

The CANADIAN THRESHERMAN AND FARMER

WINNIPEG CANADA
FEBRUARY
NINETEEN SEVENTEEN

BETTER FARMING — BIGGER CROPS — BETTER PRICES



Published Monthly by E. H. HEATH CO. LIMITED — Our Fifteenth Year

**AVERY TRACTORS. PLOWS, SEPARATORS
STEAM ENGINES AND MOTOR CULTIVATORS**

1917

*There's a Size Avery Tractor
to Fit Every Size Farm*

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and do miscellaneous farm work, road work and hauling with an Avery Tractor. Then illustrations of Avery Tractors and their nine units and nine combinations of units. Then Avery Combination and Independent Beam Plows. Then a double page inside view of an Avery Thresher and all the facts about why an Avery Thresher gets the grain out of the heads and saves and cleans it so well. Then a description of Avery Steam Engines, Trucks and Motor Cultivators.

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8-16 H.P. Tractor and 19x30inch Thresher



30 H.P. Tractor and 42x70inch Thresher

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There's a size Avery Tractor Threshing Outfit to fit every size run. The smallest and largest sizes are shown here. Between these two are three others, making five sizes in all, as follows:

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- 18-36 H.P. Tractor and 26x40 or 28x46-in. Thresher
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- 40-80 H.P. Tractor and 36x60, 42x64 or 42x70-inch Thresher

All five sizes of Tractors burn KEROSENE. All five size tractors are built alike—the only standardized tractor design. All five sizes have renewable inner cylinder walls—an exclusive Avery feature. All five sizes have sliding frame, two-speed, double drive, all spur gear transmissions—the simplest and strongest tractor transmissions built. All five sizes have opposed perfectly balanced motors that are, as one Avery Tractor owner expressed it, "The finest

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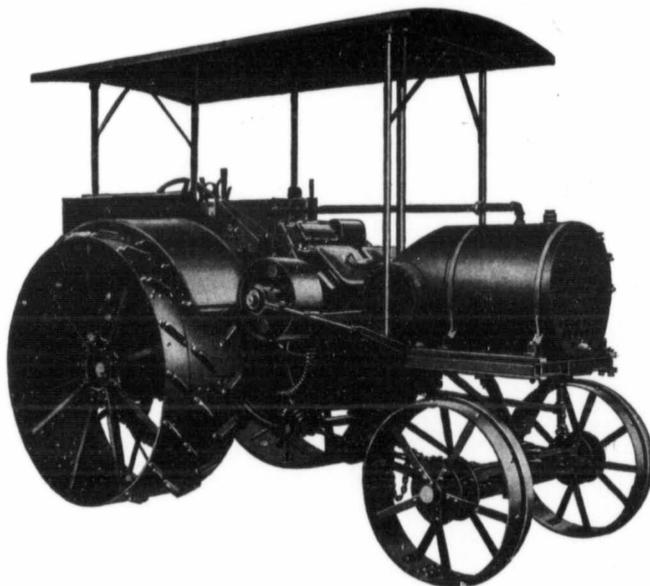
You should see the new 1917 Avery Catalog. It has a beautiful Tractor Threshing scene on the back cover in natural colors and fine illustrations and clear descriptions of all sizes of machines and parts inside. Write to-day for a free copy and get all the facts about Avery Tractor Threshing Outfits. Address

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AULTMAN-TAYLOR



There is only one way to measure the value of a tractor. Tractor value cannot be determined in a day or a week. It takes months and years to ascertain the true value of a tractor. In other words, time tells the whole story.

Many a man has been deceived in the tractor he purchased simply because low price, and perhaps a brief demonstration of the tractor in the hands of an expert, lead him to believe that he was getting something which appeared to him as being the best and cheapest source of power, but which afterwards proved the most expensive.

To-day more consideration is given the design—the quality, and the workmanship of the tractor than to the price, for men are fast learning that a tractor to stand the grind of year in and year out service, must of necessity be built for quality.

Aultman-Taylor Tractors are Quality Tractors and Make Good Wherever Used

It is the Quality, the Service, that Aultman-Taylor Tractors have built into them that create such a demand for these tractors. Last year the demand far exceeded our capacity. This year gives promise of even a greater demand. Power users are not buying Aultman-Taylor Tractors because the first cost is low, for Aultman-Taylor Tractors do not sell at a low price, but years of service prove to their owners that they last longer, do more work, better work, use less kerosene or gasoline and require fewer repairs than any other tractor the market offers to-day, so that in the end they are by far the cheapest tractors to buy. Let us again repeat: it is over a period of years that you must judge the value of a tractor.

Before you buy any tractor, we want you to know all about Aultman-Taylor Tractors. It costs you nothing to get this information, so mail the coupon appearing in this advertisement, or drop us a post card. We want you to feel free to ask us for any information you may desire concerning our tractors. We know we can save you money in your tractor purchase. Do not hesitate. Write us for full particulars to-day.

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Aultman & Taylor Machinery Co.,
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I want to know more about your Tractors. Please send full information to the following address.

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Vol. XXII

WINNIPEG, CANADA, FEBRUARY, 1917

No. 2

WHEN King Albert of Belgium—that heroic and democratic leader of a free people—was handed his official regalia in 1909, his speech from the throne announced a new national ideal—the ideal of the democratic state. Even the language of that historic speech expressed this ideal, for he spoke in the Flemish of the poor as well as in the French of the official and educated community. He declared that “the intellectual and moral forces of a nation are alone the foundations of its prosperity.”

Martin Luther spoke to the same effect nearly four centuries ago, and the sentiment has become common as a copybook heading. But when the King of Belgium reiterated the thought, he used more than language. He personally threw himself into the purpose of materializing that thought in the conditions of his people. He knew that his country, though small geographically, was pregnant with untold wealth in possibilities which were being neglected and allowed to leach into a channel that was simply draining away the commercial life-blood of the little state.

At that date, Belgium had a great overseas trade, and the second port in Europe; but its merchandise was carried in foreign bottoms, chiefly English and German. King Albert saw in this not merely a source of commercial weakness but a far more tragic prospect, which reached a climax less than five years later.

To change all this and, if possible, avert the impending calamity, he set himself to emulate the

Our Coming Statesmen and Stateswomen

The following appreciation of the work of the Boys and Girls Clubs of Manitoba, has been compiled from material supplied by Mr. S. T. Newton, Superintendent of the Extension Department, Manitoba Agricultural College, from the editor's own observations at different points of the province and from the enthusiastic testimony of leading men and women of the farm homes who have been watching and encouraging in their own districts the fine work that is in progress among the young folks.—Ed.

example of Peter the Great, but with a far nobler purpose. As we all know, he assumed the disguise of a newspaper reporter and travelled all over the world to obtain

with a manhood strength of ten times that of the little “cockpit of Europe.” But the day is not lost to her; it is only deferred. No “power” on earth can ever con-

tinguished among those personalities which have been forced into prominence by the catastrophe. The moral grandeur of the man has few parallels in the world's history, and every precedent guarantees to him and his people the very best that heaven can bestow in recompense.

King Albert's raw material consisted of just what we have to work upon in Canada—agriculture and minerals, with, of course, the immense advantage of an “old established business” in the big population of skilled labor that manufactured her products on the spot. But one of the first planks in this man's programme was the amelioration of the children of his people. “It is from the narrow

circle of family regards we are taught to serve the larger family of mankind,” said Macaulay. King Albert verily graduated in this fine school, for when this simple, unassuming citizen king ascended the throne, he did so as a great British statesman has written, “with his wife and children.”

Canada holds, as we said, about the same population as Belgium contained prior to the war, but she has a “house” with a garden to develop her family in, nearly 330 times the size of Belgium. That

is to say, something like three hundred and twenty-nine Belgians could be accommodated on the land surface of the Dominion of Canada, and there isn't and never will be a hostile foot at liberty on her soil if its hostility is known to the next man on the street.

Canada is governed by the expression of her own free people,



Articles made by the boys at Gladstone Short Course. The Club Officers are seated in front

the information and experience at first hand which would fit him for the great task he had in hand—the conservation and development of his country's resources.

What Belgium might have attained under this noble and virile impulse but for the aggression of Germany, need not be discussed. Her chances were outclassed by nothing of the kind even in States

quer or subdue a people with a leader like that. If the curtain for a time has fallen on its tragedy; if the barbarians have tunneled the land like a rabbit warren and turned it into a fortress, there is no finality in that.

As the ruin of Belgium stands out in pathetic relief from the general tragedy, the figure of King Albert is still more dis-

and there isn't a country on earth where "the wife and children" enter so largely into the leading thought of the seat of government. Elsewhere in this issue the woman's part in the general house-keeping is dealt with; here are a few passages from the activities of the coming men and women who in the short space of a single

work of the Extension Service men. It puts new life into the judges and others connected with this work to note the interest taken in it by the children and their parents."

Another adds to his report: "Many farmers told me personally that they left their plowing and threshing to attend the



Some of the Potato Prize Winners at Dauphin sit in the front row

decade from now will have a preponderating weight in the common council of the state.

The archives of the Extension Department of Manitoba Agricultural College are loaded with wonderful records of the work of the Boys' and Girls' Clubs, but the mere tabulating of these on a printed page would never suffice to tell the story in such a way that it would hit home and accomplish its purpose. A few effective pictures will do more than miles of type to visualize the real spirit of the thing at work with its fine young energy of flesh and blood.

Can any man or woman look into the faces of those girls, those keen intelligent young daughters of Canada and remain unmoved or indifferent as to what his or her responsibility is towards the future of this country, beginning with the little platoon of the home circle? The spirit and the act of the living present is the determining factor. How are we handling our own boys and girls? The question has been asked again and again in these pages and we return to it because there can be nothing at home or abroad that so vitally concerns us.

It is more than refreshing to read some of the reports of the judges and others employed by the Extension Department to attend the Boys' and Girls' Annual Shows. One man writes, "The club fair is one of the bright spots in the yearly routine

young peoples' club fair, a sacrifice they would not have made for their own." While we would not encourage the slightest weakening towards the older institution, we recognize that nothing a man can do will more abundantly repay him in the fullest sense of the word than any thought or encouragement bestowed upon the boys and girls.

Manitoba leads our Western provinces in this fine work and the cumulative results are worth taking note of. Reports were not sent in from every exhibition held but casting up the figures from those that did reach headquarters, something like 22,250 entries of all sorts were made in 1916 in Manitoba and the aggregate attendance was conservatively estimated at over 30,000.

Here is a little touch of astute business with some heart in it and a proper appreciation of just what there "is to" all this excitement in the ranks of the school

lads and lassies. The Neepawa manager of the Canadian Bank of Commerce advanced the necessary money to the children, who wished to borrow so as to pay cash for the pigs last spring, which they intended to feed up for the pig raising contest. The Virden manager of the same bank also decided to promote as far as he could the local pig raising enterprise. After seeing the Extension Department, he enlarged the idea and used his energy in promoting the organization of Boys' and Girls' Clubs in connection with the various schools of the district. He visited all the schools once or more frequently to explain the objects of the club movement and to encourage teachers and pupils to do their best. This gentleman also wrote numerous letters and conducted a special department in the local newspaper—all of which did its part towards the success of the

appearance and weight were remarkable, showing what can be done 'even by children' through systematic care and feeding. Grace Hurley deserves the greatest credit for the way in which she had looked after her hog during the summer."

At Rathwell, "the strongest and most interesting feature of the fair was the pig and calf-raising contest. There were three (all really fine) entries for pigs, a girl winning with a pig six months and two days old, weighing 295 pounds. Four sturdy calves were put before the judges, this time a boy winning with a calf of four months and thirteen days and weighing 432 pounds.

Under the Baldur report we find: "It has often been urged that education as usually conducted is not practical enough. This is certainly an ultra practical system. Every pupil knew what he or she and all other



The girls in the picture have won prizes in calf rearing

scheme in the splendid results shown at the local fair.

As specimen "reports," we take from under the heading of Gilbert Plains: "Potatoes, hogs, poultry were the chief subjects of competitive effort. The potatoes were the finest ever shown at any fair in this district. Hogs both in

pupils were doing and how they were doing it." Of necessity, this is a case where the Education Department and the purely agricultural function come in direct touch and have a common interest and business responsibility.

It seems that as the Department of Education has before it (in the big open country, at all events) the business of giving these fine young people of the province an education which will make them the best equipped farmers and farmers' wives that can be made of such promising brawn and brain, this department should have as much to do in encouraging these stock and crop raising contests as its purely agricultural colleague.

