uncle's right near the school.

I am in grade eight, I just go to school in the winter time. We got a football at Christmas and we have great fun playing with it. There are five girls and five boys going to school. I would like to get a book. Good-bye, from your Cousin Gordon Lowry, age 15.

Womans' Department

Conducted by PEARL RICHMOND HAMILTON

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

Mother's Corner

To My Son.

Do you know that your soul is of my soul, such part,
That you seem to be fibre and core of my heart?
None other can pain me as you, dear, can do;
None other can please me or praise me as you.

Remember the world will be quick with its blame,
If shadow or stain ever darken your name,
"Like mother, like son," is a saying so true,
The world will judge largely of "Mother" by you.

Be yours then the task, if task it shall be,
To force the proud world to do homage to me,
Be sure it will say when its verdict you've won,
She reaped as she sowed, "Lo! this is her Son."

—Author Unknown.

Father.

"A rock of strength to lean upon in time of joy or stress; an understanding loyal soul, a heart of tenderness, a mind all wisdom, knowing how justice and love blend; a teacher, loving and patient, kind—my 'ather and my friend."

[I found the above quotation the other day while wandering through a picture gallery, and I copied it for our mother's corner.—P.R.H.]

The Need of Nurses.

Our Mother's Corner seems to be a favorite department with our readers in Alberta and Saskatchewan, because nearly all of their letters refer to this corner. I wish we might publish some of their letters.

One woman who writes me lives 90 miles from a doctor, another 30 miles and another 50 miles. I have now about 70 letters from women who live too far to have a doctor in time of confinement. Some of our newspaper women are working hard to interest the government in the establishment of a system whereby nurses will be stationed throughout the West to aid women when they need them. The lives of the mothers and children are Canada's greatest assets. In order to help us will our readers write me regarding the need of nurses?

The women who have charge of the women's departments of the Winnipeg periodicals met Mr. Arthur Hawkes and explained this crying need to him. In his report to the government he made the following splendid plea for the women who live in new and sparsely peopled districts.

Mr. Arthur Hawkes is special immigration commissioner for the government.

"Promoting semi-public agencies for the social service of new and sparsely peopled districts.

The vanguard of the pioneers has never been adequately served or sung. An immigration service must regard it from the severely utilitarian point of view, but good sense and good sentiment are the twin basis of good immigration. One special recognition has been given to the dwellers in the more solitary places—their representation in legislature and parliament is on a smaller numerical basis than that of urban communities. It is good for those who are nearer the multitudinous case of civilization to do something to redress the balance of deprivation that is cheerfully undertaken by those who go to the remoter frontier. A double portion of the public regard belongs to the men, women and children who hit the long trail. Draw the sharpest teeth of hardship, and you greatly facilitate the filling up of vacant spaces with thriving contented communities. One such aid to immigration provides all the elaboration that is necessary to enforce the connection between social service and the most commercial exploitation of natural resources.

"Get people to build up the province" is the unanimous demand, for it is the sign, symbol and surety of the greatest natural resource of all. Human life is the most valuable where it is the rarest. A birth at the end of the long trail is the sublimest tragedy, the sublimest hope that the nation affords. The remote, all but friendless women who go down into the valley, and from whom no complaint is heard, bear an appalling risk of loss to the province, to the Dominion, which they ought not to suffer, and which is too often accepted as a matter of course.

There must always be, of course, deprivations on the frontier. But when human life is about to yield its increase, it should have as tender a care as the increase of the field has while it waits for cars. The record in the family Bible is as superior to the stud book pedigree as the stars are to the dust.

The pioneer is seldom rich. Expert help is often beyond his means. The tale of lives lost at the most precious, most jeopardous period is formidable as soon as it is gathered together. Probably in conjunction with the Commission for the Conservation of Natural Resources a provincial immigration service would ascertain the exact conditions in a given pioneer area, and take steps to organize practical help against the crisis which are apt to inflict loss on the country, and dread of which materially retards the immigration of sensitive women who are not deficient in courage but are merely endowed with saving caution.

This is pre-eminently a field for the activity of existing women's organizations, and has been touched by some of them. The demand for skilled nursing in cities and well settled areas is very great, and is being admirably met. It would probably be found that for pioneer settlements the principal need is for midwives, who are not necessarily hospital experts, but, who, in addition to practical experience, have the intensely human qualities that may destroy the effects of the lonely isolation which accentuates the crisis in the fate of the mother and child.

The women's side of immigration has never been sufficiently regarded. If it were fully appreciated and its more poignant difficulties anticipated, it would be much easier to attract thousands of the most desirable families to Canada."

HOME ECONOMICS.

The societies are responding to our request with splendid reports and we are grateful. This month we have splendid helps on gardening. As these helps come from experienced women it would be well to cut the suggestions out and keep them for next spring. How many have a "Home Economic" scrap book? Would it not be helpful to have a scrap book to paste in the helps you get at the meetings and from the reports?

We hope the Home-makers Clubs in Saskatchewan will send us reports for our July number. Let us know how you are progressing. The Home Economics Club has a powerful influence in Manitoba.

Success to every branch!

P. R. H.

* * * * *

The editor of this department begs to apologize to the Dufferin society for the delay in printing the following excellent report:

DUFFERIN.

An "Economics" Newspaper.

The Dufferin Home Economics Society held a very interesting meeting on Feb. 21st. The delegates to the convention gave their reports, which proved very interesting to members.

We have divided the work of Sec.-Treas. into two offices. Electing a recording secretary-treasurer and a corresponding secretary. A move is being made to establish a rest room in Carman. One of the Grain Growers' Associations of the country having asked the Home Economics Society to co-operate with them in securing suitable rooms for holding meetings and having a rest room in connection.

Our society has also been asked to take charge of the women's work at the Agricultural Fair this coming season. We decided to offer a special prize from our society for the best labor saving device, made and exhibited by a member of the society.

We have introduced a new feature at our meetings, which promises to be one of general interest. It is a newspaper all our own called "Economics" to be edited by a different member each month.

Our initial number appeared at our February meeting and was a most excellent paper and thoroughly enjoyed by all present.

Just watch Mistress Editress for some of our editorials!—Helen C. Fender

* * * * *

I should be pleased to have a copy of the "Economics" paper every month, as there would be items of interest in it for other societies. Will you enter my name as a subscriber? P.R.H.

OAK LAKE.

Oak Lake Will Have a Rest Room.

The Oak Lake Economic Society met on April 20, in the room which they have rented in the Masonic Hall. About forty ladies were present, and some new members were received. There was a short programme. A light lunch was served and the ladies had a delightful social afternoon.

The only important business transacted was the arrangements for the Rest Room. It was to be opened May. 1st. Some furniture, to make it comfortable is to be purchased. A woman is to be hired to look after it during the afternoon.

The ladies are taking an active interest in the society.

Yours truly,
Mrs. W. Cochrane
Cor. Sec

MINNEDOSA.

Committee for Prizes has Collected $137.

At the April meeting of the Minnedosa Home Economics Society, the Committee appointed for collecting money for prizes at the summer fair, made their report. They have collected $137.00 and after allowing for the prizes that they had agreed to collect for, they had a large surplus in hand.

After some discussion it was unanimously decided to erect a small building in the Agricultural grounds, to relieve the over-crowded pavillion of the more perishable exhibits, namely, bread, cakes, preserves, dairy products, etc.

It was thought that by laying out the money in this way that the Home Economics would be helping the Agricultural Society in the most practical manner.

Mrs. Boyd gave a short address on house plants, their care and the different soils needed by various plants.

A letter was read from the Women's Hospital Aid suggesting that a by-law to prevent expectoration on the pavements and in public places should be put in force, being very necessary for the health of the community.

It was proposed that we lay the matter before the Town Council, which was agreed to by all the members.

The meeting closed with the singing of "God Save the King."

(Miss) E. M. Ewens,
Bethany, Man. Sec. Treas

MIAMI.

A Question Drawer.

The Women's Institute of Home Economics in Miami had a very good April meeting. It was held as usual in the bright cheery vestry of the Presbyterian Church and there were twenty ladies present.

The topic that had been selected the month before was "Appetising Dishes from Leftovers." The programme committee had got Mrs. Bennington, one of our members to write a number of recipes. These were read at the meeting and it was decided to have them printed in the Miami Herald, so that they could be cut out and pasted in our recipe books.

Then we had a change in the programme in the form of a solo by one of our members.

Next came the reading of the questions out of the question drawer. Some interesting ones were asked. There was, "Has the vacuum cleaner proved a success?" The answer was the affirmative. Many women said that they liked it better every time they used it.

After the meeting four more names were received as members, bringing the list up to twenty-four.

I am enclosing some of the recipes for using left-overs.

Yours sincerely,
(Miss) L. N. Bowman,
Miami. Sec.-Tres.

* * * * *

I thank you for the recipes. I am sure they will please our readers. P.R.H.

Recipes given at meeting of Miami Society:

Chicken Pates.

Ingredients.—Remains of cold roast fowl, stuffing of the same, 3 tablespoonfuls of milk, 1 oz. of butter, 1 oz. flour, pepper and salt; pastry.

Method.—Line some pate tins with good pastry, and bake to a very light brown. Mince the cold fowl, put the bones and stuffing into a saucepan with ½ pt. water and stew down to half the quantity, remove the bones, add milk and seasoning, and let it come to a boil. Work the flour and butter together in a small basin and pour the hot liquid over them; return to the saucepan, and stir till it thickens; draw it to the

side of the stove, stir in the chicken and let it get just heated through, but do not boil. Slip the pastry cases from the tins and arrange them on a hot dish; fill with the mixture and garnish with parsley.

Potato Puffs.

Ingredients:—2 breakfast cups mashed potatoes, 2 lbs. butter, 2 eggs, 1 teacup milk, salt.

Method:—Stir the butter in the potatoes, and beat till of a white cream, then add the eggs whipped till very light, the milk and salt; beat well. Pour into a deep dish and bake in a quick oven till brown.

Beef Cakes.

Ingredients:—1 lb. cold roast beef; ¼ lb. ham or bacon, 1 tsp. of sweet herbs, 1 large egg, pepper and salt.

Method:—Mince the beef (which should be underdone) and the ham, add the herbs and seasoning and mix with the egg, which must be previously well beaten, form into cakes, brush each over with white of egg, cover with breadcrumbs and fry quickly for 5 minutes. Serve with thick gravy.

Tomato Scollop.

Ingredients:—Tomatoes, ½ pt. minced; cooked meat, ½ pt.; fine breadcrumbs, 1 onion, rind of half a lemon, pepper, salt and gravy.

Method:—Mince meat and onion as finely as possible and grate the lemon rind, mix these with the breadcrumbs, season and add enough gravy to make the mixture fairly moist, butter a pudding dish and line with slices of tomato well salted, fill it up with the meat mixture and cover with more slices of tomato, put another dish on top and bake from 20 to 30 minutes.

BIRTLE.

Helpful Ideas in Response to Roll Call.

The Birtle branch of the Home Economics Society met in the Town Hall Saturday afternoon, April 6th at three-thirty o'clock. The President, Mrs. Watt was in the chair and there were about thirty members present.

The meeting was opened in the usual way by the singing of verse of the "Maple Leaf Forever" after which the roll was called and many responded by giving helpful ideas as suggested by the motto of the Society—"If you know a good thing pass it on." We were then favored with an instrumental selection by Mrs. Cartwright, which was much enjoyed.

A most interesting paper on "Systematized Housekeeping" was then given by Mrs. Wheatley which was full of helpful suggestions.

By special request Miss Robinson favored us with a paper entitled "Canadian Literature as an Asset" which proved to be a most excellent one and was so complete in itself that it left no room for discussion. The meeting closed with the singing of the National Anthem.

(Miss) Ema Yeandle
Sec.-Treas.

MINNEDOSA.

Committee Appointed for Improvement of Prizes at Summer Fair.

The editor wishes to ask the pardon of the Minnedosa Society for the delay in publishing the following splendid report.

A most interesting meeting of the Minnedosa Home Economics Society was held today in the town hall at 15 o'clock. After a sociable cup of tea, which three members undertake to provide at each meeting, proceedings were opened by singing the first verse and refrain of "The Maple Leaf Forever."

This was followed by the regular business; after which the delegates, who had attended the convention at Winnipeg, read their reports.

Each delegate took notes on a certain number of lectures from which she compiled her report. In this way the work was lighter than if one delegate had taken notes at all the lectures, and the reports were probably fuller. Certainly they were excellent, and highly appreciated by the members. There was an animated discussion afterwards on some of the topics thus suggested.

Notably the keeping of fresh meat in the summer, which lead to talk on the need of putting up ice in the winter, which it was stated could be done at a very small outlay of both time and money.

A committee was appointed to collect money to be applied on improving the prizes in the Ladies Exhibits of the Summer Fair.

The programme for the next meeting was arranged, and the President requested each member to write on a slip of paper what subjects she would like studied during the coming year. These slips to be handed in at the next meeting.

She also asked that each member bring a recipe for the best economical meat dish prepared from the cheaper cuts of meat.

Three members were elected to provide refreshments for the next meeting, in other words, afternoon tea.

NEEPAWA.

Prizes Offered to Boys and Girls.

The April meeting of the Home Economic Society was held at the residence of Mrs. C. W. Herrell with the President, Mrs. J. H. Irwin, in the chair. After disposing of the minutes and correspondence, the mattter of giving a special prize at the summer fair was taken up and met with the approval of all present. It was decided to give $10.00 in cash as follows: For the best collection of vegetables, 1st prize $3.00; 2nd prize, $2.00, open to boys 16 years of age and under. For the best sample of hand sewing, including darning and patching (on cotton only) open to girls 16 years of age and under.