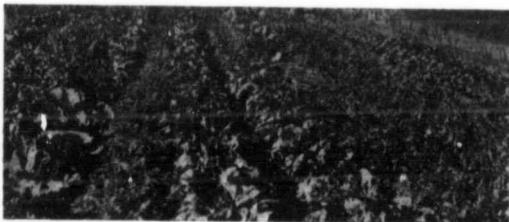
The particular institution of the Boys' and Girls' Clubs in Manitoba is only four years old, yet



Gladstone Class at work—Articles made by them are displayed on the wall

there are no less than 13,000 members enrolled and 110 club fairs were held in the province in 1916. In the past, chicken raising, potato and corn growing have absorbed the greater part of the attention of the young competitors, but in 1917 the emphasis will be laid on pig raising, the farm or home garden and canning and preserving. Altogether there will be twelve contests, but it is recommended that not more than three or four should be undertaken by any club member.

Any boy or girl who, on September 30th, 1917, will be over ten and under eighteen years old is eligible for membership and is entitled to enter any of the contests. Local clubs may make such limitations as seem best to meet their conditions as to ages for juniors and seniors, and those not attending school are eligible for membership.



This boy followed "the straight line" for easy cultivation

CONTESTS

Twelve contests make up this year's programme; these are: (1) Manual Training, (2) Grain Growing (confined to boys of 15 to 20), (3) Pig, Calf or Colt Raising, (4) Farm and Home Garden, (5) Poultry Raising, (6) Cooking, (7) Garment Making, (8) Canning and Preserving, (9) Noxious Weeds, (10) Dairy Contest, (11) Flower Growing, (12) Essay Writing. Most of the material will be supplied free in connection with the Farm and Home Garden contest, and most attractive prizes are offered by the Department in chicken and pig raising, and those who take part in the seed growing project, will, if their plot comes up to the proper standard, be permitted to enrol as members of the Canadian Seed Growers' Association.

THE NECESSARY FUNDS

In the bulletin recently issued by the Extension Department it is pointed out that while the running expenses of a club are not very large, certain funds are required in addition to the prize money and that it should not be left to the secretary to look after all the finances.

"Boys' and Girls' Club work is strictly educational, and the best way is to approach the trustees of each school district for a donation of, say, five dollars for each school room. The school trustees and teachers are the most enthusiastic supporters of the movement in the district.

"Many of the business men and prominent farmers will, if approached, be willing to contribute something toward the support of any movement that has as its object the welfare and training of the boys and girls."

ment that is expended in raising funds to secure purses of "a sufficient attractive character to bring the leading sporting cads of North America to compete on the race tracks of our city and country fairs, while it takes ten times the effort to raise a fraction of the sum to stimulate a

the encouragement of intensive farming at any stage of development. Especially has this magnificent work of the boys and girls appealed to them and we find that according to the bulletin referred to some really tempting prizes are being dangled before the bright young eyes of our farm



These boys have laid the foundation of some fine pure bred flocks

contest through which runs the very life blood of the state.

On the subject of prizes and encouragement generally, we shall have something to urge a little later, but meanwhile let it be known as the opinion of everyone who has a real sense of decency and the fitness of things, that not even the tragedy of the war has "brought home" the fact to Canada that in this, the paramount concern in our national house-keeping, we have been spending our substance like drunken sailors—after a whirlwind of dissipation, scarcely a dime left for "the wife and children."

SPLENDID PROVINCIAL PRIZES

Notwithstanding the above, there are many who are keenly alive to a common sense idea of the real place of clean sport in social life but who recognize still more what the country owes to

children. Here is what it says:

"Every member of a Boys' and Girls' Club has a chance, by putting forth a little extra effort, to be one of a party of twenty-five or thirty who will get a trip to the Agricultural College with a whole week of entertainment and instruction, with all expenses paid from the time the winners leave home until they return. Special arrangements will be made whereby each one will be in charge of some responsible person throughout the entire week. They will be met at the trains and taken to the Agricultural College, from which place personally conducted sight seeing excursions will be conducted to such places of interest as the St. Andrew's Locks, Lower Fort Garry, Lake Winnipeg, the Grain Exchange, Mercantile Institutions, the Stock Yards, Technical and Normal Schools, Flour and Lumber Mills, Railroad Shops and Munition Factories. All departments of the Agricultural College will be visited and a series of lectures and demonstrations given on grain and stock judging, vegetable growing and canning, etc.

1. The Canadian Bank of Commerce will provide one of these free trips for the winner in the Pig Raising Competition at each of the fairs, providing there are at least fifteen competitors in this contest. The rules governing contest No. 3 govern this contest as well.

2. The T. Eaton Co. will provide for a free trip for



Gladstone girls who attended the Short Course in Sewing dressed in the garments they then made

Contd. on page 18

THE CANADIAN THRESHERMAN AND FARMER

CANADA'S LEADING AGRICULTURAL MAGAZINE

E. H. HEATH
PRESIDENT

E. V. HAMILTON
MANAGING DIRECTOR

F. C. BRAY
TREASURER



PUBLISHED MONTHLY BY
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J. L. MIDDLETON
CIRCULATION MANAGER

(MEMBERS CANADIAN PRESS ASSOCIATION)

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Feb.

Financing the Farmer

1917

OUR GUARANTEE

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

THE laws that govern sound financing are like all natural laws—wonderfully simple. They are also not unlike certain complex and seemingly impossible characters we collide with now and again in forming the circle of acquaintance. Their reputation and their looks belie their real character. Physically, they offer a front to the world like those frozen promontories of the Labrador Coast, but underneath there's some splendid stuff we'd like to get at. Coiling around their kindly hearts there are fine warm gut-stream currents that only await discovery. "To know them is to love them," and the merest understanding of their simple natures reveals a positive gold mine of human service that belongs to the whole family of mankind. For the simple rudiments of commonsense accounting and what it means in human felicity, see Wilkins Micawber on the subject of "Income and Expenditure."

* * *

The matter of farm credits is engaging the earnest thought of many good intentions in these days and there seems every reason to believe that before long something far better than what has obtained will forge the connecting link between the "Scots wha hae and the Scots wha hanna". To finance with any hope of success, we must have something to finance with, or a line of credit that we can obtain as a right and not as an obligation that carries with it a load of apprehension and worry that often sends the strongest men to a premature grave. Possibly the greatest obstacle to high-class immigration into Western Canada has been the financial peculiarities of the country—more particularly as they affect the farmer, for between the farmer and the city business man there exists a wide spread in the minds of banks and financial corporations in appraising the "stability" of these two types of borrowers.

* * *

It is more than probable that the farmer (speaking generally) has earned the disadvantage he has labored under, by the small stock he has taken in keeping some system of accounts from which at any time he can state with certainty just where he stands. If a canvass were made—even among some of our older and highly esteemed agriculturists—it would be amazing to find how few of them could, from any single record or system of written records set before a stranger who had the right to know, anything like a clear statement of his assets and liabilities. This is bad enough in the case of a single man in the full flood of life who has only himself and his creditors to think of. When it happens to be a husband and father who might be cut off from his little circle at any moment, the position is not far short of criminal.

Then again, many good men, provident men who are also excellent farmers, have but a very crude idea of the real nature of some of the securities they hold and would seek to offer as a hostage against some necessary loan. They very properly have their own appreciation of these as convertible property, but the banks and loan companies also have their way of valuing these as permanent securities and as often as not this way of reckoning is largely at variance with the farmer's view of things. There is a common feeling that the banks and the loan companies are a very autocratic combine of the worst type—out to exploit the poor farmer and merchantman in the cold-blooded business of earning big dividends for wealthy investors. They forget that a very large proportion of the shareholders in these banks and loan companies are comparatively poor farmers and citizens like themselves, who have entrusted these institutions with their hard-earned savings. Why? Because first and last of all they believe them to be *safe*, and even if the dividend is a meagre one, they prefer it to taking chances on a wild risk.

* * *

Now just to do something in the way of educating good men who have not looked all round this phase of the borrowing and lending business as well as the matter of financing and accounting generally, a series of articles have been arranged for which will appear regularly in this magazine beginning with the present issue (see page 43). These are written by one who has been trained in the business from boyhood and has had a wide experience in both hemispheres. Not only will he thoroughly cover the ground of conditions as they exist in Western Canada, but through this paper he will respond to any inquiry or criticism to the best of his ability. Correspondence is cordially invited, and as the purpose is to *help our subscribers*, the hope is expressed that full advantage will be taken of these articles as they appear and of this invitation to "tell us your troubles."

* * *

Not only is it due to our old settlers; the men and women who have anchored and can't leave their job of farming even if they would, but to those from distant parts and from entirely different conditions, whom we are inviting to cast in their lot with us, is it due that all misconception of banking and other financial procedure in Canada should be eliminated as far as that can be accomplished by the publishing of information in which there is no ambiguity of language. The financial problem is and will be, the key-stone of our immigration success. The "possibilities" of Canada have been widely advertised—sound financing is imperative to their development.

SUBSCRIPTION RATES

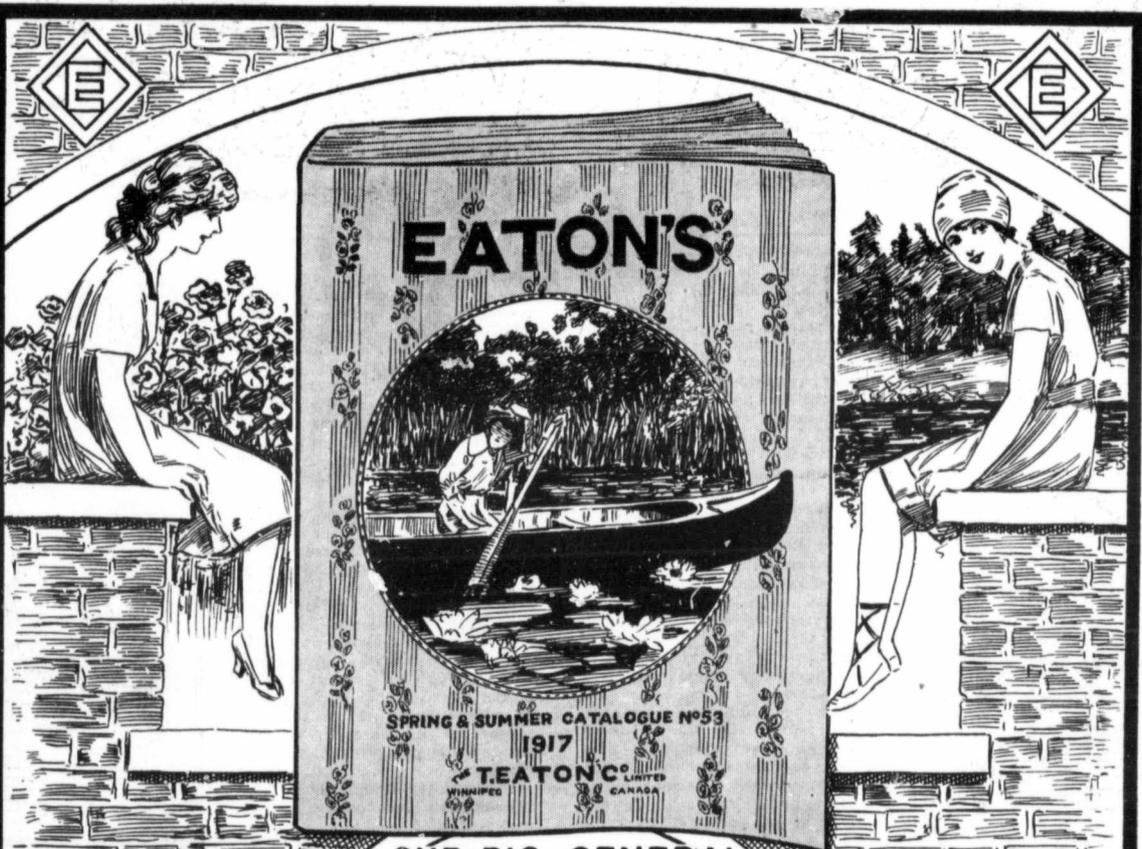
Postage prepaid, Canada and Great Britain,
\$1.00 Per Year.
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Advertising copy in order to secure good position should be in our hands not later than the 15th of the month preceding date of issue.

Advertising rates furnished on application



OUR BIG GENERAL
SPRING AND SUMMER CATALOGUE
 IS READY FOR DISTRIBUTION

BETTER THAN EVER

The spirit of Spring—life, growth, progress—can be seen on every page of our 1917 Spring and Summer Catalogue. It is bigger than ever, filled from cover to cover with illustrations and descriptions of goods that our buyers have purchased from every available market, and listing prices surprisingly reasonable considering the ever-growing difficulties of manufacture and transportation. The tremendous demand of our fighting armies limits, to a great extent, the supply of raw materials that the manufacturers can use for home consumption. It is only through our excellent and thorough buying system, touching the great trade centres of America, Europe, and the Orient, that we have been able to gather together the unusually satisfying display of merchandise pictured in our newest catalogue.