After considerable discussion it was decided to open a "Rest Room" for the convenience of the ladies during the fair. The Manitoba Agricultural and Arts Association have generously consented to allow us the necessary space in the main building. Mesdames Hall, Shearer, McKone, Howden and Irwin were appointed a committee to make all necessary arrangements.

The paper for the day on "the Vege-

table Garden" was taken by Mrs. Jno. Hall. She said in part: A garden large enough to supply the family with all the necessary vegetables the year round will mean economy, health and pleasure. In the culture of egetables we must consider the air, the exposure, the watering, the fertilization. While some plants do best in the sun others do better in the shade. For general purposes a cleared space in a bluff is recommended. Here the plants find shelter from winds and the moisture is more easily retained, the temperature more even. Water your vegetables in dry weather at least once a day before the heat of the sun, or in the evening. Do not let the vegetables overgrow, peas and beans should be picked as soon as ripe. Special attention was given to the successful growing of tomatoes; the "Earliana" variety was recommended. Plant the seed last of March in window boxes (if it is impossible to have a hot bed), keep the soil always moist, and when plants are three inches high transplant to garden. Be sure to thoroughly soak the soil before so doing, see that in lifting them a portion of the soil adheres to the roots; the danger of injury to the plant is much lessened thereby. The plants should be covered at night during the earner stages, and given all possible sunlight during the day. The speaker said she always had green tomatoes to spare and ripe tomatoes for table use up to end of December. The housing and ripening of the green tomatoes is an art every housewife should be ambitious to excel in. What one has done, another may do—if she will. In the growing of cucumber follow much the same directions. Use "White Spine Long Green" variety; plant in rows six ft. apart. Make a depression in the ground all around the plant to help retain the water and moisture. Generally speaking no pruning is required. In the growing of citrons, pumpkins, squash, vegetable marrow, the secret of success lies in securing the inoculation of the blossom, usually the bees do this for us, but if they fail see to it yourself.

The members very much appreciated a duet by Miss Verna Simpson and Miss Alma Herrell, also a delightful solo by Miss Mae Handcock. Dainty refreshments were served and the next meeting announced to be held at the home of Mrs. McKone, when Mrs. Shannon will give a paper on "Cleanliness in the Kitchen."

Mrs. W. J. Harrison.
Sec. Pro Tem.

* * * * *

I appreciate very much the review of the paper on Gardening as we are anxious for all the help we can get on this subject. P.R.H.

MANITOU.

Helps on Gardening.

Manitou H. E. Society for April.

The regular monthly meeting of the Manitou H. E. S. was held Saturday, April the 20th, at the usual time, 3 o'clock. The Vice-President was in the chair. Four new members joined the society. Mrs. J. Tait was appointed correspondent to the Farmers Advocate. It was suggested that our society should buy dishes, for our own use and to rent. It was also suggested that all women should try to bring at least one piece of her own work, which she had done within the year to the summer fair. Several patterns were brought and exchanged. At intermission candy was served. A glass of jelly made from the cores and skins of Northern Spy apples was brought for inspection by our President, and was certainly beautiful; and also a sample or home made starch. Several papers were read and discussed on gardening. Miss Rooke, Mrs. J. Wray, and Mrs. McNamara read papers on the making of hot beds. Mrs. E. J. Moore read a paper on the growing of sweet peas. A general discussion took place on the growing of onions, lettuce, radish and carrots, the ordinary long red or ox heart seemed to be the best carrot seed; the ox heart best for flavor and the long red carrot best in case of a dry season. Salt and ashes were very much praised as being a good preventative to worms in the garden. The entire meeting was very interesting. I am sending you two or three of the papers on gardening.

Our May meeting is to be principally recitations, songs and music.

Meeting closed with the National Anthem.

Mrs. T. A. Pybus,
Correspondent.

* * * * *

THE CULTIVATION OF SOIL FOR A GARDEN.

Paper Read at Manitou Meeting.

Will you please allow me to say a few words on the choice of the soil before I try to tell you how to cultivate it.

In the first place try to chose good soil for the garden needs the very best.

A good garden soil needs at least ten inches of loam and it is best to be a little sandy for then it will not crack so much.

Try to avoid what is known as thin soil, for it may be either sandy or clay but so thin in many places it is little more than subsoil and no process of dressing or cultivation can ever bring such soil into condition to compete with rich deep loam.

If your garden seems to be run down try to get some leaf mold or rotten sod to dress it with, the best time to start to cultivate your garden is as soon as the ground is cleared in the fall.

At first give it a good dressing of rotten manure, then plow deep and leave it rough for the winter.

Next thing to do is to save all your soot and ashes during the winter and scatter over your garden the first thing in the spring, quite thick, and then harrow it well. Then spade up just as you want to plant it and rake it down right away so it will be smooth and free from lumps.

Be sure you do not get the land ready until you are ready to plant, so the seed will have a damp, soft bed, don't tramp the ground too much. If you have more ashes rake them in when you cover the seed, they will help to destroy insects.

It seems like presumption for me to stand up and tell how to make a hot bed, for I have no doubt there are many present who know more about the subject than I.

Our hotbed is my husband's pet hobby; his special care. But sometimes if he is in a hurry and I am very good I am allowed to help carry water, but that's as far as my care of it goes until the contents are ready for the table.

Our hotbed is really only a salad garden, with one corner reserved for nasturtium plants. We have always been able to buy celery, cabbage and tomato plants from the gardener, and have been so hungry for something green that all the space was devoted to lettuce, radishes, onions and cress.

The construction is so simple and so little labor required that it is a surprise to me that more people do not have them, for the appetite craves something green at this season, when winter vegetables are losing their flavor, and you can have salads a month or six weeks earlier than if grown out of doors.

The only essentials are a frame and a few storm sashes. A load from the barnyard and a load of earth. Being a large family and blessed with large appetites, our frame is a larger one than most folks would need.

A frame should be made of scantling, and be the size required, and boarded on the outside and left two inches higher back and front, then the frame allows the windows to rest on the scantling, and there's no danger of being dislodged by the wind.

The length of ours is 14 feet; the width is the length of a window; two feet high in front and three feet high at back—made on level ground and filled with manure to a depth of 16 or 18 inches, well packed.

This is allowed to stand for two days and then cover with black earth four inches deep, put on glass and allow to heat about four days. When seeds are planted no water is required, as there is enough moisture. After three days water every second day, and when radishes are in third leaf water more freely every day. Our bed requires from four to six pails.

We planted radishes and lettuce Tuesday night, and radishes are up; lettuce take longer to germinate. We

will have salad in four weeks or five weeks after planting.

There's one thing more to remember. Managing a hotbed is similar to many other concerns—you need to use your own judgment and discretion.

VIRDEN.

An Enrollment of 135 Members.

Virden holds its June meeting every year at a country home across the river. The people in town consider this a rare treat, as they say it is very beautiful. They go out in autos. The Virden meeting is held the last Saturday of every month. In May their enrollment numbered 135 members, and they have new members at nearly every meeting.

VALLEY RIVER.

Excellent Papers.

The Valley River society does not hold regular meetings during the summer. Some excellent papers are read at their society, one of which, written by Mrs. McQuay, was published not long ago in this department.

MORDEN.

A Discussion of the Convention.

On account of rain the April meeting was postponed. Mrs. Kerby, who was a delegate to the convention, gave such an excellent report, and the subjects she reviewed created so much interest, that it was decided to discuss these subjects at the May meeting.

DELORAINE.

May 13, 1912.

Dear Mrs. Hamilton,—The patriotic meeting in connection with the Home Economics Society was held on May 11, in the Presbyterian basement, with 34 ladies present. The meeting was opened by singing "The Maple Leaf," then the secretary's report, and answering of questions (which had been handed in by several ladies), as well as the general business was taken up. Three excellent papers were given on Patriotism by Mrs. F. J. Hays, Mrs. Bert Urie and Mrs. W. Steedsman.

The musical part of the programme was a piano solo by Miss Tallon, a duet by Mrs. H. Boles and Mrs. Bert Urie. The meeting closed by singing the National Anthem.

Paper Read at Deloraine Meeting by Beatrice Mather.

HOW TO CREATE AND PRESERVE THAT ATMOSPHERE WHICH GIVES CHARACTER TO THE HOME.

In placing before you this subject I would ask you to search your hearts for your ideals. The ruling spirit of the home is the wife and mother—with her lies the power to make or destroy for us the place known as home.

Home—an abode or dwelling, a quiet place—a place of rest. What does it mean to us in this age of busy strife—when we cry incessantly hurry, hurry, there is much to do—when we have little or no time for reflection, where the quiet and restfulness are given over to material gain. The fact that we are obliged to provide for our physical needs, and for those who are dependent on us, makes of life a perpetual struggle. Nature has not dealt with us as her brute children. For them, in the habitat to which they are native, there is food, clothing and shelter. Everything is provided for them. But with us nature has dealt otherwise—she has given us light for our eyes, air for our lungs, earth from which to work for food, clothing and shelter and water for our thirst. Everything else that we need or wish we must win by the hardest effort. As civilization has progressed we have lost two of our natural rights, possession of land and water, and must pay the price demanded for them, and if men by business combination could take possession of air and light, we should lose those also, and be allowed only as much air to breathe and light for our eyes as we were able to pay for.

When we enter the world of trade and commerce, we find the battle of life raging intensely. The fierce competition which leads one man to tread down others that he may rise on their ruin, the financial panics which are ever recurring, and of whose cause and cure the wisest and shrewdest are ignorant, the business dishonesty, the insane and vulgar greed for riches—all these and many other practices, embitter the struggle for existence and render the failure of the majority inevitable.

Against this and much else we would place the word Home—Be it ever so humble there is no place like home. How the thought thrills through each fibre and sends the blood racing through our veins—after many years—after long days of travels—the old cry of home—just take me home once more. There is no other word in all our language that can work such mystic influence as that little word of four letters—Home.

And today I feel that I cannot look upon this subject in a one sided fashion—I feel the mother instinct cry aloud within me, but I also feel that that feeling is never wasted or lost in any woman's life; the wish to cherish and protect—to love and to sympathise, to serve and to sacrifice is given sometime to every woman, and at some period in her life they are each and all matured and blended into the perfect whole.

The triumphant march of woman began when she held in her arms the infant King, in the star-lit manger of Bethlehem. The age preceding the coming of Christ, a period of five hundred years, noted in literature as the golden age of thought, was the most brilliant of all the ages of antiquity. Philosophic thought had almost reached its zenith. It was an age of statesmen, philosophers, poets, artists—an age that gave to the world Plato, that heard the thundering eloquence of Demothenes. But with all its glory and its gifted men, woman was but a slave, groping her way in darkness, until the star of Bethlehem arose and the pathetic voice of the World's Redeemer broke the silence, and his word of love unchained the captive soul when He said, "Son, behold your mother."

But we must not today imagine that the responsibility of the home devolves entirely upon the mother, though we feel the truth of that homely saying: "What is home without a mother"—yet we know that although she is the centre which makes and attracts to our abode, yet, she to be successful, must be aided and materially assisted by those who dwell with her—and these others, the husband and children. We attach great importance to the mother in the home, but are we not slighting the duties of the husband and children—and do we not too often ask the mother to bear the uphill work and hardships without the added love and encouragement? Of course, mothers—as we know the word—live for their children and husband; but is it not high time that these also lived for the mother. It is not the wealth of the world that makes the home happy and lightens the burden of the wife, it is the tender acts of kindness lovingly bestowed; the precious words of love spoken with each passing day. These are the jewels in a woman's crown that make the halo of unfading glory about her blessed life, and here I would just like to tell a story relative to this idea.

Homer T. Wilson, in speaking to assemblies of commercial travellers, said: "You, my elderly friend, when a young man, you were very kind and attentive to the girl you loved. You waited patiently for her to prepare to accompany you to an entertainment. How is it now? You walk about restlessly and scream with all your might, 'Wife, why, in the name of common sense don't you come on?' Walking down the street you are about ten feet ahead of her, complaining because she cannot keep up. Don't you imagine she is delighted with her company? You used to walk close beside her, whispering words of tenderest devotion, but, oh! what a change. I think it would be well for every woman to have a phonograph to catch these tender expressions, so that twenty years after marriage, when sitting alone waiting for him who comes not, she may turn the machine and listen to the wooings of other days—the days when you sent her flowers. How long since have you sent your wife a rose? If you sent her a flower tomorrow she would think you were going to die. You once told her she was beautiful. My friend when you go home, tell your wife she is pretty. It may be the biggest lie you ever told,

but I believe the Lord will forgive you for it.

The illustration might not be applicable to many here present, but the principle on which it rests is true. We are so apt to drift and never speak our appreciation. I have heard time and again woman say, 'We understand each other so well that we expect nothing by word of mouth.' That may be, but I know of no human being where a word of love and encouragement does not act as a stimulant and uplift, and in some cases giving fresh hope and strength for tasks which have become monotonous and past their physical strength. We know the man of the house, wherever or whatever his occupation may be, is fully entitled to all the attention and comforts of a home, but in justice and in self respect the wife must also remember she is likewise entitled to the same consideration from those who live with her. This will be sufficient to convey to you that, although woman be the centre, yet she may not entirely stand alone and that the building and furniture count very little where harmony of soul and love do not exist. We would not lessen the material value of the home either, for we have seen women broken down from the lack of the necessary comforts of life. In the early days brave spirits who faced and stood all things on these our prairies for and in the gaining of to them a home.

There is a psychological moment in the life of the child, when a cry is sent out for greater knowledge. This is a matter of study and depends upon the age, health and environment of the child, and there should be only two parties to this act—the mother or the father and the child. Very often the child receives knowledge from the outside world, which does much to wreck its faith and attitude to the higher and better faculties of this life. That wherein a child is crudely and roughly awakened from the state of childhood, pure and simple, to a state of womanhood or manhood, to that degree, will its innate soul and thoughts shrink and its ideals be shattered to an almost incomparable state. I would strongly press the matter to each one present, that the moral significance upon the life and character of the child has much to do with this awakening, and advise great care and love at these moments. Why should the most holy and wonderful works of God's hands be brought to ridicule and scorn by the uncomprehending.

To revert to our subject—to create and preserve that atmosphere which gives character to the home. We sound the keynote when we take the full meaning of character in this subject. Character, a distinctive quality—surely that is what should mark a home from all other places of abode—a quality in it and about it which makes it stand out and speak for itself. The creation of a home takes both time and thought, but it taxes us more from the material side of our nature than does its preservation. To preserve the character of the home, we must look to a higher plane—one in which the spiritual is always on the upper side of thought and action. For what can come out of this world but the things which perish and fade away in a day and of love there is no end, neither here nor in the hereafter. Upon love must the home be founded and fenced—love speaks the soft and gentle word—is always tender and forbearing—is ever ready to forgive and assist—whose time is at the command of the needy—who is willing to excuse and pardon, yet is never weary—patient and unselfish and uncomplaining.

The home may be humble, but it can be orderly and clean—lots of fresh air must enter it every day—in all seasons. There is nothing which causes irritation of both spirit and body as the lack of pure air. It is free to all, and may be had in abundance. Cheerfulness is one of the chief essentials to home life. There is nothing which will drive everyone away from you as a complaining and fault finding spirit, and if you are so, those who live with you will be endowed with the same mark. Good pictures and simple furniture placed in the sleeping rooms of the children are a great help in cultivating the mind in a right direction and making the body clean and strong. By good pictures, I mean the studies of good artists, from whom a life lesson is learned, not only in harmony of subject, but in coloring. I have often heard of a lack in one's disposition being supplied by a coloring scheme in a bed chamber. A disposition may be toned down or exalted by such a means. The formation of all habits must begin early in the life of children. These I need not dwell on—they are familiar to all.

Good books are a very important factor. To be able to place these in the hands of children, in this age, is an easy matter. Much harm may be done the boys and girls in this particular, and it is absolutely essential that the reading matter given the children be strictly supervised, and that they are obedient in this respect to the parent. Music, where a family gift, is a great attraction in a home, and works wonders in bringing out many truths in a beautiful manner. This gift should be cultivated. The mother of the home certainly must be ever on the alert, watching the children with a physical, moral, and spiritual eye, and making them feel her sympathy, and that in all cases she is ready to receive their confidence.

I feel that I cannot close this feeble effort on so large and great a subject, without touching upon the true foundation, continuance and attraction of the home. This I feel to be our Christian faith. Can a home really exist, where God's love does not abide, where His laws are not obeyed? We cannot build on the human strength—we must have a source from which love, encouragement, faith and service may be drawn, and for this we may only seek at the Throne of God. There is scarce a stage so early when the story of Jesus and His love may not be presented to the child's mind. If we neglect this and put off the day of instruction, until the child of its own knowledge has decided for itself, or has reached an age when it will be intellectually capable, we may find that at the termination of such a period a mind set in paths, we fain would change, and we, lacking the power to achieve this change. To those then, upon whom the responsibilities of the home rest, are accorded the honors of making this race the first in the world. If I could pluck the flowers of rarest beauty and sweetest perfume and select the rarest jewels from the crown of kings and queens, I would fashion them into a more beauteous crown and with the hand of love, I would place it upon the brow of the mother.

GOOD HEALTH TALKS.

Sensible mode of living that will ward off much sickness. Give the children a chance to be well naturally.

Conducted by Edith Charlton Salisbury.

Dear Martha:—One of the things that I have learned since coming to the North-west is that there is much sickness in both town and country and in many localities doctors and nurses are few and far away. More than that, when people have been only a short time in the provinces and money is scarce, when sickness does come it is very difficult to find the necessary funds to cover expenses. That is the time the burden rests more than ordinarily heavy on the shoulders of the house mother, and to her already full share of duties is added that of doctor and nurse. I have seen so many mistakes made in treating diseases—so many that have lead to quite serious after-effects—that I feel I must write out a few suggestions that I have gleaned from various sources—experience, talks with nurses and doctors, and observation.

First, I want to make it very clear that I do not advocate dosing oneself with medicine every time one feels a "bit under the weather." There are

some people who like to take a little medicine "just for prevention" and to ward off a possible attack of some kind. Nature is the best regulator and if she gets half a chance and any thing like fair play there will be fewer headaches and liver and stomach troubles to correct. There has been a great deal of harm done by buying a bottle of medicine or box of pills just because some one recommends it or some advertisement lauds it, assuming it will prevent or cure your special ailment. Much better get in a few extra hours' sleep, go on a diet of simple food for a few days or miss a meal altogether for a few days—spend a little more time out of doors, and above all stop worrying, and five times out of six the head ache or stomach ache or billious attack will soon vanish, not to return again if the cure I have suggested is continued. Getting sick is really only a polite and popular way of saying one has been law breaking—one of nature's laws of good health—and the penalty is always pain.

Harmful Headache Medicine.

It makes me fairly indignant to see the bad habit that some women have developed of taking headache "cures" without even asking what are the ingredients of the tablets, powder or capsule which has become so essential to their existence. I know women, good sensible farm women, too, who never think of going to town or attending a social affair without slipping into their hand bags a certain little box or phial containing their favorite headache medicine. Now these headaches are sometimes caused by over-taxed or uncontrolled nerves; sometimes by eating too much or too rich food at the social affair; sometimes by defective eyes which are unduly strained by the sights and lights and quickly moving objects passing before them on this unaccustomed outing. The headache medicine does not cure any of these troubles it simply dulls the nerve centers, retards the function of some organ and sets the wonderful human machinery running "out of gear." If the medicine is continued until sleep comes to quiet the abused organs there may be no return of pain—only a queer, gone-to-pieces feeling next day—and the headache "cure" is pronounced a success. Most of these medicines contain a drug which acts to a certain extent on the heart, depressing it. This interferes with the circulation of the blood and that in turn has an effect on all the processes of life. Such medicines should not be taken without the advice of a physician, because your heart may not be able to bear the effect without seriously injuring it. No medicine can be compounded that will have the exact effect on every person, irrespective of age and constitution, because all people are not equally strong, or sick or well. A much wiser way is to find out what causes these aches and pains and remove the cause. In a great many cases it will be found it is either due to eye strain or a disordered digestive tract. Correcting either will usually stop the blinding headaches; quiet quivering nerves and calm a rebellious stomach or liver. But in any case don't maltreat your poor, long-suffering anatomy by dulling its sensibilities with dangerous drugs.

Don't Drug the Children.

Even worse than women's heartless treatment of themselves is the habit of giving little children medicine on the simple supposition it will do them good. I know of one mother who gave her baby a teaspoonful of soothing syrup as regularly as she put on his bonnet, just to keep him quiet while she had him among strangers. Do you know the composition of soothing syrup? Two of its ingredients are alcohol and morphine. You wouldn't willingly give either of those drugs to your baby if you knew it and yet you will find them listed among the contents printed on the bottle of at least one favorite make. Don't form the habit of giving children any kind of medicine unless the doctor advises it for some special reason. Four-year old Marion, a little friend of mine, is given a dose of castor oil two or three times a week "on general principles," says her mother, who has an idea that it will prevent a possible illness. A little child who is properly bathed and fed and clothed, who has plenty of fresh air and all the time she requires for sleep and play will not need castor oil or any other medicine to keep her in good health. Nature will look after that if she has the chance.

Sickness is nothing more or less than an abnormal condition of the body; when all the organs are performing their functions naturally and harmoniously there is no disease and the human machine is in perfect working order. But even the smallest, seemingly least important, part cannot be out of order very long without the entire body being effected by it. A frequently neglected defect, impaired eye sight, will after a time affect the nerves, disturb digestion and cause the most severe headaches. Continued pain in any part deranges the entire nervous system and that in turn makes trouble in every organ of the body. It is the little neglects which finally result in the big diseases, the general breaking down.

Don't Let Wastes Accumulate.

Nothing is more often the direct cause of many of the so-called diseases than constipation which is really the result of carelessness and may be traced to lack of exercise, lack of water, an overdose of condensed foods and improper habits of eating.

You would never expect a fire to burn brightly in stove or furance if the ashes were allowed to accumulate day after day. Neither can we expect our bodies to perform their work and remain in good condition when the wastes from food—the body's fuel—are allowed to accumulate and clog the different organs. Constipation is nothing but habit, and habit you know is doing a certain thing over and over until it becomes fixed and becomes like "second nature," really a part of ourselves. So the habit in this case means repeated neglect to conform to nature's laws.

The habit of constipation may be and very often is, begun in childhood and is the outcome of a mother's lack of knowledge regarding hygiene and what it means in the health of children. Some children seem to have a tendency to constipation from birth but in the most of these cases it will be found the trouble is in the diet, which, of course, should be milk. If the nursing baby is constipated the mother's milk lacks fat and this deficiency can be made up by giving the baby a few drops of the purest olive oil every two or three days. To do this put a little oil in a teaspoon and when the baby is nursing drop the oil into its mouth from the point of the spoon, slowly and gradually. In a very short time he will learn to take it without the least trouble. Or the mother's diet may need correcting. She may be eating too much meat, fish, eggs, etc., and too little butter and cream and she may not be taking enough out-door exercise, either condition may tend to make the baby constipated.

If the baby is "bottle fed" his food still may be lacking in fat, which may be increased by adding a little more cream. This, or any other change in the baby's diet, should not be made without the advice of a physician as very little things may derange his digestion. In adults one of the best cures, or prevention, for constipation is to take exercise and this the baby should have too. Don't have his skirts too long. Give him lots of opportunity to kick and stretch. Until he is old enough to roll about this is the only way he has to exercise the lower part of his body, so do not prevent it by binding his legs in long skirts. Two or three times knead the abdomen very gently and lightly with warm fingers, for a few minutes. Use a circular motion, beginning at the lower right side of the abdomen and working up towards the stomach, then across the abdomen and down the left side. This is the direction the contents of the intestine flow and the natural one to employ in massage.

Better than Purgatives are Fruits.

Whatever is the cause of constipation in children don't make it worse, or permanent, by habitually giving him purgatives. It is better to use glycerine suppositories occasionally than to give even the mildest cathartics. Begin very early to teach the child habits of regularity. It is surprising how soon they will use a chair, long before they are able to sit up alone.

One of the troubles in both children and adults which results from the practice of taking cathartics is that the

muscles controlling the rectum is weakened and loses its power to contract and relax naturally—which means that there must always be some artificial aid to secure a movement of the lower bowel.

There are certain foods which have certain laxitive qualities and some of them should be included in the daily diet of the adult who has a tendency to constipation. the list includes: Oranges, lemons, limes, grape fruit, apples, prunes, raisins, figs, dates, grapes, chocolate, honey, spinach, asparagus, rhubarb, tomatoes, olive oil, cream, butter, oatmeal, buttermilk.

The majority of these foods can be given to children over one year old and it is well to see that some of them are included in the diet. A child less than one year old can have a bit of scraped apple occasionally and a teaspoonful of orange juice is very good too, not only for its laxative properties but also because it contains minerals which are useful in bone development. Be a little careful, however, not to give the orange juice too near the time the baby has had its milk.

It always seems to me that prevention is really more vital than cure; that the house mother who sees to it that her own habits of life and those of the family are such as to prevent disease is accomplishing more than when she is instrumental in bringing about a cure. Still into the best regulated home and to the most careful individual sickness will come now and then and it is well to know something about its treatment.

I have written you a long letter this month on prevention; next month I shall have something to tell you about the home care of the sick. If there is any question you want to ask; any subject you would like to have especially touched upon be sure to write me about it.

Your Country Sister.

Mentioned in Passing.

"And what so rare as a day in June?
Than, if ever, come perfect days."

* * * *

Women in the country should spend as much of this month as possible out of doors. I hope your farm home has a veranda where the evening meal can be served now and then.

No, I have not forgotten the mosquitoes which I am told rob most of June of its outdoor pleasure. But try to keep them out by screening the veranda with the finest of netting. A more effectual way to get rid of these pests is to do away with breeding places if possible. These are standing pools of water, rain etc. Some of the pools may be drained, or it may be possible to pour kerosene on top of the water, this will smother the newly hatched mosquitoe which is a wriggler hanging head down. Keep the water barrels covered closely and if the eaves have water standing in them, remove the leaves and dirt or whatever is preventing the water from running away.

* * * * *

A more harmful pest than the mosquito is the common house fly. Keep him out of the house no matter how much time and trouble it takes, because he spreads disease. The fly's breeding place is filth so be careful about the garbage can, throwing slops on the ground, and be sure to have the doors and windows in outdoor toilets well screened. Also use ashes, lime or sand very generously every day in the closet. The manure at horse and cow stable should not be allowed to accumulate in the farm yard. These sanitary precautions will lessen the number of flies very materially.

* * * * *

Do not allow the drain or any wastes from house or barn to empty into any flowing stream. This source may furnish drinking water to other families living a few miles below you. This process of disposing of sewrage is rather common in some parts of the west and it is a most dangerous one, spreading typhoid fever and other diseases.

* * * * *

At least one housekeeper found some helpful suggestions in the article "Saving Steps" which appeared in the last number of the Canadian Thresherman and Farmer. She has informed me that she invested thirty cents in a tray that was large enough to carry all the dishes, for a family of three, from dining room to kitchen and was surprised to see how much time it took to set and clear away the table. A tray piled with dishes may be too heavy for some women to lift and may not prove as practicable for a large family as the wagon, but in many cases it will serve the purpose of saving steps quite satisfactorily and that is what I am anxious to have our housekeepers think about.