Write for Our
 Spring and Summer
 Book



THE T. EATON CO. LIMITED
 WINNIPEG - CANADA

Send Us Your Name and Address if You Have Not
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A BIGGER OPPORTUNITY FOR YOU

Your's is the opportunity in our new Spring and Summer Book. Buying for either your personal or household needs, you will find illustrated in this newest of our catalogues a selection hard to equal of Clothing for Men, Women and Children, Furnishings for the Home—Furniture, Carpets, Curtains, Wall Paper, Paints; Farm Implements of the most useful, durable kind; Harness that will give the best of service, etc. More interesting, even, than the wonderful display of goods: if you find the fact that every article is priced in the usual EATON way—as low as the quality of the goods will allow.

If you have not received a copy of this book—it has been in the mails for a week—let us know, and we will see that a catalogue is sent to you by return.

Write for EATON'S
 Spring and Summer
 Book



GRADING

IT may be true, as a general thing, that the use of the tractor in road operations may be more of a contractor proposition than it is a farmer proposition, but nevertheless, the farmer has a primary and vital interest in the road problem, hence if the tractor can be employed effectively in road building, the farmer must take, at least, a secondary interest in that phase of its usefulness. As a matter of fact the building of the modern road hardly could be prosecuted successfully without the tractor. Both in its common form, well known to the farmer, and under some of its specialized forms, as in the road roller and the like, the tractor is employed very extensively in road construction.

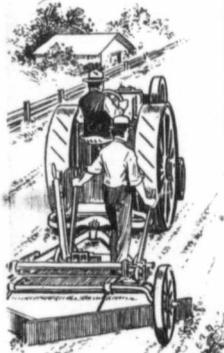
Anyone who ever has seen one of the big graders at work in the days of horse power will remember how many horses had to be hitched to it, what a complicated job the driver had, and what exceedingly hard work even the many horses had to pull the unwieldy machine along. Then, too, there was a decided difference in the quality of work the grader would do, depending upon the kind of soil or dirt it had to encounter. But the impression which must have been left upon the mind, paramount to all others, was that road grading was primarily a matter of power and that horse power hardly was the best means for securing that power. To-day, to see a big tractor take a grader and snake it along, is a revelation in the application of concentrated and competent power. The tractor is the ideal power producer for all kinds of road work, and whether it is one of the machines which is rumbling along behind it, or whether the machine is pulling but a split-log drag, the quality and ease of the work that is being done cannot fail to arouse admiration and respect for the machine, which is doing the pulling.

But really the efficacy of the tractor in road building comes not so much from the power it will develop as it is in the fact that the work of construction can be so generally expedited. To see a tractor hauling a long train of wagons loaded with rock or sand, is to see that which will bring a realization of how much more effective mechanical power can be than that pro-

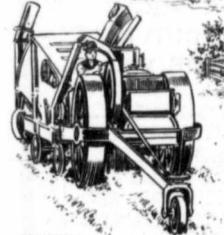
vided through the use of horses. The obvious saving in expense is another consideration of importance. One man with a train of wagons, will do as much work and do it as quickly as will a half-dozen teams, each requiring a man to direct and drive. Road making is an expensive operation at the best, and every saving which may be effected is so much to the good of the community. It is the economy and the efficiency of the tractor which has made it so popular in road making, and which will give it an extensive employment there.

During the years to come there is to be an enormous extension of road building in this country. It is becoming a prime necessity. It means very much for the farmer. Leaving out of consideration the ownership of the automobile as a potent cause for enlisting the interest of the farmer in road building, he should be sufficiently attracted to the matter by the difference between the cost of hauling his product over poor roads and over good roads. Upon the basis of the figures, government investigation vouches for as the annual hauling cost to the farmers of the nation, this difference would amount to hundreds of millions annually. This saving would actually build many miles of road. And, under modern practice, this prospective road building will be very largely a tractor proposition.

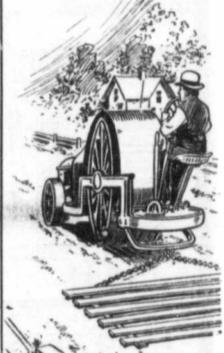
Another thing which should appeal to the farmer is that the time is coming very speedily when the tractor or the motor truck will be used very extensively in hauling farm produce to market. This will be economically possible only where there are good roads, yet such road use for the tractor is going to be a necessity in order that the machine may be an economic possibility for a good many farmers. It may take some time to establish this idea in the minds of the farmers, but it is bound to come, and when it does, the tractor will take on a degree of importance to the individual farmer which it hardly has as yet attained. Up to the present the farmer's eyes have been turned to the tractor in the field, and he hardly has considered it as a road proposition. The latter aspect is sure to come, however, and then the subject of good roads will loom larger than it ever has in the past.



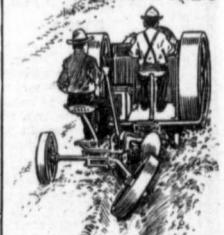
LEVELING



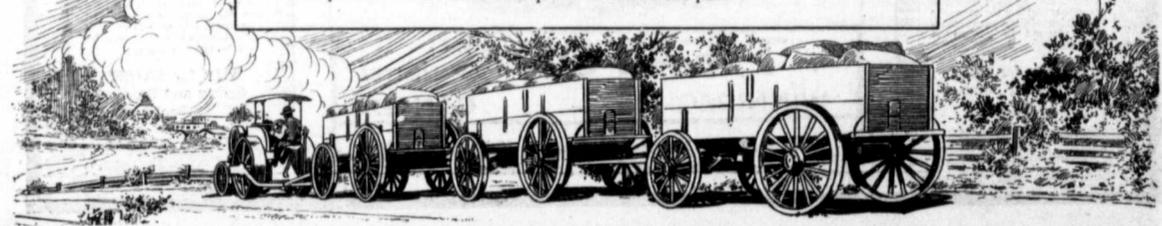
DRAWING THRESHER



DRAWING

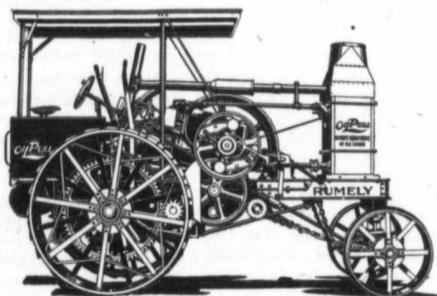


DITCHING



A 100% Outfit

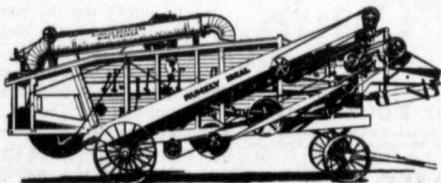
THAT is not the one-sided opinion of ourselves, the manufacturers—it is the verdict of the many hundreds of threshermen and farmers who own Rumely OilPull Tractors and Ideal Separators. The best evidence of it is our greatly increased building schedule for 1917, to supply the demand for these outfits. It's just a plain case of having "made good." And what these outfits have done for others they will do for you.



15-30 and 30-60 H. P.

Guarantee

We guarantee the Oil-Pull Tractor to operate successfully at all loads under all conditions, not only on all grades of kerosene permitted by law to be sold in the United States and Canada, but on distillates and fuel oils free from earthy matter.



Built in Five Sizes—Special Models for Rice

Money can't buy power more reliable than the OilPull Tractor

Consider just a few of the special OilPull features of money making advantage to you.

A Real Kerosene Burner

Extravagant claims, word of mouth promises or weak guarantees don't make a real kerosene burning tractor. The high price of gasoline is calling for a lot of bluffing on the kerosene proposition, but Advance-Rumely doesn't have to bluff—we know what the OilPull will do and we back it up with a written guarantee that has no strings tied to it.

Remember that the OilPull is a kerosene tractor from the ground up—not a makeshift "combination" outfit. It is designed and built to burn kerosene, coal oil, solar oil, distillate, stove oil, etc., and it not only burns them successfully, but successfully at all loads, under all conditions.

Close Regulation

The power the OilPull furnishes is smooth and steady regardless of the load. In threshing, the OilPull automatically holds a separator to its correct speed all day long—the speed of the engine automatically and instantaneously adjusted to meet every change in the load. For close regulation the OilPull simply has no equal.

Oil Cooled

Here is one of the special OilPull features you want—oil in the cooling system instead of water. That means no cooling water to bother with—more even temperature—no accumulation of dirt—no danger of freezing, even in the coldest weather.

All Around Usefulness

The worth of your OilPull is not confined to any one operation. It will handle all your power jobs, draw bar or belt. What you can do with it is limited only by what you give it to do. Two sizes—15-30 and 30-60 H. P.

Belt your OilPull up to a "Save all the Grain" Separator

A North Dakota farmer hit the bull's eye when he said "The Rumely Ideal will thresh more bushels in the same length of time and do better work and with less expense than any machine on the market."

The fact is that no matter how hard you crowd it, the Ideal does the same steady, satisfactory work—thorough, clean threshing without waste, whether the grain is headed or bunched, long straw or short, wet or dry, in good weather or bad. But there's nothing complicated about the Ideal. Its working parts are simplified to the greatest possible degree, readily accessible, easily understood and kept in adjustment. It's the simple result of being designed right and built right.

The Ideal is built in five sizes—suitable for the biggest job as well as the small ones. Two special sizes for rice.

Send a post card to our nearest branch for a copy of our new Catalog showing the 1917 line of Advance-Rumely machines.

ADVANCE-RUMELY THRESHER CO.

(Incorporated)

La Porte

Indiana

Aberdeen, S. D.
Battle Creek, Mich.
Billings, Mont.

Columbus, Ohio
Crowley, La.
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Des Moines, Iowa
Fargo, N. D.
Indianapolis, Ind.

Kansas City, Mo.
Lincoln, Neb.
Madison, Wis.
Minneapolis, Minn.

Nashville, Tenn.
Peoria, Ill.
Portland, Ore.

San Francisco, Cal.
Spokane, Wash.
Wichita, Kans.

::: :: The Romance of Engine Fuels ::: :::

DO we ever think, as we tip up the square can and let its colorless liquid contents run into the fuel tank of the auto or the gas tractor, of the story that runs through the passing of that liquid?

Life is made up of little things; the things that men call "great" are only an immense mass of small, microscopically small things, but each containing a reason, a story! The coral reef that lies hidden beneath the surface of the ocean rips the strake plates from the bottom of the lordly liner, gives her the death wound that sinks her to the hidden gloom and silence of the ocean. Yet that coral reef is naught—but a mass of dead animalculae, a collection of atoms that yet have power to exert themselves in a cohesive state though dead.

We watch the gasoline as we turn the handle of the pump and see it fill the measure at so much a gallon, and we can follow its suction from the tank through the carburetor, its mixture with the air suction, and its atomized evolution passing into the cylinder.

A brief second and the flying piston compresses its gaseous bulk back, back toward the cylinder head, then the electric spark—a nature power that we can only control, but cannot trace—flies between the two points and the ignited gas expands and expands, driving back the retreating piston and giving power, energy and inertia. Then, its work done, the exhausted vapor is ejected into the atmosphere apparently passing forever from the use of man. Yet that power came originally from the bowels of the old earth, even as all power comes. In that short word of five letters—"Power" there is a romance that can thrill the heart of anyone who has in him the far-flung fibres of imagination.

To-day we can fly in fancy back to the early ages of the world, we can see the tangled and gloomy depths of the primeval forests through which roamed and fought the mammoth animals of the prehistoric aeons.

We see, in the passing of centuries, the vegetation and tree life fade, the mighty trunks lie quiescent, sinking deeper and deeper into the putrefying surface vegetation. Time passes on and on and the vegetable decomposition sinks deeper and deeper through the damp soil, down, down to where no air exists. From the deep vegetation, dur-

ing the long years, new life—plant life—arises, but the layer of decomposed, vegetable matter sinks deeper and deeper and becomes, finally, what we know as peat. Peat ranges in character through time, from a brown fibrous matter to an almost black carbonaceous matter.

Ages pass and the peat sinks and sinks under the pressure of the superincumbent earth deposited through subsequent geological ages, compressing and preserving in many cases its vegetable structure, until, finally, it becomes what we call lignite. Peat and lignite belong to what geologists call the fossil age, and even before that age their earlier formations are that of bituminous coal, and, most ancient of all, the coal that we call anthracite.

It is needless for us to go into detail regarding the working and mining of coal, and its final transformation into power by combustion upon the firebricks of the steam tractor or the locomotive engine.

That story has been told so often; let us revert to the new power, the power of gasoline and atomized oils.

In considering gasoline, we find a colorless, highly inflammable liquid, the first and higher distillate of crude petroleum.

Therefore, that we may trace

its power from birth we must seek its parent—petroleum.

Petroleum is the general name given to an oily fluid found in different parts of the world; a mixture of hydrocarbons, chiefly belonging to the marsh-gas (C.H. 4) series. It is found in almost all localities where bitumen exists in quantity among the rocks, and the word itself is derived from the Latin "petra," a rock, and "oleum," oil. It is simply a mineral oil ranging in color from water white to a jet black. Many different theories have been advanced to account for the existence of petroleum, but no really satisfactory solution has been arrived at. For many years it was contended by geologists that petroleum was formed in the rocks by the decomposition of animal and vegetable matter, but of late years scientists support the idea that the formation of petroleum is due to the natural distillation of shales and hydrocarbons by means of the earth's internal heat.