PATTERN DEPARTMENT

Any of these patterns supplied by the Pattern Department of the E. H. Heath Co., for 10c., or stamps. Please order by number and state the month in which pattern appeared.

No. 6815. The simple frock that can be worn over any guimpe is always a desirable one. This model includes a straight plaited skirt. Light weight wools and washable materials are appropriate. The pattern, No. 6815, is cut in sizes for girls of 6, 8 and 10 years of age. For the 8 year size will be needed 3 yards of material 36 inches wide with ⅝ yard for the trimming.

6887. Little children are wearing a great many frocks of this kind. The yoke or body portions are cut in one piece with short sleeves and the skirt is plaited. The dress can be worn with or without a guimpe. Gingham, lawn, batiste, all similar materials are liked, and wools such as challis and cashmere and albatross, are appropriate. The pattern, No. 6887, is cut in sizes for girls of 4, 6 and 8 years of age. For the 6 year size will be required 2½ yards of material 36 inches wide.

6931. Sailor costumes are always liked for little girls, and this one is especially smart. The skirt is straight and joined to an under waist. The collar can be made round or square and the blouse with or without an opening at the front. This dress is made of white linen with trimming of blue, but both washable materials and wool are appropriate. The pattern, No. 6931, is cut in sizes for girls of 8, 10 and 12 years of age. For the 10 year size will be needed 4½ yards of material 36 inches wide with ½ yard for the collar and 4½ yards of braid.

7074. Dresses that are made in peasant style, or with the sleeves making a part of them, are favorites for little children. This one is novel for it is lapped onto a yoke with panel extension. In the illustration striped gingham is trimmed with collar of white lawn, but all seasonable materials are suitable for dresses of this kind. The pattern, No. 1074, is cut in sizes for girls of 4, 6 and 8 years of age. For the 6 year size will be needed 3½ yards of material 27 with 1 yard for the trimming.

6908. What is known as French dresses, or those that are made with long waists and straight gathered skirts, are very fashionable and very pretty for the younger children. This one can be made from white or colored material, from lawn or batiste, linen and from all

fabrics of the kind. In the illustration white lawn is trimmed with embroidered banding. The pattern, No. 6908, is cut in sizes for children of 2, 4 and 6 years of age. The 4 year size will require 1¾ yards of material 36 inches wide with 5¾ yards of banding.

The above patterns will be mailed to any address by the Fashion Department of this paper, or receipt of ten cents for each.

Nos. 7287 and 7283. White serge makes some of the prettiest dresses of the spring. This one is trimmed with soutache applied over a simple design. The blouse can be made with or without a lining, consequently, the model is a good one for washable materials as well as for those of wool. The skirt is cut in two pieces and can be finished at either high or natural waist line. The blouse, No. 7287, and the skirt, No. 7283, are cut in sizes for misses of 14, 16 and 18 years of age. For the 16 year size the blouse will require 2 yards of material 27 inches wide with 1 yard of all-over lace 18, ¾ yard of lace for the frills; the skirt 3¼ yards of material 27 inches wide.

7249. The frock that is closed at the front is practical as well as fashionable. This one can be made with square or high neck, three-quarter or long sleeves. In the illustration challis is trimmed with striped silk and banding, but all the washable materials, lawns, ginghams, and batistes, are appropriate as well as the wool materials. The pattern, No. 7249, is cut in sizes for girls of 8, 10 and 12 years of age. For the 10 year size will be required 4¾ yards of material 27 inches wide with 1 yard for the trimming and 3 yards of banding.

7307. Reefer coats are the outer garments that boys like best for the warmer season. This one is made of covert cloth with collar of velvet, but all the materials that are used for boys' coats are appropriate with collar of the same or of velvet. The pattern, No. 7307, is cut in sizes for boys of 8, 10, 12 and 14 years of age. For the 12 year size will be needed 1¾ yards of material 44 or 52 inches wide with ⅛ yard of velvet for the collar.

Pretty Night Gowns for All Ages.

No. 6620—One piece night gown for misses and small women. It is made in one piece, there being only the underarm seams to be sewed up. It is slipped on over the head and the size is regulated by means of ribbon threaded through eyelets. The 16 year size will require 3½ yards of material 36 inches wide. The pattern is cut in sizes for 14, 16 and 18 years of age.

No. 7080—Square yoke night-gown for misses and small women. It is full below a square yoke and includes sleeves that are sewed to the armholes. The 16 year size will require 5½ yards of material 36 inches wide with 3½ yards of banding and 4 yards of edging. The pattern is cut in sizes for 14, 16 and 18 years.

No. 6746—One-Piece Night Gown. It is made in one piece, the sleeves can be made with or without openings. The medium size requires 3⅜ yards of material 36 inches wide. The pattern is cut in three sizes, 34 or 36, 38 or 40, 42 or 44 bust.

No. 7085—Girl's Square Yoke Night Gown. It is full below the yoke and can be made high or square and the sleeves in full or three-quarter length. The 8 year size will require 3¼ yards of material 36 inches wide. The pattern is cut in sizes from 2 to 12 years.

No. 7104—Girl's Chemise Night Gown. It is drawn on over the head and the size is regulated by ribbon threaded through beading. The sleeves are separate and sewed to the armholes. The 10 year size will require 3½ yards of material 36 inches wide. The pattern is cut in sizes from 6 to 12 years of age.

The above patterns will be mailed to any address by the Fashion Department of this paper, on receipt of ten cents for each.

7289. High waisted frocks are always becoming to tiny children and this one is very dainty in a simple way. The body portion and the sleeves are cut in one. The skirt portion is straight at the lower edge and well adapted to flouncing. All the pretty, dainty materials that are used for little girls' dresses will be found suitable. The pattern, No. 7289, is cut in sizes for children of 2, 4 and 6 years of age. For the 4 year size will be needed 1¾ yards of flouncing 18 inches wide with ½ yard of plain material 36; or 2 yards of plain material 36 inches wide.

7286 and 7153. The shirt waist worn with separate skirt makes a necessary and always satisfactory costume. This skirt is made in two pieces and gives a tunic effect, but in reality is all in one, the tunic being stitched to a narrow foundation. The blouse is tucked becomingly and includes the new sleeves. It is closed at the back. The blouse pattern, No. 7286, is cut in sizes from 34 to 42 bust, the skirt, No. 7153, in sizes from 22 to 30 waist. For the medium size will be needed for the blouse 3¼ yards of material 27 inches wide; for the upper portion of the skirt 2½ yards 44 and for the lower portion 1¾ yards 27, 36 or 44 inches wide.

The above patterns will be mailed to any address by the Fashion Department of this paper, on receipt of ten cents for each.

No. 6914—House Dress with Four Gored Skirt. The Blouse is cut in one piece with the sleeves and is closed at the left of the front. Cashmere, challis and similar wool and simple washable materials are appropriate. The medium size will require 7 yards of material 27 inches wide with ¾ yard for the trimming. The pattern is cut in sizes from 34 to 42 bust.

N. 7036—Semi-Princesse Gown. It is closed at the center front. The sleeves are separate and sewed to the armholes and the skirt is six gored. All simple materials, both wool and those of cotton and linen are suitable. The medium size will require 7 yards of material 27 inches wide with ⅞ yard for belt and trimming. The pattern is cut in sizes from 34 to 44 bust.

No. 6727—House Gown or Nurses' Costume. A simple gown in shirt waist style. The skirt is six gored. The waist is closed at the center front, the skirt slightly to the left. Gingham, linen, percale and the like are appropriate. The medium size will require 7¼ yards of material 27 inches wide. The pattern is cut in sizes from 34 to 46 bust.

No. 6580—Breakfast Jacket. It can be made with either square or high neck and with short or long sleeves. The medium size will require 4 yards of material 27 inches wide with 2¾ yards of beading for the trimming. The pattern is cut in sizes from 34 to 44 bust.

No. 6907—House Jacket with Peplum and Body and Sleeves in One. One of the prettiest possible jackets. The side portions are cut in one with the sleeves and lapped onto the center portions and there is a separate peplum that is joined to it beneath the belt. The closing is made at the left side. Challis and the like and washable materials are appropriate. The medium size will require 3 yards of material 27 inches wide with 5 yards of banding. The pattern is cut in sizes from 34 to 42 bust.

The above patterns will be mailed to any address by the Fashion Department of this paper, on receipt of ten cents for each.

Hints on Growing Sweet Peas.

Dear Editor:—Here are some hints for growing sweet peas; as I got it from a professional, I will pass it along. Never sow sweet peas year after year on the same piece of ground, nor don't sow

them where garden peas or beans have been grown the previous year. If it is necessary to grow them on the same spot every season remove some of the soil and add fresh soil. Dig a trench, remove the soil to some other part of the garden, then dig up the bottom where you have taken the soil out of, mix with manure and add fresh soil. Before sowing, early as you can in April, hoe or dig it again where you intend sowing and mix some wood ashes in it. As soon as the peas appear begin to cultivate them and keep running the hoe frequently up the rows. If it is a dry season they should be watered often.

Sweet Pea.

Reader, Staneley, Alta.:—In order to pursue a systematic and thorough study of Home Economics one should attend College and take the prescribed course. If that is impossible the next best thing to do is to read books on the subject, of which there are many, but most of them are more valuable to the student if they are read under the supervision of an instructor. I wish it were possible for you to attend Manitoba Agricultural College and take the full two-year course. You could not possibly spend two seasons to better advantage in order to gain the best kind of preparation for right living. We are to have new buildings, new equipment and an enlarged faculty, full of enthusiasm and zeal in their work. Altogether the combination is one that is worth making real sacrifices for, if need be, in order to take advantage of it.

Recipes

This is an Eastern Canadian Recipe.

To Cure Pork in Pickling Brine.—A general cure which serves to make fine ham and bacon, pickled tongues, etc., includes the following: For each 100 lbs. of meat, use 7½ lbs. of fine salt, 2 lbs. of refined sugar, and ¼ lb. of saltpetre. Rub the meat well with this mixture, and pack closely in a cask. Cover the meat with about 10 gallons of cold water, and place a weighted cover on it to keep the meat well down. In about three weeks drain off the brine, and re-boil to insure it against impurities and add original ingredients or re-furnish the quantity; replace in the cold brine for about four weeks longer, after which the pieces may be washed and hung to dry and smoked or stored.

Not infrequently, from insufficient care in cleansing from surface food, unclean barrels, etc., the brine becomes malodorous and the contents of the pork-barrel, if not given immediate attention, become unfit for food. As soon as the trouble is discovered, remove the meat, wash it thoroughly, and soak in clean water until fresh and sweet. Cleanse the barrel by scouring with hot water and wood ashes; re-boil the brine for half an hour, skimming off the impurities that rise, then allow to cool. Replace the meat after sprinkling it with a little fresh salt and re-cover with the brine, and if due care has been given no further trouble will be experienced, and the meat will be sweet and firm.

Experience Extracts.

Egg shells when washed form the best medium possible for clearing coffee, soups, and jellies.

When watering house plants, instead of pouring the water into the plant pot, dip a whisk broom into the water and sprinkle over the leaves and earth.

In steaming dumplings or puddings a cloth should first be placed over the steamer before the lid is put on. It prevents moisture and insures light, puffy dumplings.

White and light-colored plumes, lace or fine silk shawls may be cleaned by dusting in a mixture of flour and borax or flour and salt. Cover the article to be cleaned with the mixture, roll in a white cloth and allow it to lie for a few days, after which shake out the flour and the article will be beautifully clean. The cleaning mixture may be used again if it is not perceptibly soiled.

A Germ-Protector.

Get different sized embroidery-hoops, purchasable at the ten-cent store. Then take squares of cheese-cloth and stretch across the smallest hoop and put the larger one over to hold the cloth in place. Hem the squares so they can be scalded, and always keep clean for use. Use for covering dishes containing food, hot or cold. When used over hot things, the cheese-cloth lets the steam escape and keeps all dust and germs from the food. These covers are especially handy when you wish to put things on the outside window-sill to cool.

To Put New Wick in Lamp.

To put a new wick in any lamp-burner quickly, thread a needle first, run the thread across the wick, and pass needle through burner.

WILD HORSES OF THE WEST.

By Day Allen Willey.

In the writings of American novelists, an animal which frequently figures is the so-called wild horse. The authors often describe him as fleeter than the steed of Arabia, dangerous in his fierceness, and have given accounts of his pursuit which have added to the sensation of the tale. In fact, the existence of the wild horse in the ordinary sense of the term is doubted by many people, even some living west of the Mississippi River.

There is no doubt, however, that herds of wild horses live in some of the uninhabited valleys and occasionally graze along stretches of the vast prairie of the southwest which is still separated from civilization. They have been seen at times by hunters, mining prospectors, and occasionally have ventured in the vicinity of some outlying ranch, and thus come within sight of the cowboys. Nevada contains what is believed to be the largest herd, which apparently has a foraging and breeding ground within its boundaries. The nearest human habitation is in the little hamlet of Battle Mountain, on the route of the Southern Pacific Railway.

Like Stalking Caribou.

Here the hunter of the wild horse must leave civilization and cross the summit and valley over a region which is deserted even by the sheep herder. It requires about two days to traverse the thirty miles to the breeding grounds, such is the difficulty of the way, but after reaching the vicinity of the animals they must be stalked as carefully as a caribou, for their scent is as keen, and they are quick to detect the presence of man. As a rule they can be seen only at a distance.

The wild horses of Nevada owe their origin to a band of domestic horses which were turned loose on the hills and plains back of Sheep Creek Mountains over thirty years ago. There they have since remained, breeding and running at will, and until the last two years or so no attempt has been made to capture them, except in rare individual instances. For more than a quarter of a century they have existed in a country as wild as when the continent was discovered, full of deep canons and maze like runways. The country over which these horses roam is ideal for their freedom, isolation and concealment. The Sheep Creek Mountains are a comparatively short range, rising from the valley of the Humboldt River. In the region noted it is estimated that there are now two thousand wild horses; but their method of existence and travel is in small bands, numbering

from a half dozen to twenty. Each band has a stallion as its leader, and there is practically never more than one stallion to a band. As soon as a male colt acquires growth and strength he is either driven out of the old band or voluntarily leaves to form a band of his own.

The leader is in every sense the master of the band. The members of his family are such by his will, and acquisitions are made only with his consent. The stock on the range is frequently added to by strays from distant ranches or from some vaquero camp. This has been particularly true within the last two years, when effort has been made to capture the wild bands, and a cow boy camp has been maintained in the hills for much of the time. Iron shod saddle mares and even mules are among the members of the bands, all apparently as wild as the leader.

Exciting and Difficult Work.

Catching these wild horses is, as may be well imagined, exciting and difficult work. Among the men engaged in it, it is called "running" wild horses, and that is what it amounts to. The vaqueros run them down by superior skill rather than by speed and endurance, and force them into some corral or some band of gentle horses, where they can be handled for market. A Nevada ranchman named Blossom has made several attempts to round up this wild stock and turn it to some profit. The principal thing necessary is to keep the horses moving, giving them no chance to rest, and finally rounding them up in an exhausted state. The sight of a man on horse back is frequently enough to keep the wild band going the entire day. Knowing this trait, Blossom tried the device of mounting images of men upon captured horses and turning them loose, counting upon frightening and exhausting the wild horses that caught sight of them, and then running them down with fresh animals. The scheme was only partly successful, owing to the fact of his not being able to get enough dummies in the field.

The difficulty of the chase was enhanced by the fact that the herd apparently posts sentinels on the lookout for danger. The country is nearly all rolling, and the first sight of a band is usually of one or two lookouts on the crest of a knoll, plainly on the alert, though miles away. On attempting to move nearer, the entire band appear, and, after a moments' gaze at the intruders, start off at a trot, the leader in the rear. This trot is deceptive. It seems easy to overcome, but the pursuer soon finds that it

Valiant Protectors.

When the band is met unexpectedly the most exciting incidents often occur. At close quarters the mustangs break into a run, and the race is to the swift. Here, when there is no doubt that each one will strain every nerve, the stallion takes the lead and makes every effort to pilot his family out of danger. But let the rider succeed in getting among the escaping horses, swing his reata, and attempt to cut out some of the mares, and the stallion will turn instantly, and with open mouth, teeth gleaming, and mane flying, rush at the disturber of his family unity with fury. A wild stallion is a jealous guardian of his host, and with mouth open, threateningly, even when the pursuer is a couple of hundred yards away.

The captured wild horse is far from being easy to handle, and its usefulness as a saddle horse is doubtful. Under intelligent training at the hands of a skilled rider it may be tractable, and strength and endurance make it a valuble animal; but one that has a strain of viciousness will require close watching. The comparatively few that have been captured and broken for use have proved that they can withstand hunger and thirst to a remarkable degree, and will make journeys across the desert regions of the Southwest subsisting on foliage of bushes and bitter grass which the ordinary Western horse used on the plains cannot eat. While they may run at high speed for a few miles, the statement that they vie with the Arabaian blood is not true.

CHIPS

Let not your pride be so sharp that it will stick you in your sleep.

* * * *

Poverty is not a disgrace when it comes from paying your debts.

* * * *

When you strike a man below the belt, you strike him where he lives.

* * * *

Put your life into your work, or your work will take the life out of you.

* * * *

Faith is that which leads you to trust a man you know will not do to trust.

* * * *

If water were worth a dollar a quart, how men would boast about taking a bath.

* * * *

No religion is of any account if you can't take it to your place of business with you.

NUGGETS.

The time to do your worrying is when a thing is all over.

Do not play with the spoon before you take your medicine. Learn right at the outset.

It isn't so much knowing a whole lot, as knowing a little and how to use it, that counts.

I have never known a fellow who was smart enough to think for the house days and for himself nights.

I want to see you grow into a car-lot man—so strong and big that you will force us to see that you are out of place among the little fellows. Buck up!

Procrastination is the longest word in the language, but there's only one letter between its ends when they occupy their proper places in the alphabet.

What you know is a club for yourself, and what you don't know is a meat-ax for the other fellow.

It isn't what a man knows, but what he thinks he knows that he brags about. Big men talk little knowledge.

When a fellow makes the same mistake twice he's got to throw up both hands and own up to carelessness or cussedness.

When a fellow has half knowledge of a subject, he finds it's the other half which would really come in handy.

Remember that when you're in the right you can afford to keep your temper, and that when you're wrong you can't afford to lose it.

When a man's in the selling end of the business what he really needs to know is the manufacturing end; and when he's in the factory he can't know too much about the trade.

I don't know anything that a young business man ought to keep more entirely to himself than his likes and dislikes, unless it is his likes. It's generally expensive to have either, but it's bankruptcy to tell about them.

It seems to afford a fellow a heap of satisfaction to pull the trigger for himself to see if it is loaded; and a lesson learned at the muzzle has the virtue of never being forgotten.

It is easy to keep a line of goods that are not advertised.

SYNOPSIS OF CANADIAN NORTH-WEST LAND REGULATIONS

Any person who is the sole head of a family or any male over 18 years old, may homestead a quarter-section of available Dominion land in Manitoba, Saskatchewan or Alberta. The applicant must appear in person at the Dominion Lands Agency or Sub-Agency for the district. Entry by proxy may be made at any agency, on certain conditions, by father, mother, son, daughter, brother or sister of intending homesteader.

Duties—Six months' residence upon and cultivation of the land in each of three years. A homesteader may live within nine miles of his homestead on a farm of at least 80 acres solely owned and occupied by him or by his father, mother, son, daughter, brother or sister.

In certain districts a homesteader in good standing may pre-empt a quarter-section alongside his homestead. Price $3.00 per acre. Duties—Must reside six months in each of six years from date of homestead entry (including the time required to earn homestead patent) and cultivate fifty acres extra.

A homesteader who has exhausted his homestead right and cannot obtain a pre-emption may enter for a purchased homestead in certain districts. Price $3.00 per acre. Duties—Must reside six months in each of three years, cultivate fifty acres and erect a house worth $300.00.

W. W. CORY

Deputy of the Minister of the Interior

N.B.—Unauthorized publication of this advertisement will not be paid for.

SOME FUN

Laborers Were Plentiful.

An officer who served with Lord Kitchener in Egypt tells the following anecdote of him:

"During the progress of some construction work in Upper Egypt the young subaltern in charge had the misfortune to lose some native workmen through the accidental explosion of some cases of dynamite. He telegraphed to Lord Kitchener, then Sirdar:

"Regret to report killing ten laborers by dynamite accident.'

"In a few hours came this laconic dispatch: "Do you need any more dynamite?"—Pittsburg Dispatch.

What He Got Out of It.

He never took a day of rest,
He couldn't afford it;
He never had his trousers pressed,
He couldn't afford it;
He never went away, care-free,
To visit distant lands, to see
How fair a place this world might be—
He couldn't afford it.

He never went to see a play,
He couldn't afford it;
His love for art he put away,
He couldn't afford it.
He died and left his heirs a lot,
But no tall shaft proclaims the spot
In which he lies—his children thought
They couldn't afford it.

Chicago Record-Herald.

It Would Not "Down."

Nat Goodwin was much occupied in looking at the waves. As he leaned over the deck railing a young woman passenger emerged from the first-cabin saloon.

"Oh, Mr. Goodwin" she cried, "is the moon up to-night?"

"If I swallowed it, it's up," responded the actor sorrowfully.—New York Mail.

Cold Storage.—He—"Where is the live chicken I bought for our party?"

She—"I put it in our new ice-box, to keep it fresh until it is killed to-morrow."

"Unsight, Unseen."—"I have found just the party for you, Lord Duncan—a lady with a dowry of half a million."

"And when can I see this lady?"

"Just keep thinking of the dowry—don't ask to see her."

A Difference.—Jones—"Poor Blake. He's worrying a great deal about debts."

Smith—"Nonsense! You'll never catch him worrying because he can't pay his debts."

Jones—"He's not worrying about old debts he can't pay, but about new ones he can't contract."

Gave Him Some Class.—She—"When it was given out that Cohen's cashier ran off with $50,000, Cohen didn't seem to mind at all."

Mose—"Is he so rich as not to miss it?"

She—"Well he was flattered. He never owned $50,000 in his life."

Looked Like One.—"How did that story pan out about the man up in the Bronx who found the big hailstone on his back stoop this morning?" asked the city editor.

"Nothing in it," replied the reporter. "He discovered it wasn't a hailstone after all. The iceman left it there."

Lucky Dog.—"My girl used to think a lot of her pug dog, but I've managed to get the edge on him since we married."

"How did you work it?"

"Fido wouldn't eat her cooking and I did."

Stung.—"You call this cake angel food?" said the harsh husband.

"Yes, dear," said the timid wife, "but if the diet doesn't seem exactly what you want, here are some deviled crabs."

Going, Going, Gone—The three degrees in medical treatment—Positive, ill; comparative, pill; superlative, bill.

OF THE CULL'U'D PEOPLE

A friend from the North had gone to visit the colonel, who lived in the swampy Mississippi River bottoms of Louisiana. There was no mosquito netting over the bed, and in the morning when the negro came with the water and towels, the tortured visitor asked: "Sam, why is it that you have no mosquito netting over the beds? Doesn't the colonel hav any in his room?"

"No, suh," replied Sam.

"I don't see how he stands it."

"Well, suh," said Sam, "I reckon it's jes dis away; in de fo' part uv de night, suh, de colonel's mos' gen'rally so 'toxicated dat he don't pay no 'tention to de skeeters, an' in de las' part uv de night, suh, de skeeters is mos' gen'rally so 'toxicated dat dey don't pay no 'tention to de colonel."

His Platform.

A prominent Chicago politician, when a candidate for an important municipal office, related the following story to illustrate why he should be elected instead of one of his opponents:

"Once I told three negroes that I'd give a big turkey to the one who'd give the best reason for his being a Republican.

"The first one said, 'I'se a 'Publican kase de Publicans sot we niggers free.'

"'Very good Pete,' said I. 'Now, Bill, let me hear from you.'

"'Well, I'se a 'Publican kase dey done gib us a perfective tariff.

"'Fine!' I exclaimed. 'Now, Sam, what have you to say?'

"'Boss, said Sam, scratching his head and shifting from one foot to the other—boss, I'se a 'Publican kase I wants dat turkey.'

"And he got it."

Charged the Jury.

Congressman Sydney Mudd, of Maryland, is said to have told this story about an old negro who, by some peculiar election twist, was elected a justice of the peace in the backwoods of Georgia.

His first case happened to be one in which the defendant asked for a trial by jury. When the testimony was all in and the argument had been concluded, the lawyers waited for the judge to proceed with his instructions to the jury.

The justice seemed somewhat embarrassed. Finally one of the lawyers whispered to him that it was time to charge the jury.

Looking at the jury with a grim, judicial air the judge said:

"Gentlemen ob de jury, sense dis is a very small case, I'll jes charge ye a dollar an' a half apiece."

In His Own Line.

Jim Jackson was brought before a Western judge charged with chicken stealing. After the evidence was all in, the justice, with a perplexed look, said:

"But I do not understand, Jackson, how it was possible for you to steal those chickens when they were roosting right under the owner's window, and there were two vicious dogs in the yard."

"Hit wouldn't do yer a bit o' good, jedge, for me to 'splain how I kotched dem chickens, fer you couldn't do hit yerself ef yer tried it fohty times, an' yer might git yer hide full er lead. De bes' way fer you ter do, jedge, is jes ter buy yo' checkens in de market, same ez odder folks does, and when yer wants ter commit any rascality do hit on the bench, whar yo' is at home.—Exchange.

New Logic.

Aunt Chloe Carter and Verbena Washington two colored women, met on the street on their way home from work. The compliments of the day were exchanged, and on separating each importuned the other to come to see her. So insistent, indeed, was Verbena in her hospitality that Aunt Chloe was moved to say:

"I'll tell you de trufe, Verbena Washington ef I didn't live no furder from you den you does from me, I'd come to see you ev'y day."

Conducted for the benefit of Dealers, Threshermen and Farmers who have anything to sell or exchange. Three cents a word for each insertion.

ENGINEER MACHINIST—Wants position in Manitoba for threshing season. Can do own repairing and capable of keeping engine in first class shape. State wages, wire or write J. T. H. c/o The Canadian Thresherman and Farmer, Winnipeg.

BUYERS ATTENTION.

THE GEORGE WHITE & SONS COMPANY, LIMITED, BRANDON, MAN.

ENGINES

2—25 H.P. White tractions thoroughly rebuilt and in good shape, each.... $1600.00
Second Hand
1—16 H.P. American Advance traction.. $ 700.00
1—18 H.P. Minneapolis traction..... $ 600.00
1—20 H.P. Brandon Cornell, Portable.. $ 400.00
1—20 H.P. White traction..... $1200.00

SEPARATORS—Second Hand
1—Altman & Taylor 28x50, all attachments..... $400.00
1—40x62 Waterloo separator, all attachments..... $400.00
1—36x60 Goddison separator, all attachments..... $300.00
1—36x60 American Abell, all attachments..... $325.00
1—36x56 Felshie separator, all attachments..... $300.00
—2—32x56 Great West Separator; all attachments..... $200.00
1—36x56 Great West Separator, all attachments..... $200.00
2—White Challenge separators, thoroughly rebuilt, all attachments, each..... $900.00
Write us re new goods—We have the best.