Historically we find that petroleum is of great antiquity, and was known to eastern nations. The "slime" noted in the Old Testament, as employed in the construction of the Tower of Babel, was, without doubt, partially evaporated petroleum. The

ruins of Babylon and Nineveh prove to us that petroleum was used as a bond in cementing structures of brick in the year 2000 B.C. Herodotus, the Greek historian, mentions the oil springs on the island of Zante, and the asphaltic or bituminous deposits that were carried down by the River Is and which were collected by the ancient Babylonians. Bitumen, which we know as tar, was an article of commerce by the Dead Sea and was largely exported to Egypt in early Biblical times as the Egyptians used it for embalming purposes.

About the beginning of the Christian Era we have records that what was called "Sicilian Oil" was found upon that island, and was burned in lamps in the temple of Jupiter. This was petroleum and nothing else. Investigation has proved that petroleum was known and used in the early days of Galicia, Persia, India, China and Japan. On the Asperon peninsula on the borders of the Caspian Sea, there has been for centuries what the Persian fire worshippers called "holy fire," which is neither more nor less than burning natural gas or naphtha springs.

Such is a short account of the antiquity of petroleum, while we find in America that it was first discovered in 1627 by a French missionary who describes a famous petroleum spring in the west of New York state, and in 1767 a Moravian missionary records the presence of petroleum springs in Pennsylvania.

The artesian well driller has been an important factor in striking petroleum, while in the search for water, and we now find that petroleum exists in many of the states to the south of us, while Canadians all know of the vast fields in the Petrolea district of lower Ontario.

In 1858 Col. Drake, of the Seneca Oil Co., commenced boring an artesian well in order that he might tap the sources of oil strata among the rock layers of Pennsylvania, but he met many trials and difficulties ere, in 1859, he struck the first oil strata penetrated in the United States at a depth of 69½ ft. For a short time this well produced about 40 barrels a day, the product selling at \$20 a barrel. This discovery raised great excitement all over America and was the pioneer effort of the thousands of wells that exist or that have been pumped dry long ago. Pennsylvania, Louisiana, Kansas, Oklahoma, Colorado, Wyoming, Cali-

Continued on page 18

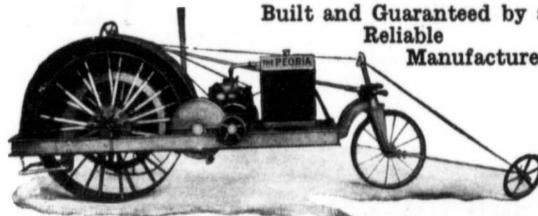
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Burns Kerosene

Self-Steering

4-cylinder, 4-cycle engine, develops 8-20 horse-power.¹ Enclosed type air-cooled radiator. Cut steel transmission—gears run in oil bath—sliding gear change. Underslung frame means added strength. No side draft, self-adjusting on uneven land. Cheap reliable power for every farm job.

**Built and Guaranteed by a
Reliable
Manufacturer**



The Greatest Value for Your Money

Solves the problem of farm labor. Burns cheap fuel. Is ready for work every minute in the year. It is a practical, economical, easily operated power-plant. Write to-day for full particulars.

R. A. LISTER & COMPANY, Ltd.

Galt Building

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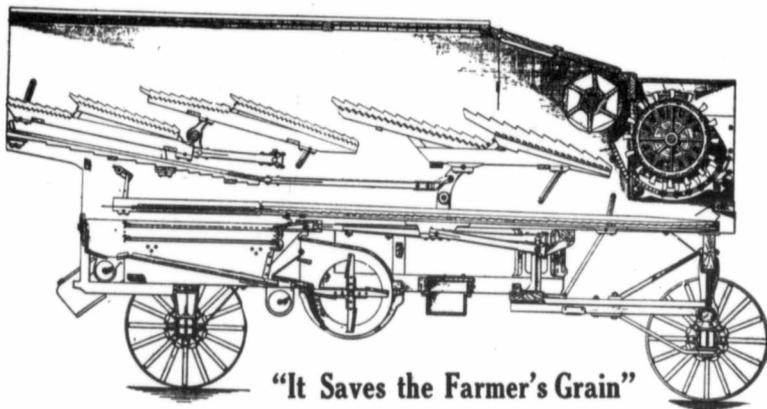
OTHER LISTER LINES

Melotte Cream Separators	Lister Gasoline Engines
Lister-Burton Automatic	Electric Lighting Plants
Lister Grain Grinders and Crushers	Lister Milking Machines
Lister Ideal Thrashers	Lister Engine Cutters
"Canuck" Gasoline Engines	

"The Great Minneapolis Line"

Sizes:

- 28 x 46 Std.
- 32 x 52 "
- 32 x 56 "
- 36 x 56 "
- 36 x 62 "
- 40 x 62 "
- 40 x 72 "



"It Saves the Farmer's Grain"

A big little machine for light gas or steam power and built up to the Minneapolis Standard in all respects is the Light Weight Light Running

24 x 36 Jr.

Minneapolis Standard Separators are equipped with self-oiling cylinder boxes, tool steel cylinder and concave teeth, reinforced concaves, double concave adjustment, perfectly balanced straw racks and the **Greatest Adjustable Separating Grate** ever put into a threshing machine. Threshes, Saves and Cleans any and all kinds of grain or seed.

- Always Ready
- Runs Steady
- A Miser to Save
- Perfect Cleaner
- Gets the Big Jobs

Delivers the most clean grain in the sack in the least time

The Farmer's Favourite

The Thresher's Choice

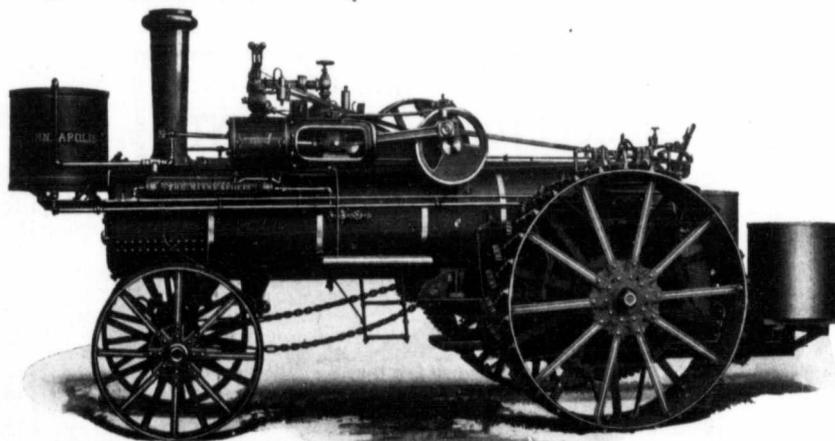
Gas Tractors

- 15 H.P.
- 20 H.P.
- 25 H.P.
- 40 H.P.

Four Cylinder Type

Properly Designed

Rigidly Inspected



Steam Tractors

- 16 H.P.
- 20 H.P.
- 24 H.P.
- 28 H.P.

Single Cylinder Type

Carefully Constructed

Thoroughly Tested

Backed by the Minneapolis Reputation for Building Honest Machinery, for rendering prompt and efficient service and according

A SQUARE DEAL TO ALL

The Minneapolis Record of the Past is a Safe Guarantee for its Customers of the Future

AUTOMATIC POWER LIFT TRACTOR PLOWS, WIND STACKERS, GRAIN REGISTERS, SELF-FEEDERS AND BAND CUTTERS, TANKS, SUPPLIES

The Minneapolis Threshing Machine Co.

WINNIPEG, Man.

HOPKINS (WEST MINNEAPOLIS) MINNESOTA

REGINA, Sask.

The Art of Blacksmithing

(Continued from January)



Upsetting With a Hammer

If the bar is short it may be brought to the anvil with a pair of tongs, as shown in Cut (H), and held vertically on the anvil with the hot end up and the heated end hammered, or with the hot end down and the blows struck on top of the cold end. By the second method, the heated end is constantly in contact with the cold face of the anvil, and will therefore cool very rapidly; the result is that the bar will not spread so much on the end, but the bulge will extend up a little farther than by the other method.



Precautions in Upsetting

If in upsetting a bar, it begins to bend after a few blows have been struck, the piece must be straightened at once, for any blows struck endwise on a bent bar will not have much effect in upsetting it, but will only bend the bar more and make the straightening harder. For upsetting, a good heat is required; in fact, it is well to make the final heat a welding heat, because upsetting often separates some of the fibers, and by taking a welding heat over the piece and hammering it on the sides a little, all loose fibers will be welded together again.

MAKING A BOLT Square-Headed Bolt

If a 1/2-inch bolt, as shown in Cut (A) is to be made out of a 1/2-inch round rod, the end of the rod is heated and upset. When enough metal has been upset to form the head, the enlarged end is re-heated and the cold end of the bar passed through a suitable hole in the swage block, or through the heading tool. If the latter is used, it is laid on the anvil, so that the body of the bolt passes through the hardie hole. The upset end is then hammered down against the swage block or heading tool, as shown in Cut (B) until the head is 9-16th of an inch thick, and the piece driven out of the heading tool. The head is then shaped square with a hand hammer. If, after the sides of the head are properly formed, it is

found that the head is longer than it should be, it is laid on a piece of soft iron placed on the anvil, and the extra length cut off with the hot cutter. After this, the bolt is put back into the heading tool and the head is finished with the hammer; the bolt is then cut off

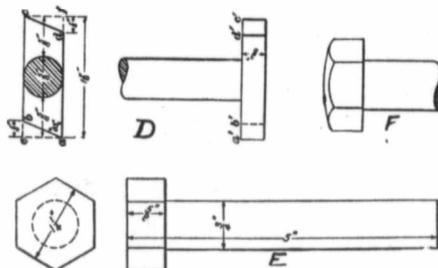
to the desired length and the burrs, or rough edges, on the end are hammered down.

Bolt Header

When a large number of bolts are to be made, it is well to use a bolt header, one form of which is shown in Cut (C). The frame is



B



of cast iron and quite heavy; steel dies are provided for bolts of different sizes, usually varying by 1/8-inch, although occasionally 7-16th-inch and 9-16th-inch dies are used. The length of the bolt is determined by a steel block (a) provided with notches that engage a series of notches on the

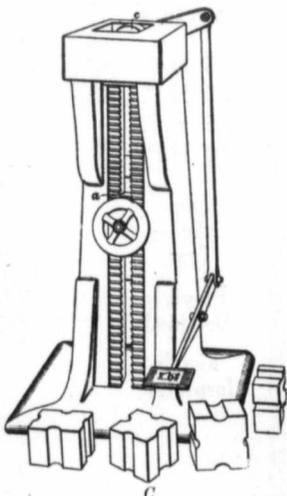
frame of the machine. This block may be set for any length of bolt within its range. The iron may be cut to length so as to leave the right amount of stock to make the head without any trimming. The dies are closed to grip the iron by means of the foot treadle (b) and the head formed with a hammer. The dies fit in the top of the machine at (c), the two dies forming a heading tool.

T-Headed Planer Bolt

(Refer to Cut D)

The method of making a T-

headed planer bolt is as follows: Suppose that the bolt is to be made from a 5/8-inch round rod, the size and form of the head for the bolt are shown in cut, indicated by the dimensions and letters of the top and side views. The points (a) (b) (c) (d) of the head in the top view correspond to the points (a) (b) (c) (d) in the side view. First the shape of the head is made oblong in cross-section,



tion, as indicated in the top view by the letters (a) (e) (c) (f), and 3/8-inch thick.

The end of the rod is then heated and upset; but the upsetting is not a continuous operation; it must alternate with hammer work to keep the sides (a) (f) and (e) (c) parallel. For the latter, the bolt is laid flat on the face of the anvil, with first one side (e) (c) placed uppermost to receive the blows of the hammer, and then the opposite side. Also,

Continued on page 21

A FULL LINE OF AGRICULTURAL IMPLEMENTS

Manure Spreaders

Straw Cutters

Grinders



New Deere Gang Plow

Anything in the Plow Line and all of the BEST



Boss Wood Harrows (Oak)

Engine Disc Harrows

Acme Harrows

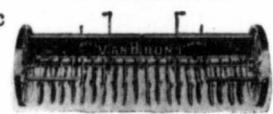
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Single and Double Disc Drills Shoe Drills

Big assortment of Vehicles to suit any size purse

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HERE IS THE PLACE. NOW IS THE TIME

TO BUY YOUR SPRING SUPPLIES. These are extraordinary low prices considering market conditions

SEND FOR OUR 1917 SPRING AND SUMMER SALE CATALOG

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The Judson Throttle Governed Kerosene Engine

Burns Kerosene or Gasoline
Judson Engines use less fuel and cost less for upkeep. Enough saving in a year to pay engine price.

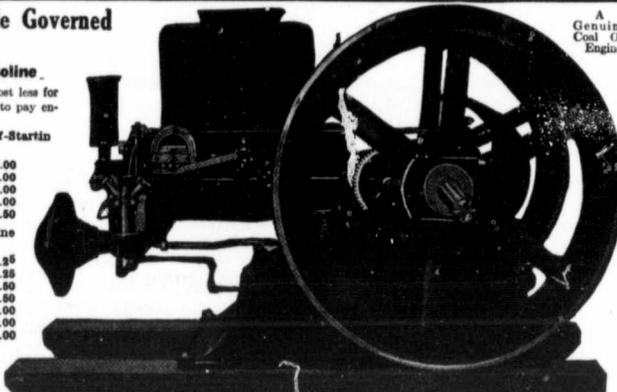
Complete with Pulley and Self-Starting Magneto

3 1/2 h.p.	\$120.00
5 h.p.	175.00
7 h.p.	225.00
9 h.p.	275.00
12 h.p.	327.50

Price of Judson Gasoline Engine with Self-starting Magneto

1 h.p.	\$ 48.25
1 1/2 h.p.	57.25
2 1/2 h.p.	66.50
3 1/2 h.p.	77.50
5 h.p.	100.00
7 h.p.	125.00
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Sold Direct to the Farmer
THIRTY DAYS' TRIAL



A Genuine Coal Oil Engine

CHAMPION ENSILAGE CUTTERS

No. 40 machine has 2 patented 20 in. knives; will cut from 3 to 5 tons dry feed, 5 to 7 tons of green fodder an hour. Power required, 5 to 7 h.p. with plain table, or 7 to 10 h.p. with travelling feed table. Price with blower and plain table, \$65.00. Blower for use with 5 h.p. Engine \$42.50.



42 50
and up

FULL GAUGE WIRES



One Penny for a DOLLAR-SAVING BOOK
Give valuable fence facts—shows how to get better quality at sensational direct-from-factory prices.

Empire Fence

is guaranteed to show the biggest saving on highest quality fence. Patent applied. All Big No. 5 wires. Open-Heath steel, heavily galvanized, rust proof, pig tight, stock strong. Just a penny postal Free Book—NOW.

Lankford Cotton Collars



all friction on neck and shoulders. Weight, about 19 lbs. No. 4PA91—Sizes 17 to 27

This collar is made of good heavy duck, reinforced with leather at points of wear. It is stuffed with cotton fibre, that will not get hard. This collar is recommended to cure or prevent galls and sore shoulders. The cool, oily setting cotton fibre and the open throat principle in the Lankford Cotton Collar take away

weight, about 19 lbs. No. 4PA91—Sizes 17 to 27 \$1.50



Brass Trimmed Team Harness

Every strap Guaranteed \$37.50 Complete Less Collars
No. FA17—A harness with quality in every strap. Bridles 3/4 in., long check reins, 1 in. lines, 3 ply ring traces, 1 1/2 in. steel brass ball top hames, martingales and breast straps 1 1/2 in. Order this harness or write for special harness catalog and see our full line and low prices.

Clevises

Screw Pin Malleable	Length	Each	Doz.
4 1/2 ins.	\$0.06	\$0.90
6 ins.11	1.15
7 ins.12	1.30
8 ins.14	1.60

Harrow Teeth
ONLY 6c.
High Carbon Steel, perfectly tapered, better finished and threaded than the common harrow teeth; 9/16 inch square, 1/2 inch round shank. Lengths 6 1/2 and 7 inches.

Each	6c
Per 100	\$6.50

One of the Most Complete Cultivators Made

\$5.50 Complete
Adjustable in width, 10 to 26 in. Depth instantly regulated by lever. Teeth, hoes and hillers all adjustable. Thousands in use. Catalog describes fully. Complete, with short hillers and 5 hoes. Our price \$5.50

Buy Your Feed Cooker Now While These Prices Hold—\$10.00



In listing this Cooker as our Big Value Feed Cooker, we do not hesitate in recommending it as the greatest value ever offered in a high grade cooker at a price that is exceptionally low considering the quality of material that enters into its construction. The most durable and popular style of feed cooker made for cooking feed for hogs, poultry, cattle, sheep, horses; also invaluable for heating water. Door is 12 inch, and will take large chunks of wood.
No. 6FA36—30 gal., weight 220 lbs. \$10.00
No. 6FA37—40 gal., weight 260 lbs. 11.50
No. 6FA38—50 gal., weight 285 lbs. 14.50
No. 6FA39—60 gal., weight 320 lbs. 18.00
Coal Grate, \$2.50 extra.
Galvanized Covers, \$1.00 extra.

Flint Surface Ready Roofing

\$1.50 per roll of 108 square feet. A thick, heavy and durable roofing; anyone can lay it, no experience necessary; full directions go with each roll.
1 Ply Flint Surface, roll \$1.50
2 Ply Flint Surface, roll 1.85
3 Ply Flint Surface, roll 2.25
Samples sent on request. This is undoubtedly the best offer ever made direct to the Canadian farmer on roofing.

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Write for Catalog Describing Sulky and Gang Plows—
High Quality, Low Prices

Channel Steel Harrows

A very popular high-grade harrow at a very low price.
60 tooth, 3 section, 9 ft. \$12.00
100 tooth, 5 section, 15 ft. 21.50
120 tooth, 6 section, 18 ft. 25.00



Ideal Tongueless Disc Harrows

Possess many features of superiority not found in other makes.
12 1/2-inch discs, 6 ft. \$2.50
14 1/2-inch discs, 7 ft. 47.50
16 1/2-inch discs, 8 ft. 51.00
20 1/2-inch discs, 10 ft. 55.00

Finished Plow Shares

Are guaranteed to be as good material and in many cases they are better than the original. We have on hand all the best numbers for leading makes of plows. Always give size and number of share when ordering.
12 in., \$2.45 14 in., \$2.70 16 in., \$2.90

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We aim to have the best Separator regardless of cost, and to supply our customers at prices which are the lowest safe margin over the actual shop cost, and by avoiding all the expenses of branch stores, salesmen and agents we can make a big saving for every buyer, as a comparison of our price with others will prove. Latest edition of our catalog now ready. Send a postal card to-day if you have not received a copy.
250 lbs. capacity \$42.50
375 lbs. capacity 55.00
600 lbs. capacity 69.50
800 lbs. capacity 69.50

C. S. JUDSON CO. WINNIPEG Limited CANADA

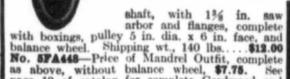
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FROM FACTORY TO FARMER

SAW MANDREL SETS

You can construct your own frame to suit with this set.
No. 6FA47—Price for Mandrel, 4 ft., 4 in. x 1 1/2 in. shaft, with 1 1/2 in. saw arbor and flanges, complete with boxings, pulley 5 in. dia. x 6 in. face, and balance wheel. Shipping wt., 140 lbs. \$12.00
No. 6FA48—Price of Mandrel Outfit, complete as above, without balance wheel, \$7.75. See page 19 of catalog for complete Cordwood and Pole Saw Frames.



CIRCULAR CUT-OFF SAWS AT WHOLESALE PRICES

\$4.00 Lowest Prices Fully Guaranteed
These Saws are made of best quality steel, are filed and set ready for use, and we will replace every Saw that proves defective. Made by one of the oldest and best saw manufacturers in America. The prices we quote you are the very lowest and are on a wholesale basis. For use on cordwood and pole sawing machines and mandrels. All saws have 1 1/2-inch arbor hole.

Diameter	Gauge	Crated	Price
20-inch	13 12 lbs.	\$4.00
22-inch	12 15 lbs.	4.50
24-inch	11 19 lbs.	4.75
26-inch	11 23 lbs.	5.75
28-inch	10 27 lbs.	6.50
30-inch	10 32 lbs.	7.50

IRON HICKORY DOUBLETREE PLOW SET

A first class farming outfit suitable for heavy plowing and other farm work. All selected hickory stock. Flat doubletree, 1 1/4 x 3 1/4 x 42 in. long. Singletrees 2 1/2 x 30 in. Weight per set, 18 lbs.
No. 6FA81—Per set, usual \$17.50 value. Sale price..... \$1.35

:- :- Tractor Appeals To Auto Engineers :- :-

AUTOMOBILE engineers are going to take up the tractor and men trained in the automobile industry are going to make possible thirteen years of progress in five years or less. They are going to do this largely apart from any business reasons.

They are going to enter the tractor field as individuals because of the immense fascination of the machine, writes A. Ludlow Clayden, in *Automobile*. There are many passenger car engineers who have never been able to work up much enthusiasm over the motor truck, probably because the truck is rather like a passenger car shorn of many refinements, but the tractor has a different appeal. The effect of a first sight of a tractor demonstration is indiscernible; one feels he is witnessing a manifestation of a new form of energy. It provokes much the same tingling of the blood as does the first sight of a speedway with a bunch of cars tearing past. Probably the explanation is that one sees and realizes in the deep-biting plows and the rapidly changing face of the landscape that same raw power which is the fascination of the speedway.

Whatever be the truth the fact remains that any man who took up automobile engineering for the love of the art has only to see a dozen tractors blazing their trail across acres of stubble in order to discover a new enthusiasm.

Development Will Be Rapid

Even among tractor engineers it would be difficult to find a man who would contend that the gasoline tractor has reached more than an early stage in its development. To make a comparison with the automobile or motor truck is far from easy, the conditions of service and the requirements being so greatly different, but it is fairly close to the truth if we say that the gasoline tractor to-day is at about the same stage of its development as was the passenger automobile in 1903.

This does not mean that the tractor is going to need another 13 years to reach a stage equal to the 1916 automobile. Probably what took 12 years for the passenger car will be done in five or fewer for the tractor, general accumulated experience now being so much greater, but the amount which remains to be done will provide sufficient work to give the tractor engineers a very full five years.

An automobile engineer in approaching the problems of tractor

design must first clear his mind completely of all prejudices. He must manfully resist the natural impulse to compare tractor features with, for instance, motor truck convention. In many ways it would be possible to draw a closer parallel to the motor boat than to any road vehicle. Really, though, the tractor is not comparable with any other self-moving machine. While it is more difficult a problem than the automobile in some ways it is easier in others, but is essentially different. A most successful truck engineer could easily make a very bad tractor if he took on the job with a light heart.

None the less, the automobile is going to benefit by reason of what will be learned in developing the tractor. To give an example, the kerosene carburetor is essential to the tractor, and already experience is being gained which will be valuable throughout the whole range of internal combustion engineering. Another thing which is as yet imperfect for tractors is the ignition system, and a curious little thing which comes to light in this re-

spect is a growing demand from the tractor men for a smaller spark plug, the engineers quoting all the arguments recently advanced by aeroplane engine builders in favor of the metric size of plug shell.

Six Major Problems

Having said that the tractor is as yet only partially developed it may be well to mention the major problems that are not yet overcome:

First—Reliability is not good enough yet, not nearly good enough. This is partly due to poor engineering that can be recognized as such and partly to the peculiarly difficult conditions of a tractor's work.

Second—The efficiency of the machine as a whole can be improved very greatly; must be improved, in fact. At present the horse-power at the draw-bar and the horse-power at the fly-wheel are too widely different.

Third—The weight is usually out of proportion to the horse-power. Weight is an essential in order to permit a sufficient draw-bar pull, but it can be applied scientifically so that every ounce

tells, or otherwise. Frequently the amount of waste weight is as great as the amount of useful weight.

Fourth—The question of drive is unsolved. We have one-wheel, two-wheel, three-wheel and four-wheel machines, all caterpillar machines, and machines which are combinations of the wheel and the caterpillar. They cannot possibly all be right, yet there is not enough experience to-day to enable any one system to be named as the best for all purposes.

Fifth—The trouble of rapid turning is important. There are some machines which can turn in their own length, but to do it they require mechanical features regarded as revolutionary by the more conservative builders. The advantage of a square turn is very great and it must be decided whether this advantage can be given without any drawback.

Sixth—Then there is size. We have now every conceivable size and power from very little to very much. There are too many sizes. The biggest machines will always have a market, but a limited one. The very small machine will also have its uses, but it will have to be decided just what size the great big majority of farmers will find most efficient. This is best stated in terms of draw-bar pull and the ideal size for general work is variously estimated at anywhere from 1,500 up to 6,000 lbs. This is a matter for experience mainly, but study can help to solve the problem.

Mr. Thresherman!

When buying your new Separator for 1917 do not overlook the most important part—the business end. Buy the Best, and there is but one **Best Self-Feeder** and that is the

NEW MAYTAG ALL STEEL

RUTH

No matter what Separator you buy, we can furnish the attachments to properly put it on.

Remember we carry a full stock of **Repairs** at Regina, Saskatoon and Calgary.

The Maytag Company, Ltd.
Winnipeg, Man.