GAS ENGINEER wants position on Hart-Parr or Rumely Oil Pull. Thoroughly experienced. Not a correspondent throttle puller! **J. H. Nugent, Gravelbourg, Sask.**

STEAM ENGINEER wants position plowing season 1912, Saskatchewan License. Strictly temperate. References. State make and size engine. Wages. **Chas. L. Simpson, Box 834, Regina.**

FOR SALE—Two portable steam engines, 12 and 16 H.P., also two separators, 30 Bell City and 36 Sawyer Massey, all in good shape. $150 each. Must be sold. G. T. Grant, Ituna, Sask.

LICENSED ENGINEER MACHINIST (not a throttle puller) would like a plowing or threshing engine this season. State wages. Apply Box C. K., care of The Canadian Thresherman and Farmer, Winnipeg.

25 H. P. FAIRBANKS-HORSE Gasoline-Kerosene Engine. Worked only 12 days. Suitable for plowing. Also 32-50 Goodison Separator with Feeder, Bagger and Blower. Price for all (including 8 barrel gasoline Tank) $3500. Terms to suit. Wm. Paterson, Wawanesa, Man.

FOR SALE—One 26 H. P. S. M. Traction Engine, in first class shape. Box 76, Tuxford, Sask.

ENGINEER WANTED to operate 30 H. P. Rumely Oil Pull. Must understand repair work. Apply, stating wages wanted. H. W. Palas, Sperling Man.

CHOPPING OUTFIT FOR SALE. A 15 H. P. Stationary International Gasoline Engine 12 inch plate chopper, elevators, belting, pulleys and scales. Apply Box 137, Camrose, Alta.

FOR SALE.—40 H. P. Flour City engine and 10 plow John Deere gang. Price and terms on application to Lock box 127, Elbow, Sask.

EXPERIENCED ENGINEER wishes job on steam plowing outfit for coming season and will also run during threshing season. Apply stating wages, to D. McDonald, Red Jacket, Sask.

WANTED Position on steam plowing outfit for the season of 1912 as engineer and oblige Yours truly, R. H. Hargest, McLean, Sask.

HOW TO START YOUR GAS ENGINE in the coldest weather first clip. No hot water, (save time. **Formula 80c.**

P.S. For your information, this formula is a liquid, very high explosive, will vaporize in coldest weather. I use it myself at all times in bold weather.

J. W.BARON 2112 Louise, Brandon.

WANTED—Position as engineer on steam tractor, breaking or plowing, sober, industrious and responsible, fifteen years experience on traction engines. Emergency repairing performed, satisfaction guaranteed, references furnished. C. T. O. Selahl Sheyenne, North Dakota.

FIREMAN wants position on Steam Plowing or Threshing engine, preferably in Sask. In replying please state wages and probable length of run. Geo. Meilke, Blanche P. O., Que.

FARMS WANTED. We have direct buyers. Don't pay commissions. Write describing property, naming lowest price. We help buyers locate desirable property. Free. American Investment Association, 15 Palace Building, Minneapolis, Minn.

WANTED—Position as engineer on Hart-Parr considerable experience, state wages. Apply J. H. Nugent, Caron, Sask.

FOR SALE OR EXCHANGE FOR AUTOMOBILE OR HORSES
One 18 H. P. John Abell Simple Traction Engine McDonald and McCrindle, Glen Ewen, Sask.

FOR SALE—One J. I. Case, 20 H.P. Traction Engine, only used a short time in good shape; one 32-54 J. I. Case steel separator in good shape, will sell outfit for $1800.00. Will take stock in part payment or will trade it on a gasoline traction. Apply Box 10, Lauder, Man.

BE AN ENGINEER—The Heath School of Traction Engineering (by correspondence) offers you a thoroughly practical course in Traction and Stationary Steam Engineering for spare time home study. Send for prospectus and full information to E. H. Heath Co., Limited, Winnipeg.

FOR SALE—One Gould Balance valve for 22 or 25 H. P. Gaar-Scott engine. J. Reynolds, Yellow Grass, Sask.

FOR SALE—30 H. P. Flour City gasoline traction engine, price $2400.00, plowed 400 acres. As good as new. For terms, etc., write to Glennie & Rodger, Macdonald, Man.

FOR SALE—Hawkeye Band Cutter and Self Feeder used one season. Size 36 inch. First fifty dollars takes it. G. W. Vincent, Cor. Arlington and Ellice, Winnipeg.

WANTED—Engine gang six or eight bottoms must be in good repair. Box 70, Morse, Sask.

FOR SALE—Case 25 H. P. engine, fitted with contractor's tank and coal bunkers. Engine was reflued this fall and a new cylinder and steam chest put on. Is in 1st class running order. Also case separator, 44 x 66, in good repair. $1600 buys this outfit, or will sell separator. This is a bargain. Apply J. T. Taylor, 775 Corydon Ave., Winnipeg

FOR SALE—One 33-inch Waterloo Feeder, used 24 days. Cor. Heinrichs, Box 13, Lowe Farm, Man.

FOR SALE—Lots in 34 and 35 St. James, close to several large manufacturing industries. Price $250.00 each. Easy terms. Box 3079, Winnipeg.

FOR SALE—We have a few lots left in Transcona Gateway, the best buying in the district. Prices $6.00 to $10.00 per foot. Hurry if interested. Box 3079 Winnipeg.

FOR SALE—Five acre improved frui ranch on the Okanagan Lake, B.C. For sale or exchange for Winnipeg property. Box 3079, Winnipeg.

WANTED—Position as Engineer on a steam traction outfit. Fully experienced. Can furnish references. Address J. E. Peatch, Clava, Man.

WANTED—Gasoline Tractor engineer for "Flour City 40." Must have had traction experience. References required. Good pay. Also want woman cook for cottage; also man for garden and dairy. W. H. Pawson, Jr., Coaldale, Alta.

ENGINEER WANTS POSITION on plowing engine in Sask. or Alberta. Had 4 years experience, Can do own repairing. Graduate of the Heath School of Engineering. State wages. Chas. B. McMain, Summerberry, Sask.

TWENTY HORSE GAS ENGINE, Separator, five furrow plow, stubble and breaker bottoms, twenty-five shares. First class running order. Three thousand takes lot. Apply, "Thresherman" Care Can. Thresherman and Farmer, Winnipeg.

TWO MECHANICS, experienced in Gasoline Tractors, desire positions running Rumely, International, etc. Both have worked with Rumely and International Companies, understanding thoroughly the construction and maintenance of tractors. Communicate with Geo. Hart, 707 S. Scoville Ave., Oak Park, Ill.

"A SNAP"—FOR SALE—John Deere engine gang, 8 breaker bottoms, 1910 make, in first class condition, broke 300 acres. Apply to Neil Wright, Box 155, Wellwood, Man.

FOR SALE OR TRADE FOR GOOD LAND—One 35 H.P. Double Cylinder Steam Engine with 10 Bottom Cockshutt Plow. All in first class shape. Elias Gjertson, Warren, Man.

WANTED—Position on steam plowing outfit, firing preferred, experienced. Frank Campbell, Marquette, Man.

FOR SALE—Imported English Bull Dog, "Lucky Bargee," big winner, Winnipeg Winter Show 1911—Cheap. M. Cochran, Imperial Bk. Winnipeg.

WANTED—Position as Engineer on steam traction outfit for threshing, or would take both ends. Can do own repairing. Nine years experience. Best of references and certificate for Sask. Am strictly temperate. Address E. F. Sharpe, Maple View Ont.

WANTED—Gasoline Tractor, Separator, and Plows, ons or all. Write giving Make, Size, Age, Price and terms to Box 81. Daysland, Alta.

LIVE IN A MILD, WARM CLIMATE. The Fraser Valley of British Columbia near the big city of Vancouver. Grass keeps green all winter; fine class of farmers. Residents have running water, bathrooms and telephones in their houses. Splendid high schools and churches. Fast electric tram service into Vancouver. Railroad station only a quarter of a mile away; splendid driving roads. Farmers with 5 acres make from $1,500 to $3,000 a year clear profit on berries, poultry and small fruits. I can sell you a 5 acre farm for from $50 to $200 down, the balance $10 to $20 a month. If you want to know just how they make big money there write me, W. J. Kerr, Ltd., 1711 Columbia Street, New Westminister, B. C.

FOR SALE—Threshing machine, also engine gang plow. For particulars apply to W. L. Barker, Box 1714 Calgary.

WANTED—Catalogues of Steam and Gasolene Threshing and Plowing Outfits. Address G. H. Lewis, Cosy Nook, Sask.

FOR SALE—Massey-Harris warehouse in good town near Saskatoon. Agency guaranteed to first-class man. Apply care of Canadian Thresherman and Farmer.

WANTED TO BUY Steam Traction Engine about 20 H. P. Address W. W. Kennedy, Magyar, Sask.

GAS ENGINEER desires position with reliable farmer, April to November; operating engine. Box 171, Lumsden, Sask.

ENGINEER WANTS POSITION on ploughing out-fit, for coming season. Holds third class certificate, four seasons' experience. Strictly temperate. Apply to R. McGhie, Caron, Sask.

WANTED—Position on plowing engine for summer as fireman. Am holder of diploma from Heath School of Engineering, by correspondence, and could run engine if necessary. Would prefer to work in Saskatchewan. Apply stating wages to H. E. M'Mahon, Box 11, Kinley, Sask.

FOR SALE—Avery 1911 model 30 h.p. Alberta special under-mounted engine, equipped for plowing. Cockshutt engine gang 8 bottom. Both run 8 days. Also new 36 x 60 Avery separator, with feeder and blower. All 3 for $3,800.00 cash. No trade considered. Davy C. Purfurst, St. Paul Minnesota

160 ACRE FARM FOR SALE OR TRADE—For Traction Plowing outfit. Land is quarter mile from town of Ladysmith, Man. Andrew Peets, Hanlan, Man.

FOR SALE—Small separator complete with all attachments. $400 cash. Box 13, Welby, Sask.

WANTED—Gasoline-Kerosene Tractor. Write giving make, size, age, price and terms. Box 24, Colonsay, Sask.

FOR SALE

	No.
15 Horse Case Simple Portable Engine	20540
15 Horse Case Simple Portable Engine	15833
15 Horse Compound Portable Engine	13426
18 Horse Simple Traction Waterloo	323
16 Horse Portable Sawyer-Massey	8299
20 Horse Portable Sawyer-Massey	1419
20 Horse Simple Traction Sawyer-Massey	1116
20 Horse Compounded Traction Engine, Case	7936
20 Horse Simple Traction Engine	" 17721
20 Horse Simple Traction Engine	" 16912
32 Horse Simple Traction Engine	" 19019

J. I. CASE, THRESHING MACHINE COMPANY, Winnipeg, Canada.

EXPERIENCED Licensed Engineer and Traction Plowman wants position for the coming season. Eight years practical experience in steam traction work. Will consider position in Man., Sask., or Alta. Charles Rondeau, Saint Leon, Man.

WANTED—By holder of second class certificate position as engineer; have also good knowledge of gasoline engines. Address care of Box 148 Oxbow, Sask.

FOR SALE
SECOND-HAND AND REBUILT MACHINERY.

Two 25 H. P. Simple J. I. Case engines.
One 15 H. P. Simple J. I. Case engine.
One 15 H. P. Compound J. I. Case engine.
One 15 H. P. Compound J. I. Case engine.
One 32x54 Wood Case separator.
One 28x50 steel Case separator, with wind stacker, self feeder and weigher.

J. I. CASE THRESHING MACHINE CO., Calgary, Alberta.

FOR SALE

We have on hand at present a very full line of Rebuilt and Second-hand Engines and Separators which we are offering at attractive prices. Write us fully what you are thinking of buying, when we shall be pleased to tell you what we have and quote prices. All our rebuilt goods are sold under same guarantee as new ones and of course are carefully repainted and look exactly like new. If you write us at once we are sure to have the size you almost want.

We also have a thoroughly Rebuilt Saw Mill Outfit consisting of 25 H. P. Saw Mill Engine and Portable Saw Mill with carriage and track complete. Can hardly be distinguished from new goods Will be sold at a bargain.

SAWYER-MASSEY COMPANY, LIMITED
Winnipeg, Man

BARGAINS

1—32 H.P. Port Huron engine, rebuilt and in first class shape.
1—American-Abell 20 H. P. engine, rebuilt.
1—Minneapolis Separator 44x72, rebuilt. With all connections.
1—32x54 Avery Separator complete, just rebuilt.
1—36x60 Avery Separator to be rebuilt complete.
1—Avery 30 H. P. double undermounted engines.
1—30 H. P. Northwest engine, not rebuilt, cheap.
1—J. I. Case steel, 42x60 separator complete with all attachments.
1—42x70 Avery separator, will be rebuilt in time for next fall's work.

If you are interested in second hand goods, please write and let us know what you want as we are making deals almost every day, and feel sure that we can fix you out with almost anything you want, either in new or second hand goods.

HAUG BROS. & NELLERMOE Co. Ltd.
WINNIPEG.

WANTED—Excellent opportunity for energetic salesman: highest salary paid to right men to represent an old established company and demonstrate and sell their Cream Separator. Reply in writing, stating salary, age, experience and references, to P. O. Box 255, Regina.

FOR SALE. Second hand repairs for Garr-Scott Separator, size 30-60. Will sell for less than half price. Fred Crump, Two Creeks, Manitoba.