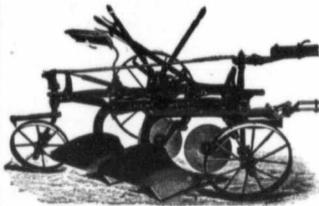
A REMEDY FOR CARBURETER BACK-FIRING

Back-firing of a gasoline engine through the carbureter can be, in a great many cases, traced to the excess air. On many of the carbureters a wire screen is usually provided for the purpose of allowing this air to enter in the form of line streams, which aids greatly in making the proper kind of mixture. The screen also serves another important purpose in that it prevents dirt from entering the carbureter.

In place of using only one screen, apply three, and by shifting them radially with respect to one another, the splitting up of the air is easily accomplished, and also increased or decreased as conditions warrant. The device works well, and the mere shifting of one or two of the screens quickly eliminates some of the troublesome cases of back-firing.

MASSEY-HARRIS HIGH-GRADE FARM IMPLEMENTS

Great West Plows

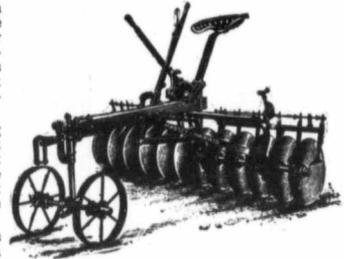


high standard of Massey-Harris construction.

Not only do they do the most satisfactory work possible, but this is accomplished with a minimum of effort on the part of team and driver; lightness of draft and the convenience and comfort of the driver have received special attention, as also the points of strength and durability.

Built especially to meet conditions in Western Canada and they have made good. Wheels are set well out, making the plow run steady. It is amply strong for all conditions of soil. Convenient Levers and easy-acting Foot Lift make it easy to handle. Bottoms are of the well-known

Massey-Harris Disc Harrows



Being equipped with Pressure Springs, the Gangs are held to their work on rough and uneven ground, on ridges and in furrows, so that the entire surface is cultivated.

Should one Gang strike an obstruction, it may rise and pass over it without disturbing the other Gang, or without danger of injury to the machine.

Angle of Gangs is readily controlled by a single, easily operated Lever.

Bearings have oil-soaked Maple Bushings and Spring Oil Caps. The Low Hitch takes all the weight from the horses' necks.

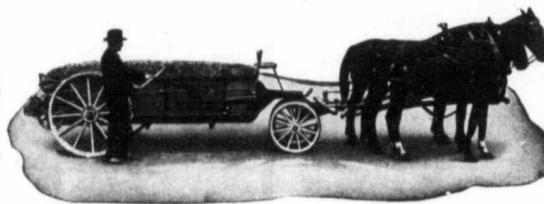
LOW DOWN

Here is a spreader that is low down, but not too low—plenty of clearance under the frame.

It is a wide-spread machine—spreading full seven feet wide although the box measures only 3½ feet.

Ample strength is secured by making the frame of steel—heavy 4-inch channel side sills with steel cross sills, forming the strongest frame ever put on a spreader.

Massey-Harris Spreader



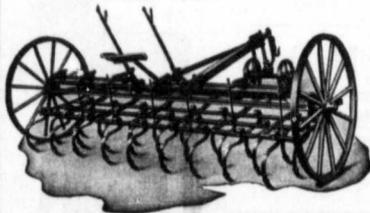
WIDE SPREAD

The Simple Chain Drive does away with all cogs, clutches, and springs, and when out of gear no parts of the machine are running to cause wear.

The Upper Beater is in two sections, set at an angle to spread the load out beyond the wheels.

The Simple, Direct Drive—the divided beater and small size of same—the taper shape of the bed—the broad-faced wheel—the careful fitting of all parts—these combine to secure light draft.

A Big Cultivator for Big Farms



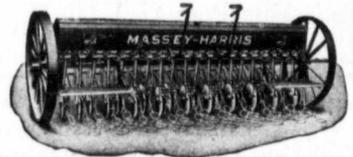
Can be fitted with wide points for shallow cultivation, if desired.

Our well-known Spring-Tooth Cultivator in 10 and 12-foot sizes for use on big farms.

The frame is made extra strong and two levers are provided to make the operation easy.

Furnished with 4-horse pulley hitch or with forecarriage.

A Drill with Steel Grain Box



This Steel Box is the largest grain box on any drill and saves the time and inconvenience of frequent re-fillings.

Its construction is especially strong and, with the substantial construction of the balance of the drill there is ample strength to carry the weight of the drill when loaded to capacity.

MASSEY-HARRIS CO., LIMITED

HEAD OFFICES: TORONTO, CANADA

CANADIAN BRANCHES AT

Montreal, Moncton, Winnipeg, Regina, Saskatoon, Swift Current, Yorkton, Calgary, Edmonton

AGENCIES EVERYWHERE

THE ROMANCE OF ENGINE FUELS

Continued from page 12

fornia—in all these states petroleum has been found in large quantities, until we find that in 1904 the petroleum production of the United States was 120,733,420 barrels, at 42 gallons to the barrel, valued at \$101,474,300.

Science has proved that, as well as for illuminating mediums, and for lubricating oils, there are 200 different products possible to make from crude petroleum.

The one that affects power farming and the use of the internal combustion engine, is assuredly the distillate which we call gasoline.

In the chemical laboratory all gasoline is termed naphtha; and its gravity as used for the modern internal combustion engine is usually from .68 to .76. Crude petroleum yields about 15 per cent gasoline for all gravities, and about 4 per cent only for gravities above .76. Like most of the products of crude petroleum, gasoline was for a long time disposed of as waste, especially in the effort to make kerosene for illuminating purposes. Yet it was there, and science finally found a means of extracting it.

Like whiskey, gasoline represents the lightest portion of a crude oil, and is extracted by the process of distillation. This is done in retorts or stills, which are specially made for either horizontal or vertical use. Rectification is obtained by a copper coil many feet in length, which is boiled inside the retort, and which passes through the crude petroleum. Through this coil steam at a high pressure passes, and its heat is augmented by a gentle direct flame at a temperature of 122 to 257 deg. F.

(continued in next issue)

Don't Miss Page 47

Very Important Information for Western Canadian Farmers from McBean Bros.

In our last letter of Dec. 8, 1916, we claimed our wheat was worth \$2.00 per bus. and oats 75c per bus. in store Fort William. These prices have not yet been reached, although near it for wheat. The break in prices during the last week was apparently brought about by the large grain operators in the United States, and it looks to us as if it was a deliberate attempt to stampede the farmers into selling their cash grain, the bulk of which would fall into their hands, and therefore, we strongly urge farmers to sit tight and not sell a bushel on this break. We still figure our wheat is worth \$2.00 per bus. and oats 75c per bus., and we feel satisfied that if farmers will hang on they will get these prices. Of course, such advance may not come as soon as we expect, but we figure this will be the ultimate outcome if the war continues. Do not pay any attention to peace rumors as the most of them are manufactured out of whole cloth by large operators who want temporary lower prices. If peace was declared we would likely have a temporary break followed by a sharp advance to a high point, as German and Austrian immediate huge wants would have to be supplied. The world requires all our wheat, oats and barley, and will want them and want them badly before another crop is harvested.

We are commission merchants, and would like a share of your grain this year. Try us by shipping your grain to Fort William, Fort Arthur, Saskatoon, Moose Jaw, Duluth or Superior, advise McBean Bros., Winnipeg, Man., and we will look after the grading, etc. We make big advances on each car of grain. Write us any time for market information.

McBEAN BROS.

February 1, 1917.

Grain Exchange, Winnipeg, Man.

COCKSHUTT Light Tractor PLOW

Just a Few of its Remarkable Good Points

NEW---Yet Already Well Tried and a Splendid Success

Ideal for two or three furrows.

You can turn it into a two or three furrow plow at will.

Just a pull on a cord lifts the bottoms from the ground to avoid an obstruction.

Just a pull on the same cord lowers them and the bottoms dig straight to their work like a walking plow.

The land wheel and an exclusive eccentric and clutch "do the trick" —easy.

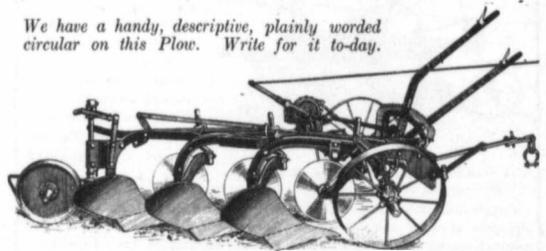
Change the depth of work by easily handled levers — without stopping or slowing up the plow.

Staggered front wheel ensures absolutely true running with furrows always even—and high clearance to avoid trash.

Cockshutt light draft and high quality materials.

If you're going in for a light tractor, don't forget the "better half" of the partnership—a suitable gang plow. We have it in the Cockshutt Light Tractor Plow, made in two and three furrow sizes. It represents a lot of hard work on the part of our engineers, and has stood the hardest tests in actual use—far stiffer, probably, than you'll ever give it. We're so satisfied with it that we say: "Save time, go right out and buy the Cockshutt Light Tractor Plow, the 'experimental work' is all done and we'll stake our reputation it will do everything claimed for it."

We have a handy, descriptive, plainly worded circular on this Plow. Write for it to-day.



COCKSHUTT PLOW CO. LIMITED

WINNIPEG REGINA CALGARY SASKATOON

Our Coming Statesmen, etc.

Continued from page 7

the club members securing the highest score in each inspectorate. But as it would be difficult to compare the work done by the girls with that done by the boys, two or more inspectorates will be combined and the boy and also the girl receiving the highest score will be given the free trips, provided there are not less than 200 members in each inspectorate included.

These prizes are transferable and as the excursion to the College will take place during July, 1918, there will be plenty of time to perfect all arrangements to the satisfaction of parents as well as the boys and girls themselves.

Spring Bargains

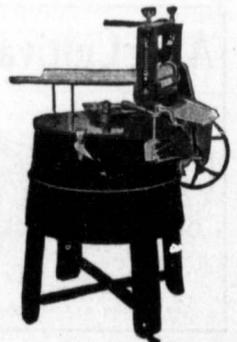


The Eclipse Plow is guaranteed to be perfect in construction and material. Will clean where any other plow will clean and where most others fail.

Price 12 inch gang\$81.00
Price 14 inch gang\$83.00
With four-horse hitch.

Washing Machine

Reversible Wringer, easy control guaranteed to be the best on the market. Will not injure the finest fabric.
Price\$22.00
Shipping weight 125 lbs.



Plow Shares

12 inch Crucible Steel. Each...\$2.45
13-14 inch " " Each...\$2.70
15-16 inch " " Each...\$2.90
18 inch " " Each...\$3.10

These shares are guaranteed to be exact duplicates and to fit your plow.

Buy your shares from the Stover Company, and get good shares at right prices. Beware of imitations. Write for complete list.

THE CANADIAN STOVER GASOLINE ENGINE CO., Ltd.

BRANDON, MANITOBA

WRITE FOR SPECIAL HARNESS CIRCULAR

Kerosene Not A Carbon Remedy

It has been popularly supposed for a long time that the injection of liberal quantities of kerosene into the internal combustion engine would remove the carbon accumulations, and various specially prepared carbon removers, having a kerosene base have been placed upon the market from time to time with the same end in view. M. H. Foster, writing in Motor Age, combats this theory and gives his reasons. He says:

"In the first place, kerosene does not dissolve carbon, as every chemist knows. There is no substance as yet discovered which will dissolve carbon. For years science has sought for such a fluid because it is believed that if you can dissolve carbon you could crystallize it out again and make diamonds, so the search for such a substance has been most vigorous and persistent. Anyone who desires to test this matter can try soaking a piece of charcoal in kerosene and note the results, or, better still, soak a well carbonized spark plug in kerosene and note how much of the carbon has disappeared after immersion for 24 hours.

"Kerosene does dissolve or soften thicker oils and if there is a mixture of gummy oil and carbon on the plug kerosene will assist the process of removal by thinning out the oil and making the mixture easier to remove, with a brush or some such instrument.

"It is true that if you put kerosene in the cylinders over night, that when you start up next morning a lot of black smoke will come out of the exhaust, but apparently this is simply the carbon resulting from the incomplete combustion of the kerosene, as we would naturally expect. Carbon will come out after you put kerosene in, but it is simply the carbon in the kerosene, and in all probability there is really more carbon in the motor after this treatment than before, because some of the carbon formed by the incomplete combustion of the kerosene must be deposited on the cylinder walls and compression chamber. It is equivalent to running too rich a mixture through the motor, which is a very common source of carbon.

"Now concerning the theory that the mixture of gummy oil and carbon is softened or loosened up or blown out. The usual practice is to pour in a small quantity, say a tablespoonful or so. At best all this could do would be to act on the head of the piston and possibly work around to the valve seats. It would not come in contact at all

with the upper parts of the combustion spaces and certainly we could not expect it to loosen up the coating with which it does not come in contact.

"Experience has shown that the running of a motor is sometimes better after using the kerosene than before. This improvement is probably due to giving the valves a better seat and also possibly to some of the kerosene working down on the valve stems and springs and also to the rings, making all the parts work easier. The use of kerosene to wash out thickened or hardened oil from any of the working parts of a motor is sound both in theory and practice. I believe better results would be obtained by applying it as directly as possible by means of an oil can or squirt gun to the parts where it is needed rather than by introducing a quart or so through the carburetor, while the engine is running. As stated before, a part of the kerosene thus introduced is burnt up in the motor, making an excessively rich mixture and resulting of necessity in the deposit of additional carbon in the combustion spaces.

"Good results may be obtained by the use of a small amount of kerosene in a motor once in a while, but we might just as well understand how this is accomplished and what really takes place as to think that we are getting rid of carbon, which is probably not the case, as the improvement is due to bettering the lubrication and possibly making the valves seat tighter."

TO GET PERFECT COMBUSTION

The ideal condition is to have the proportion of gasoline to air constant throughout the combustion chamber, but this condition is not exactly attainable in the average motor. First, because the carburetor will not supply an absolutely perfect vapor. In other words, the first part of the charge sucked into the cylinders may be weak and the last part rich and only the intermediate zone will be of the correct proportions. Second, there is always a certain amount of burned gas left over from the previous explosion and this does not mix evenly with the incoming charge, with the result that some parts of the mixture are diluted by it more than other parts.

It Depends

"Papa, what do you call a man who runs an auto?"

"It depends upon how near he comes to hitting me."

Two Specialities in Seeds

**Every Farmer,
Every Gardener
will want
in 1917**



The New Fodder Plant Duplex "Rape-Kale"

Tested carefully in 1916 by leading agriculturists this valuable fodder plant has proven its adaptability to the West. Just the plant every stock raiser has been looking for.

Very hardy. Yield enormous crops. Of rapid and vigorous growth. Immune from disease. An excellent milk producer.

1 lb. 5 lbs. 5 lbs. or more
Postpaid Purchaser pays freight
1.30 5.90 1.00 per lb.

Further particulars on page 42 of our illustrated seed catalog. ORDER EARLY as supply is limited.

Every Stock Raiser should grow this.

Special Collections

GARDEN AND FIELD SEEDS To Suit Every Purse

Save Time. Save Trouble. Save Money.

Specially prepared to meet the economic spirit of the times—they save 25c to 95c as compared with the individual items bought separately.

Thousands of Gardeners will use these convenient collections this season.

Even if any particular collection does not fit your requirements exactly you can afford to discard one or more varieties and be money in pocket. Quality absolutely dependable. Don't miss reading pages 4 and 5 of our 1917 Seed Catalog.

Collection A

26 Varieties Vegetable Root Seeds and Sweet Peas—the best obtainable

2.50
Postpaid

Collection B

26 Varieties Vegetable and Flower Seeds—excellent value

2.00
Postpaid

Collection C

An Economical Assortment of Vegetable Seeds—17 Varieties

1.50
Postpaid

Plan Your Garden NOW

The seductive joys of making a garden, the aesthetic delights of starting the outline of work for the time just ahead may be yours—McKenzie's Seeds will help.

Write for prices on Seed Corn, Clovers, Grasses, Alfalfa, Flax, Millet, Incubators, Poultry Supplies.

We have everything for the farm and garden.

Collection D

Specially Selected Field Seeds—3 Varieties

1.50
Postpaid

Collection E

18 Varieties Vegetable and Flower Seeds—Selected to meet popular demand

1.00
Postpaid

Collection F

13 Varieties Vegetable Seeds and 2 Flowers

75c
Postpaid

The Twenty-first Annual issue of the McKenzie Seed Book, aptly designated the "Red Guide Book for the West" is better than ever before. The leading Canadian Catalog of Seeds. SEND FOR COPY TO-DAY.

SELECTED SEED GRAINS

FOR GENERAL CROP

We have Thousands of Bushels Ready NOW

WHEAT—Marquis, Choice Selected No. 1 Northern	Stock No.	Per Bushel
	K70	\$10
OATS—Banner	K74	.88
Eger or Victory	K78	.91
Abundance	K72	.86
Gold Rain	K76	.88

N.B.—Above stocks are not subject to market changes, excepting Wheat, Marquis No. K70, which we offer on the following basis: When Fort William May price for commercial grade 1 Northern is under \$1.85 our price will be \$2.10 per bushel. Whenever Fort William price is \$1.85 or more, add to our price of \$2.10, 1c or fraction thereof per bushel, concurrent with each advance of 1c or fraction thereof of per bushel. F.O.B. Brandon. The lowest price we can sell this stock in 10-bushel lots or more, is \$2.10 per bushel.

Prices quoted are for quantities of 10 bushels or more, for less quantities add 5c per bushel. Special quotations on carloads. Use stock number when ordering. Add 15c for Jute Sacks (wheat 2 bus., oats 2½ bus.).

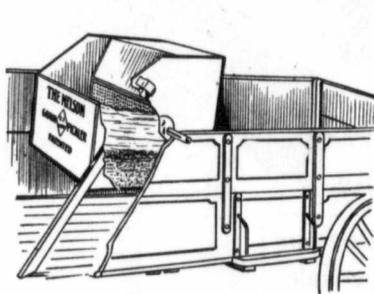
ASK FOR SPECIAL SEED GRAIN CATALOG

We have the choicest stocks of Vegetable Seeds, Flower Seeds and Sweet Peas in the West. Specially Selected and Grown to suit our climate. Sure to Grow.

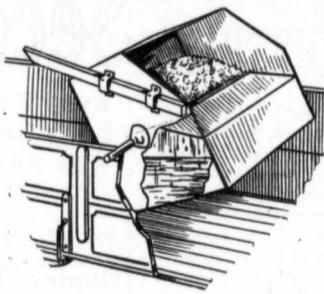
A. E. McKenzie Co. Ltd., BRANDON, MAN.
CALGARY, ALTA.

WESTERN CANADA'S GREATEST SEED HOUSE

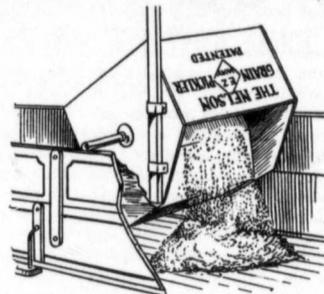
"Nelson" Galvanized Grain Pickler



No. 1 Position—Showing Grain in Pickle



No. 2 Position—Showing Grain Draining



No. 3 Position—Showing Grain Being Dumped

All Grain Thoroughly Immersed and No Solution Wasted

Can you think of anything more simple and efficient? No cranks to turn or parts to get out of order. You simply put solution into pickler, shovel in grain, give pickler one-quarter turn to let grain drain a few seconds, then dump and turn pickler back into position for the next lot of grain. One man can easily pickle 100 bushels per hour. Pickler can be placed in wagon box, as shown or on stand in granary. Price only **\$11.00** net cash with order, and we guarantee every pickler to work satisfactorily or money refunded. **Order now as this Season's supply is limited.**

GOOD AGENTS WANTED

Please send particulars to

This Pickler will be on Demonstration in Winnipeg at the Forum Block (Curlers' Headquarters) during Bonspiel Week.

THE METAL SHINGLE & SIDING COMPANY, LIMITED

WINNIPEG

SASKATOON

CALGARY

The Metal Shingle and Siding Co. Ltd.
WINNIPEG

Name

Address

THE HYATT DYNAMOMETER MAKING A TEST ILLUSTRATION

A recording tractor dynamometer, the only one of its kind ever made, has been built by the Hyatt Roller Bearing Company, engineers of Chicago, Illinois, and has been placed at the disposal of the tractor industry to assist them in the development of better machines.

This dynamometer consists chiefly of a hydrostatic pressure unit, which is coupled between the tractor and the plow, and a recording gauge which automatically records the draw-bar pull.

All the energy required to pull the plow must be taken through the hydrostatic pressure unit. The pressure thus created actuates the pressure gauge which moves the indicating needle along the chart and in this way an absolutely accurate record is obtained.

At all the power farming demonstrations held this summer in the States, this instrument was used by the officials for making ground tests and between times several private tests were made for any of the manufacturers who wished them.

So many of the manufacturers availed themselves of these dynamometer tests at the shows, that the Hyatt people have decided to

permanently maintain this service and advise that the engineers in charge are ready to co-operate with the tractor manufacturer at all times.

The tractor bearings department of the Hyatt Roller Bearing Company at Chicago, Illinois, has been very active in the tractor industry, and this dynamometer service is but another instance of their faith in same and their desire to assist in its development along constructive lines.

TRACTOR BEARINGS HIGHLY IMPORTANT

Three-point suspensions and other devices for avoiding the ill

effects of twisting caused by riding over uneven roads have been of the greatest value in ordinary automobile construction, and a great deal of attention has been given to the problem of preventing the binding of shafts in their bearings due to temporary misalignment. This problem, however, sinks into comparative insignificance beside that of keeping the shafts running free and true in an agricultural tractor, whose natural habitat is the fields.

Self-aligning ball bearings are advocated for this service by a leading ball bearing expert, who points out that a bearing is such an important part of the tractor that it is an exceedingly risky matter to attempt to economize on its cost.

"A farm tractor, from the nature of its work, receives much abuse," says this authority, "and the roughness of the ground upon which it travels necessitates a method of compensating for shaft slackening the driving mechanism, which may be of various forms, but is usually some kind of a disc or collar attached to the armature spindle by means of a tapered friction hold. If the ignition is set to give slightly more advance than before, improved running is more than possible."



THE HYATT DYNAMOMETER IN THE FIELD

BLACKSMITHING

Continued from page 14

the head is frequently moved beyond the edge of the anvil and is struck with the hammer for the purpose of both forming and upsetting it. This process of upsetting and forming is continued until the amount of metal upset is sufficient to form the desired head. This is then heated and the cold end of the rod is passed through the right size of hole in a swage block, or through a heading tool, and the inside face of the head is worked to shape. But this latter cannot be done at one operation, for the side faces shown in the top view at (a) (e) and (c) (f) must be brought to shape with the hammer. The final shape of the head shown in the top view by (a) (e) (c) (f) is obtained by dressing the side faces (a) (e), (c) (f), (c) (f) and (f) (a) and the end face of the head with the hammer, and by finishing the inside face on the swage or heading tool.

The lengths (e) (b) and (f) (d), each equal to 3/4-inch, are marked off with a soapstone pencil or a hand chisel, and the portions of the head (a) (e) (b) and (c) (f) (d) are then cut off with the hot cutter. The angles (b) (a) (d) and (b) (c) (d) are approximately equal to 65 deg., and hence if the bevel is used it may be set to this angle and used to test the angles between the faces. It is not desirable that the edges at (a) and (c) be made sharp. The head of the bolt is made thin so that it will break off before the pressure becomes great enough to injure the lip of the T-slot on the cast-iron planer table. The head of the bolt is given the shape shown in Cut so that it will not turn in the T-slot when the nut is tightened. After the head is properly formed, the bolt is cut to the required length.

Making a Hexagonal Bolt Head

If it is desired to form a hexagonal, or six-sided head on a 3/4-inch bolt of the dimensions shown in Cut (e), the end of a 3/4-inch round rod is heated and upset. When enough metal has been upset to form the head, the cold end of the bar is passed through a suitable hole in the swage block or the heading tool, and the inside face of the head is surfaced around the shank of the bolt as



Moë—Ah gif yer a nickel fo' a kiss, Miss Gladys.
Miss Gladys—Ef you-all's lookin' for a jitney bus you done hail de wrong hack.—Life.

described for a square-headed bolt. The head is then shaped in a three-sided groove of proper size, which is usually formed on the surface of the swage block. The swage block is placed so that the groove is horizontal and the opening is on top. The inside face of the head is trued up, as before, and the side faces are again touched up with the swage, after which the head, if it is too long, is marked for the proper thickness and the end cut off with the hot cutter. A hand hammer is also used in the final dressing of the head. A cup-shaped swage may be used for finishing the top of the head into the round shape shown in Cut (F). The bolt is finally cut to the proper length, which in this case is 5 inches, and the burrs on the edges dressed down with a hammer.

METHOD OF FORGING IRON AND STEEL

Iron and steel, while made up of the same properties, are chemically different and must therefore be forged under entirely different conditions.

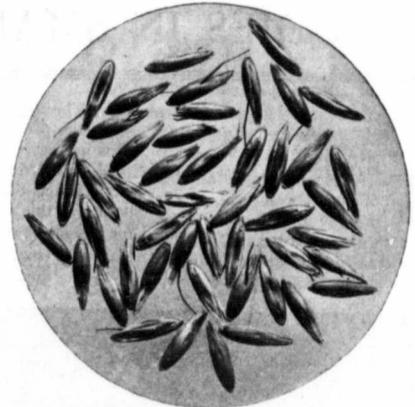
Iron should never be forged at a real dark-red heat, but at a light-red or white heat. If forged at a dark-red heat the iron generally will crack open. However, if a real smooth finish is desired the last forging should be done at a dark red heat.