FOR SALE. Hart-Parr plowing engine, John Deere and furrow plow, all complete and 9-inch Ideal Duplex Feed Grinder. Full particulars apply to H. J. Wilbur, Morris, Man.

FOR SALE

QUARTER SECTION, 6 MILES NORTHwest from Grays, Man., $16 per acre. 20 per cent cash, balance 4 years, at 6 per cent.

160 ACRES CLOSE TO PARKMAN, SASK 40 acres broken, $16 per acre. $1160 cash.

ONE HUNDRED AND SIXTY ACRES Prairie near Manson, Man., $15 per acre: ¼ cash 1, 2 and 3 years.

TWO HUNDRED AND FORTY ACRES, improved, first class land, near Woodlands, Man $25 per acre: ¼ cash.

240 ACRES IMPROVED NEAR CULROSS Man. A splendid little farm, over 200 acres under cultivation $32.00 per acre easy terms.

THREE HUNDRED AND TWENTY acre improved farm, near Holland, Man., $18.50 per acre: $7.50 per acre cash.

THREE HUNDRED & TWENTY ACRES prairie, adjoining the village of Frances, Sask. This is a fine parcel of land, and selling at $20 per acre if taken before the 25th of Feb. $1,000 cash balance to suit at 6 per cent. A great snap.

THREE HUNDRED AND TWENTY ACRES prairie close to Castor, Alta., at a snap price of $18 per acre, if sold quickly.

SIX HUNDRED AND FORTY ACRES prairie, near Woodlands, Man., $15 per acre, Terms. It's a snap.

SIX HUNDRED AND FORTY ACRES prairie close to Makaroff, Man., $20 per acre: ¼ cash. A first class buy.

SIX HUNDRED AND FORTY ACRES prairie, near Makaroff, Man. $15 per acre. Terms. Sure a snap.

EIGHT HUNDRED ACRES, WITH COMplete equipment stock and implements. Close to Crandall, Man., $30 per acre: 20 per cent cash, balance arranged to suit purchaser.

NINE HUNDRED AND SIXTY ACRE IMproved farm, within a nice driving distance of Brandon, Man. A beauty spot and one of the best cared for and finest places as regards foul weeds, buildings, etc., in the province. This place is worth $45 an acre, but for quick sale and on account of the terms will take $36 per acre. Just the place for a homeseeker.

NINE HUNDRED AND SIXTY ACRE IMproved farm, 30 minutes drive from Yorkton, Sask. The greater part of it is under cultivation and there are two sets of farm buildings, besides other convenient facilities. Which we can better tell you about. $45.00, 20 per cent. cash.

SIXTEEN HUNDRED ACRE IMPROVED farm in southwestern Manitoba, all under cultivation and ready for crop. This is a beautiful farm, with fair buildings and on the railroad, having a siding and elevator on the premises. Will sell, with or without stock and implements, which is sufficient and complete in every respect. Without stock, etc., $32.50 per acre, $14,000 cash: with stock, etc., $37.50, $18,000 cash, balance to be arranged suitably. If you investigate this you will agree with us that it's a great bargain Free information.

OLSEN & ARMSTRONG, 51 MERCHANTS Bank. Phone Main 434.

FOR SALE—A BARGAIN—Hawkeye Self-Feeder, 36 inches. Run only one season. In good condition. 555 Burnell Street, Winnipeg

FOR SALE—32 H. P. Reeves Steam Engine only plowed 320 acres. Cheap for quick sale May consider a trade. Apply L. M. Armstrong 314 Donohoe Block, Tel. 1484, Regina, Sask.

THRESHER BELT BARGAINS—A limited number of brand new endless belts, fully guaranteed, at cut prices. 8 inch 5-ply red canvas stitched 150; $42.00. 8 inch 5-ply rubber $45.00. Other sizes and plys. These prices limited to present stock but we always have bargains in belts, saws saw mills and supplies. Write us for prices on new and second-hand. Harris Machinery Company, Minneapolis, Minn.

BOILER TUBES—Save half on tubes to refluе your boiler. Second-hand clean perfect guaranteed tubes cut to lengths ordered. Write us for prices Harris Machinery Company, Minneapolis, Minn.

SECOND-HAND—We have a big stock of boilers, engines, saw mills, iron working and wood working machinery, belting, saws, shafting, pulleys in fact "everything in machinery." Do do fail to write us when you need anything second-hand or new, large or small. Harris Machinery Company, Minneapolis, Minn.

WANTED—Experienced and Licensed Engineer wishes position on Gasoline Tractor for season with reliable party, industrious and sober. Address George Merkling, Leofeld, Sask.

FOR SALE

30 H.P. Bell Traction Engine.
26 H.P. Bell Traction Engine.
22 H.P. Bell Traction Engine.
20 H.P. Sawyer & Massey Traction Engine.
18 H.P. Battle Creek Advance Traction Engine
15 H.P. Case Compound Traction Engine.
20 H.P. Giant Traction Engine.
15 H.P. Case Portable Engine.
36 x 60 Imperial Separator, Stacker and Ruth Feeder.
32 x 50 Imperial Separator, Stacker and Ruth Feeder.
36 x 60 Avery "Yellow Fellow" Separator, Russell Stacker and Ruth Feeder.
28 x 44 Goodison Separator, stacker and feeder.
32 x 50 Daisy Separator, Stacker and Lindsay Feeder.
32 x 54 Port Huron Separator, Stacker and Feeder.
36 x 54 Challenge Separator, Stacker and Feeder.
8 H.P. Gasoline Engine.
10 H.P. Stationary Gasoline Engine.
1 Parsons Hawkeye 36 inch Self Feeder.
3 Perfection Weighers and Loaders.
1 Dauntless Shingle Machine and Edger.

Address
ROBT. BELL ENGINE & THRESHER CO., Winnipeg, Man

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.

1—AMERICAN SEEDING MACHINE CO., Winnipeg.
2—BEATTY BROS., Brandon.
3—BELL ROBT. ENGINE & THRESHER CO., Winnipeg.
4—BRANDON PUMP & WIND MILL WORKS, Brandon.
5—BRITISH CANADIAN AGRI. TRACTORS, Saskatoon.
6—BUFFALO PITTS CO., Moose Jaw.
7—BURRIDGE-COOPER CO., Winnipeg.
8—CANADIAN FAIRBANKS CO. Winnipeg, Calgary, Saskatoon Vancouver.
9—CANADIAN HOLT CO., Calgary.
10—CANADIAN MOLINE PLOW CO., Winnipeg.
11—CANADIAN RUBBER CO., Winnipeg, Vancouver.
12—CANADIAN STOVER CO., Brandon.
13—CANADIAN SWENSONS CO., Winnipeg.
14—CASE, J. I. T. M. Co., Winnipeg, Regina, Calgary.
15—COCKSHUTT PLOW CO., Winnipeg, Regina, Calgary, Edmonton.
16—CRANE & ORDWAY, Winnipeg.
17—DEERE, JNO. PLOW CO., Winnipeg, Regina, Calgary, Edmonton Saskatoon, Lethbridge.
18—DE LAVAL SEPARATOR CO., Winnipeg.
19—DOMINION SPECIALTY CO., Winnipeg.
20—DUIS GEO. & CO., Winnipeg.
21—EMPIRE CREAM SEPARATOR CO., Winnipeg.
21½—GARDEN CITY FEEDER CO. Regina.
22—GAS TRACTION CO., Winnipeg, Saskatoon, Calgary.
23—GENERAL SUPPLY CO., Winnipeg.
24—GOODYEAR TIRE & RUBBER CO., Winnipeg, Regina, Calgary.
24½—GOOLD, SHAPLEY & MUIR, Winnipeg, Regina.
25—GRAY-CAMPBELL CO., Winnipeg, Brandon, Moose Jaw, Calgary.
26—HAUG BROS., & NELLERMOE CO., Winnipeg, Calgary, Regina.
27—HARMER IMPLEMENT CO., Winnipeg.
28—HART PARR CO., P. la Prairie, Regina, Calgary, Saskatoon.
29—HERO IMPLEMENT CO., Winnipeg.
30—INT. HARVESTOR CO., Winnipeg, Regina, Calgary, Edmonton, Saskatoon, Brandon.
31—LISTER R. A. & CO., Winnipeg.
32—LOUDEN HARDWARE & SPECIALTY CO., Winnipeg.
33—MANITOBA WINDMILL AND PUMP CO., Brandon.
34—MASSEY-HARRIS CO., Winnipeg, Regina, Calgary, Edmonton, Saskatoon.
35—MAYTAG CO., Winnipeg.
36—McLAUGHLIN CARRIAGE CO. Winnipeg.
37—McRAE ALEX., Winnipeg.
38—MELOTTE CREAM SEPARATOR CO., Winnipeg.
39—MINNEAPOLIS STEEL AND MACH. CO., Regina.
40—MOODY MATHEW & SONS, Winnipeg.
41—NEEPAWA MFG CO., Neepawa.
42—NICHOLS & SHEPARD CO., Regina, Winnipeg.
43—ONTARIO WIND ENGINE & PUMP CO., Winnipeg.
44—PETRIE MFG. CO, Winnipeg, Calgary, Vancouver.
45—PIONEER TRACTOR CO., Calgary.
46—RAYMOND MFG. CO., Winnipeg.
47—REEVES & CO., Regina.
48—RENFREW MACH. CO., Winnipeg.
49—RIESBURY PUMP CO., LTD., Brandon.
50—RUMELY M. CO. Winnipeg, Calgary, Saskatoon, Regina.
51—SAWYER & MASSEY CO., LTD., Winnipeg.
52—SHARPLES SEPARATOR CO., Winnipeg.
53—STEVENS BRUSH CUTTER CO. Didsbury.
54—STEWART SHEAF LOADER CO., Winnipeg.
55—TUDHOPE-ANDERSON CO., Winnipeg, Regina, Calgary.
56—VIRDEN MFG. CO., Virden.
57—VULCAN IRON WORKS, Winnipeg.
58—WATERLOO MFG. CO., P. la Prairie, Regina.
59—WATROUS ENGINE WORKS, Winnipeg.
60—WATSON JNO. MFG. CO., Winnipeg.
61—WESTERN FOUNDRY CO., Saskatoon.
62—WESTERN STEEL & IRON CO., Winnipeg.
63—WHITE, GEO. & SONS, Brandon.
63½—WINNIPEG CEILING & ROOFING CO., Winnipeg.
64—WINNIPEG RUBBER CO., Winnipeg.

BUGGIES AND CUTTERS.

Armstrong Buggies and Cutters.... 15
Barrie Buggies and Cutters..... 61
Bayne Carriages Co..... 37
Brockville Buggies and Cutters.... 17
Dominion Carriages (Transfer Agents)..... 6
Gray Buggies and Cutters..... 25
Greer Buggies..... 62
Heney Buggies..... 10
McLaughlin Buggies and Cutters.... 36
Munro-McIntosn Buggies & Cutters 10
Reindeer Buggies..... 17
Tudnope Buggies and Cutters..... 55

CREAM SEPARATORS

Blue Bell..... 30
Champion..... 55
Dairy Maid..... 30
De Laval..... 18
Empire..... 21
Magnet..... 44
Massey-Harris..... 34
Melotte..... 31
National..... 48
Sharples..... 32
Standard..... 48

CULTIVATORS AND STUMP PULLERS.

Climax Stiff Tooth Cultivators..... 15
Cockshutt Cultivator..... 15
Deere No. 2 Cultivator..... 17
Deering Cultivator..... 50
Elk (2 Horse) Cultivator..... 17
Fleury's Cultivator..... 17
Frost & Wood Scuffler..... 15
Hilborn Stump Puller..... 64
B. A. (2 Horse) Cultivator..... 21
McCormick Cultivator..... 30
Massey-Harris Corn Separator.... 34
Paris Scuffler..... 49
Sylvester Cultivator..... 55
Verity Cultivator..... 34

DISC AND DRAG HARROWS.

Ajax Drag..... 17
Bissell Disc..... 17
Boss Drag..... 50-62-60
Canadian Moline Boss Drag..... 10
Canton Disc..... 55
Case, J. I. Disc and Drag..... 27
Cyclone Wheel Disc..... 17
Cockshutt Disc and Drag..... 15
Cockshutt Lever and Clip..... 15
Deer Disc and Drag..... 17
Deering Boss Drag..... 17
Deere Steel Boss..... 17
Deering Disc Harrow..... 30
Defiance Jr. Disc..... 62
Economy Disc..... 10
Emerson Disc and Drag..... 64
Evans Disc..... 1
Fleury's Steel Channel Drag..... 17
Fleury's Clipped Drag..... 17
Fleury's Disc..... 17
Fuller and Johnston..... 61
Grand Detour Drag and Disc..... 60
Hossier Wheel Disc..... 1
International Diamond and Lever.. 30
Massey-Harris Disc and Drag..... 34
McCormick Disc..... 30
Moline Flexible Drag and Lever... 10
Noxon Disc and Drag..... 64
Harris Disc and Drag..... 49
Scotch Diamond Drag..... 5
Superior Wheel Disc..... 30
Universal Drags..... 17
Universal Tongue Trucks for Disc Harrows..... 17
Watson Drags..... 60
Wilkinson Drag and Disc..... 61
Windsor Disc..... 15

FEED AND ENSILAGE CUTTERS AND PULPERS.

Cockshutt Feed Cutters..... 15
Cockshutt Pulper..... 15
Fleury's Feed Cutter..... 17
Geiser Feed Cutter and Grinder... 77
Massey-Harris Feed Cutter..... 34
Watson's Feed Cutter..... 60
Watson's Root Pulper..... 60

FEED GRINDERS.

Brandon..... 6
Challenge..... 60
Cyclone..... 9 & 27
Daisy..... 7
Diamond..... 55
Fleury's..... 17
Goold Shapley & Muir..... 15
Manitoba..... 37
Maple Leaf..... 44
Ontario..... 43
Scientific..... 60
Stover Ideal..... 10
Vessot..... 30
Victor..... 60
Watson's Ideal..... 60

GARDEN IMPLEMENTS. INCUBATORS AND POULTRY SUPPLIES.

Chatham Incubator..... 25
Cyphers' Incubator..... 60
Fountain Air Sprayer..... 53
Iron Age (Garden Implements. 53-61
Maxwell..... 55
Planet Jr. Garden Tools..... 41-55

CLEANERS, FANNING MILLS AND PICKLERS.

Acme Pickler..... 6
Automatic..... 19
Chatham Fanning Mills..... 25
Fossten Fanning Mill..... 17
Hero Fanning Mill..... 29
Hero Pickler..... 29
Superior Fanning Mills..... 27
Webber Grain Cleaner..... 10
Wonder Fanning Mill..... 15

GASOLINE ENGINES.

Avery Tractor..... 26
Brandon..... 6
Buffalo Ritts, (Tractor)..... 6
Caters..... 4
Case Tractor..... 14
Fairbanks (Stationary, Portable Traction)..... 8
Flour City (Tractor)..... 43
Fuller & Johnston..... 61
Gade..... 7
Gas Traction ("Big 4, 30")..... 22
Geiser (Stationary, Portable Traction)..... 7
Gilson..... 48
Hart-Parr Traction..... 28
Holt Caterpillar..... 9
Ideal..... 24½
International..... 30
International (Tractor)..... 30
Ivel (Traction)..... 62
Manitoba..... 33
Minneapolis..... 20
Master Workman..... 60
Nichols & Shepard (Tractor)..... 42
Ohio (Traction)..... 58
"Oil Pull" Rumely (Tractor)..... 57
Olds..... 34
Pioneer (Tractor)..... 45
Rustin Procter (Tractor)..... 5
Sawyer-Massey (Tractor)..... 51
Stickney..... 43
Stover (Stationary, Portable, Traction)..... 12
Sylvester..... 63
Twin City "40" (Tractor)..... 38
Universal (Gas Tractor)..... 50
Watrous..... 68
Waterloo Boy..... 7

HARVESTING MACHINES.

Champion..... 30
Deering..... 30
Frost & Wood..... 15
Massey-Harris..... 34
Massey-Harris Corn Harvester.... 34
McCormick..... 30
Noxon..... 55

HAY LOADERS, HAY PRESSES, HAY TOOLS, MOWERS, RAKES, SWEEP RAKES, HAY STACKERS AND SHEAF LOADERS.

Admiral Hay Press..... 15
B.T..... 2
Buffalo Hay Press..... 51
Canton Hay Press..... 30
Champion Hay Rake..... 30
Champion Mower..... 30
Champion Side Delivery Rig..... 25
Dain Hay Loader and Stacker..... 17
Dain Hay Press..... 17
Dain Side Delivery Rig..... 17
Deere Hay Loader..... 17
Deering Hay Stacker..... 30
Deering Sweep & Hay Rack..... 30
Deering Mower..... 33
Frost & Wood Mower..... 15
Tedder..... 15
Frost and Wood Champion Hay Loader..... 15
International Hay Stacker..... 30
International Sweep Rake..... 30
International Hay Press..... 30
Jenkins' Sweep Rake..... 10
Keystone Hay Loader..... 30
Louden Hay Tools..... 34
Massey-Harris Mower..... 34
Massey-Harris Sweep Rake..... 34
Massey-Harris Hay Tedder and Loader..... 34
Massey-Harris Side Delivery Rig.. 34
McCormick Hay Stacker..... 30
McCormick Mower..... 30
McCormick Sweep & Hay Rake.... 30
Noxon Mowers & Rake..... 55
Stewart Sheaf Loader..... 54
Success Hay Loader..... 10
Tiger Steel Rake..... 15

HORSE POWERS AND JACKS, SAW MILLS, WOOD SAWS AND TREAD POWERS.

Caters Wood Saws and Jacks..... 4
Cockshutt Horse Power..... 15
Fleury's Horse Power and Jacks.. 17
Fleury's Wood Saws and Tread Powers..... 17
Gaar Scott Saw Mills..... 50
Geiser Saw Mills and Horse Powers 7
Goold Shapley & Muir Wood Saws. 15
Horse Powers, Tread Powers Bevel Jacks..... 51

LAND ROLLERS AND PULVERIZERS.

Acme Pulverizers..... 17
Canton Land Roller..... 30
Canton Packer..... 30
Campbell Sub-Surface Packer..... 30
Cockshutt Land Roller..... 15
Cockshutt Pulveriser..... 15
Cockshutt Combined pulverizer and Sub-Soil Packers..... 15
Deere Land Roller..... 17
Fleury's Pulveriser..... 17
Fultons' Sub-Surface packer..... 10
Hilborn Land Roller..... 55
Hilborn Pulverizer..... 64
Moline Paraliser Pulverizer..... 10
Verity Land Roller..... 34
Verity Pulverizer..... 34
Watson's Flexible Pulverizer..... 60
Watson's Land Roller..... 60
Western..... 61

MANURE SPREADERS AND LITTER CARRIERS.

B.T..... 2
Clover Leaf..... 30
Corn King..... 30
Hawkeye..... 35
Kemp..... 15
Mandt..... 10
Louden..... 32
Massey-Harris..... 34
National..... 10
Success..... 17

GANG PLOWS, ETC.

Canton..... 30
Case, J. I..... 27
Case, J. I., Engine Gang..... 27
Canton Mogul Engine Gang..... 30
Cockshutt..... 15
Cockshutt Engine Gang..... 15
Deere..... 17
Deere Engine Gang..... 17
Emerson..... 55
Emerson Engine Gang..... 55
Geiser Engine Gang..... 7
Grand Detour..... 60
Janesville Gang..... 1
Massey-Harris Engine Gang..... 39
Moline..... 10
Moline Engine Gang..... 10
Oliver Engine Gang..... 30
Paris..... 49
Railroad Grading & Rooter Plows.. 58
Verity..... 34

PORTABLE GRAIN ELEVATORS

Cyclone..... 17
Gopher..... 27
North Star..... 27
Taggart..... 27
Winnipeg Ceiling & Roofing Co.. 63½
Wizard..... 27

POTATO AND BEET MACHINERY.

Aspinwall Potato Planters and Sprayers..... 15
Aspinwall Assorters and Cutters.... 15
Deere Potato Diggers and Beet Tools..... 1
Dowden Potato Harvester..... 17
Egan Potato Sprayer..... 43
Evans Potato Planter..... 1
Eureka Potato Planter..... 17
Hoover Potato Digger..... 15
Moline Knocker Potato Digger..... 10
Splittstoser Sprayer..... 17

RIDING ATTACHMENTS, HARROW CARTS, WHEEL BARROWS AND HAND CARTS.

Cockshutt Wheel Barrow..... 15
Cockshutt Harrow Cart..... 15
Deere Harrow Carts..... 17
Eclipse High Harrow Cart..... 27
Emerson Harrow Cart..... 55
Fleury's Wheel Barrow..... 17
Fuller & Johnstone Harrow Cart.. 61
Kramer Rotary Harrow..... 17
Naylor Harrow Attachment..... 27
P. & O. Harrow Cart..... 30
P. & O. Hand Cart..... 30
Racine Rotary Harrow..... 14
Success Harrow Cart..... 10
Verity Wheel Barrow..... 34
Watson's Wheel Barrow..... 60

ROAD SCRAPERS AND ROAD MACHINES.

Cockshutt Scrapers..... 15
Good Roads Machinery..... 59
Indiana Road Machine..... 55
Russell Elevator..... 32
Standard Reversible Grader..... 17
Toronto Pressed Steel Scrapers..... 61
Sawyer & Massey Reversible Grader 51

SEEDING MACHINES.

Cockshutt..... 15
Deering..... 30
Frost and Wood Champion..... 15
Hoosier..... 1
Kentucky..... 1
Massey-Harris..... 39
McCormick..... 30
Monitor..... 10
Superior..... 1
Sylvester..... 55
Van Brunt..... 17

THRESHING MACHINERY, SELF FEEDERS, WIND STACKERS AND ATTACHMENTS.

Advance..... 50
American Abell..... 50
Aultman & Taylor..... 30
Avery..... 26
Bell Robt..... 3
Buffalo Pitts..... 6
Case J. I..... 14
Cuddy Steering Device..... 62
Dakota Weigher (Ask Any Thresher Co.)..... 50
Dreadnought Engine Guide..... 50
Garr Scott..... 50
Geiser..... 9
Goodison..... 35-68
Garden City Feeder..... 21½
Hawkeye Feeder..... 30
Hartley Weigher..... 58-67
Minneapolis..... 20
Monarch Feeder..... 31
Moody..... 40
Neepawa..... 41
Nichols & Shepard..... 42
Parson's Feeder..... 35
Peoria Weigher.....
Perfection Weigher (Ask any Thresher Co.).....
Reeves..... 47
Rumely..... 35
Ruth Feeder..... 50
Sawyer Massey..... 51
Waterloo..... 58
Watrous..... 59
Whiteford Justice Measure..... 56
White Geo. & Sons..... 63
White Wings Feeder..... 35

THRESHERS' SUPPLIES.

Brown Wing Carrier (Ask Any Thresher Co.).....
Canadian Fairbanks..... 8
Canadian Rubber..... 11
Crane & Ordway..... 17
Desmond Stephan..... 17
General Supply Co..... 23
Goodyear Tire & Rubber Co..... 24
Thresher Supplies Carried in Western Canada by all the Thresher Cos.....
Madison Kipp Lubricators..... 35
Manzel Oil Pumps..... 17
Maytag Co..... 35
Ohio Injection Co. (Ask any Thresher Co.)
Penberthy Injector & Brass Goods Handled by all Leading Jobbers and Thresher Companies.....
Winnipeg Rubber..... 64

WAGONS AND SLEIGHS

Adams Farm Trucks..... 15
Adams' Lorries & Heavy Team Gears..... 15
Adams' Wagons & Sleighs..... 15
Anderson Metal Wheel Trucks..... 55
Avery Wagons & Grain Tanks..... 28
Bain Wagons & Sleighs..... 39
Canadian Crescent Wagon..... 30
Chatham Wagon..... 10-64
Cockshutt Metal Wheel Truck..... 15
Columbus Wagon..... 30
Davenport Wagon..... 17
Electric Steel Wheel Trucks..... 27
Fish Bros., (Racine) Wagon..... 55
Genuine T. G. Mandt Wagon..... 10
Grand Detour..... 60
Gray Light Farm Sleigh..... 25
Hamilton Wagon..... 30
Hamburg American Wagon..... 64-60
Metal Wheel Truck..... 17
Millburn Wagon..... 36
New Deal Wagon & Sleighs..... 17
New Deal Farm Truck..... 17
New Moline Wagon..... 17
Northern Sheet Metal Wheel Truck 17
Old Dominion Wagons & Sleighs.... 30
Petrolia Wagons & Sleighs..... 30
Rushford Wagon..... 36
Stone & Gravel Spreading Wagon.. 58
T. G. Mandt Sleighs..... 10
Weber Wagon..... 30
Winona Wagon..... 36

WELL DRILLING MACHINERY.

Austin..... 0
Brandon..... 6
Kelly & Tannyhill..... 43
Sparta..... 8
Standard..... 48

WIND MILLS, TANKS AND PUMPS

Caters Pumps.....
Caters Star Windmill..... 4
Canadian Air Motor..... 43
Chicago Aermoter..... 27-7
Florence Pump..... 44
Goold Shapley & Muir Wind Mills and Pumps..... 24½
Hayes Pumps..... 35
Londen Pumps..... 34
Manitoba Pumps & Wind Mill..... 33
Manitoba Tanks..... 33
Ontario Pumps..... 43
Riesbury Pumps..... 49

THE CASE CAR WINS THE BRIDE

IT was the old, old story. Young lovers anxious to wed—irate parent opposing the match.

¶ "Let's elope," says John. "But won't Dad catch us?" asks Mary. "Not in my Case Car," says John. "We can depend on that to see us safely through. I have had it a long time and it has never gone back on me or failed me yet."

¶ So away they went with Dad in pursuit *and Case Reliability Won.*

¶ We like that word "Reliability." It sums up in one word all of the many good features of Superiority of the Case Automobile, because with the reliability of the Case Car proved beyond all shadow of a doubt in scores of Hill Climbs, Reliability Runs, Speed Contests, and Continuous and Strenuous Every-Day Use under all imaginable conditions, there is nothing more that the Purchaser need know about the Case Car.

¶ The Case Car *must* be constructed of exceptionally good materials, its famous engine *must* be an exceptionally powerful dependable power plant and all of the minor details of construction *must* be well thought out and wrought out or the Case Car could never have established the Records and Reputation that it has.

¶ No element of chance enters into the purchase of the Case Automobile. You can easily ascertain before you buy, just what you can expect in the way of Service by examining the Case Car at our Local Agencies, by riding in it, by comparing the details of its construction and equipment with the highest priced cars on the market, by the reputation of Case Automobiles among owners and by the 70-year reputation of the Case Company itself as builders of Reliable and Dependable Machinery.

Take the first step today toward the ownership of a Case Car—and that is to write at once for the *Case 1912 Automobile Catalogue* describing in detail the various models.

J.I.CASE THRESHING MACHINE CO.

Incorporated

RACINE, WIS., U.S.A.

CANADIAN BRANCHES, TORONTO, WINNIPEG, REGINA & CALGARY