The weight of the hammer blows will also differ with the different size of iron being forged. For small sizes the hammer blows should be rather light while for large sizes they should be correspondingly heavy. If light blows be used in forging heavy iron the outside alone will be affected, thus causing considerable strain in the iron, which will weaken it very materially.

Steel should never be heated above a yellow heat. If heated to a white heat the steel will be burned and will not "stand up" nearly so well as when properly heated. Steel should also never be forged at a dark-red heat. If this is done it will cause considerable strain between the inner and outer portions which invariably cause it to crack while forging.

The weight of the hammer blows in forging of steel is vastly of more importance than in forging iron. If the blow is not heavy enough to exert its force throughout the thickness of the steel it will invariably crack when hardened. If steel is properly forged it will be found easy to harden, but if improperly forged the hardening will be very difficult and generally is a failure. The quality of a finished tool depends entirely on the correct heat and proper method used in forging and hardening it.—H. A. Schott, Colorado Agricultural College.

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The Only Prairie-bred Oat Known**

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Our stock weighs between 45 and 50 lbs. per measured bushel. Yielded in 1916 on fall plowed wheat stubble land 110 bushels per acre. Thoroughly re-cleaned—not a grain of anything in our stocks—all Oats. Sow 2 bushels per acre—Price \$3.40 for 2 bushels; 12 bushels for \$19.00; bags included. Should be in the hands of every progressive grower in Western Canada.

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Northwestern Dent Minnesota 13 As Seedsmen we were the first to introduce these varieties to Western Canada, and we have today what we believe to be the **finest stocks that ever came into this country, matured at the most northerly limits**. The superb quality of our stocks may be understood from the fact that we were offered by another seedsmen \$2,000 premium on our crop of Northwestern Dent alone.

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WINNIPEG

STUDIES IN SMALL TRACTOR DESIGNS

By
E. R. WIGGINS

IV.

OPERATION Field Work

There are a large number of small tractors on the market that are very good in design, well built, and entirely practicable, and in the hands of most men, these machines are



The Small Tractor is being used to haul fertilizer

successful. There are some, however, who are unable to handle even these tractors with favorable results, and the successful operation of a tractor depends upon the operator. If he is to succeed, he must thoroughly understand and study the best methods of handling his machine. He should be able to solve all the problems that come up in traction farming. He ought to have a thorough knowledge of the proper management of gas engines and their general repair. There is no place that the motto of "Knowledge is power," holds more truly than with tractor operation. Of course, tractor knowledge will come with experience, but such experience is very expensive.

Plowing is the most important field work operation. All the small tractors have sufficient power to pull the number of plows for which they are designed at full depth. The average speed of nineteen well known makes of three-plow tractors is 2.4 miles per hour, and the average for nineteen two-plow machines is 2.5. The average speed of the large sized tractors, especially 30-60, is considerably less than this, averaging about two miles per hour.

This rate is slower than good plowing will warrant. To do the best work the tractor should travel from $2\frac{1}{4}$ to $2\frac{1}{2}$ miles per hour. The purpose of plowing is to turn under all stubble, weeds, grass or fertilizer and to turn the soil that was underneath up, so that it will weather. Also, it should thoroughly pulverize the ground.

Within certain limits, the faster the plow travels through the ground the better it breaks up the

soil. The average team cannot stand the pace of plowing as fast as is necessary for doing the best work all the time. Horses do not plow faster than two miles per hour. In this way the small tractor has an advantage over horses and large tractors. The operator, however, must be careful not to

exceed the speed in miles per hour that the makers recommend. As has been shown, that rate of speed is conducive to the best results, and if exceeded to any great extent, the dirt will be thrown completely over the furrow that has just been plowed. This will make a very uneven seed bed. A higher speed than the engine is rated, also strains the entire mechanism. Most of the men who own tractors, overload them, and then speed up higher than they should. At 3 and $3\frac{1}{4}$ miles per hour the slippage is greatly increased and the percentage of power losses is greater.

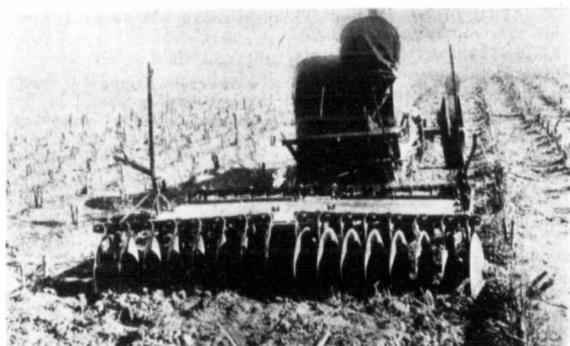
It is necessary to have the plows and hitches properly adjusted. In the case of the hitch, the operator must be sure that his plow is plowing directly in line with the tractor and that it is adjusted so that the front plow wheel follows close to the land side of the furrow but does not rub against it tightly, causing excessive friction.

The plows should be set at the

proper depth to scour the best, thus doing good work and relieving the engine as much as possible. Sometimes, a plow will scour satisfactorily in one piece of land but in another it fails to do so. The trouble can generally be overcome by setting the plows slightly deeper. If the plow does not scour, the first thing to be done is to clean it off completely. Not one particle of dirt can be left on because one little piece, no matter how small, will cause a large mass of dirt to collect. These things are mentioned because small tractors have been condemned in some cases where the real cause of failure has been poor operation of the plows.

Small tractors are being used for disking, harrowing, seeding, mowing, loading hay, grain harvesting, corn harvesting and to some extent, for cultivating. It is best to do these jobs singly with small tractors. It is not good

two mowers, or, generally, two grain binders. One grain binder is enough, because if two are used an extra man is required. With one binder, the extra man can help shock. The small tractor is used generally for pulling only one corn binder, because of the difficulties of running over bundles. Fertilizer has been hauled with success by a number of small tractors. This work is to the advantage of the machine because it generally comes in the summer when the ground is hard and the tractor has good footing. The small tractor has been used for haying and is found to be entirely successful for mowing, pulling the loader and for hauling the loads to the stack or barn. Cultivating has been done to a very small extent with tractors. To be worth the effort, a two-row cultivator should be used, but a man who has to watch and steer his tractor and keep his eyes on



Disking is a good job for a Small Tractor

policy, for example, to try to pull drags back off a plow unless one has an abundance of power. Plowing is load enough in itself. A small tractor will pull a three-section drag or two seeders, or

two rows of corn certainly is kept altogether too busy. Cultivating corn is not, therefore, in the province of the small tractor, unless it be a machine especially designed for such work.

Belt Work

In the operation of small tractors I find that their usefulness for belt work is of great importance. I doubt if the small tractor could be made to pay unless it was used for driving machinery. When it comes to threshing, the small tractor is almost out of the question unless the farmer wishes to run a very small separator with which he can do his own threshing and possibly the threshing for one of his neighbors. There is no separator small enough to be run with an 8-16 tractor but a 10-20 will have power to drive a 20-inch cylinder and a 32-inch separator thresher, and 12-25 will run a 22x36 separator.

In belt work the big field for

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The **New Workmen's Compensation Act** will be in force 1st of March. This is the **most drastic legislation** ever passed affecting employers of labor. Every owner and operator of a threshing outfit in Manitoba is under an **unlimited** liability respecting accidents to any of his employees, and also under the heavy penalty of **Two Hundred Dollars per day** for non-compliance with the Act.

If you have not already complied with the Act write us immediately for full information and application blank.

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It must be strong, because it carries not only the strain of steam making, but must withstand that which the pull and haul of the engine and traction gearing put upon it.

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The shell plate is thick enough to hold stay bolts, rivets and bracket bolts, so that they never come loose.

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The fire-box is capacious and the boiler is an easy steamer.

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BRANCH HOUSES (with Full Stock of Repairs) at

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the small tractor is running the silo filler. If the farmer has a small machine he has the means at hand of putting his corn into the silo at the right time, which in the northern states is a very important item. To figure the power required to cut silage it is best to allow one horse power for every inch of cutter bar. It is also good practice to calculate one horse power an hour to cut one ton of green corn.

The following data gives the sized cutters to use with small tractors:

Width of Throat Inches	Capacity Tons per hour	Size small Tractor Rated
10	4½	8-16
12	6.7	10-20
14	8.8	12-25

It would not be good practice to run a husker shredder with any tractor smaller than a 12-25, and then the smallest machine would be a four roll. Smaller machines can be run with an 8-16 tractor, still the work would be so slow that it would not be any great advantage over husking by hand.

Shelling corn is a great field for the small tractor in some sections of the country. This work, which can be accomplished at all times of the year, therefore, comes at periods when the tractor might otherwise be idle.

The following table gives the capacity of shellers and the power required:

Bushels per hour	Tractor required
500	8-16
1,000	12-25

Many farmers grind corn and grain in the winter with their small tractors to great advantage. I find that an 8-16 will grind 80 bushels per hour and the 12-25 will grind 110 bushels per hour. Grinding is not very hard on the machine because the load is very steady; consequently, the fuel consumption is low.

If the tractor is very well housed the cold weather will not affect its operation while grinding. The wear it will get at this time will be insignificant.

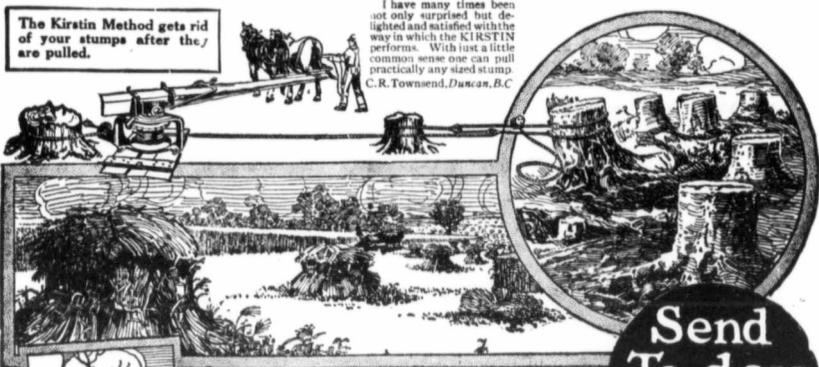
Wood sawing is very popular with small tractor owners. An 8-16 will run any wood saw in sizes from 24 to 30 inches with speeds ranging from 1,500 for the former to 1,200 revolutions per minute for the latter.

The power requirements vary from 4 to 8 horse power.

The tractorowner to get the best out of his small tractor should thoroughly understand ignition. The largest number of troubles that come with motor operation are charged to ignition. The electrical appliances are very delicate and can be put out of commission if care is not exercised.

Lubrication requires thought, care and knowledge. It has been the practice in the past that one gallon of lubricating oil is used

The Kirstin Method gets rid of your stumps after they are pulled.



Surprised and Delighted
I have many times been not only surprised but delighted and satisfied with the way in which the KIRSTIN performs. With just a little common sense one can pull practically any sized stump.
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30 stumps in 100 minutes. Record made by Kirstin Horse Power Puller under official watch test at the Land Clearing Demonstration of the Univ. of Wisconsin.

Guaranteed for 15 Years Money Back Bond

Yank Out Those Stumps!

A Guaranteed Saving of from 10% to 50% in Clearing Land Ready for the Plow.

The rich crop pictured above, is growing on what was a tax-eating stump field. The owner got it ready for the plow the Quickest, Cheapest and Best Way—with the Kirstin Method. Thousands of farmers have increased the productive value of their land a hundred-fold by clearing the Kirstin way. You do the same. Stop paying taxes on worthless stump fields; make them earn money for you—get a

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GAS ENGINE HELPS

By M. Coverdell

with every twenty gallons of fuel burned. A 10-20 tractor will use about one gallon of lubricating oil a day when run at full load. It is necessary to know that each part is getting its proper share of oil. The oil level in the crank case, for example, should be kept at a constant height. Where high speed multiple-cylinder engines are used, the oil in the crank case should be drawn once a day if kerosene is burned and once in three days if gasoline is the fuel.

The proper adjustment of the carburetor is necessary for good operation. The idea should be to save fuel. A low fuel consumption is not in itself of greatest importance, but it indicates that the motor is very efficient. A motor that is not burning an enormous amount of fuel indicates that the adjustments are nearly correct and that the parts are not dirty and badly worn.

Perhaps many a farmer will not agree with me that the gasoline engine is going to prove an important factor in stemming the tide of boys and girls flowing to the city. Let us consider a moment:

While many theorists are advancing various reasons for our young folks leaving the farm, I know, from personal experience and close observation, that the continual, never-ceasing grind of farm work is what the boy or girl is trying to dodge when they go to the city. I say "go," because they do go—they do not "drift," as some of these theorists would have us believe.

Now, with the installation of the gasoline engine, there are a lot of the old, back-breaking jobs

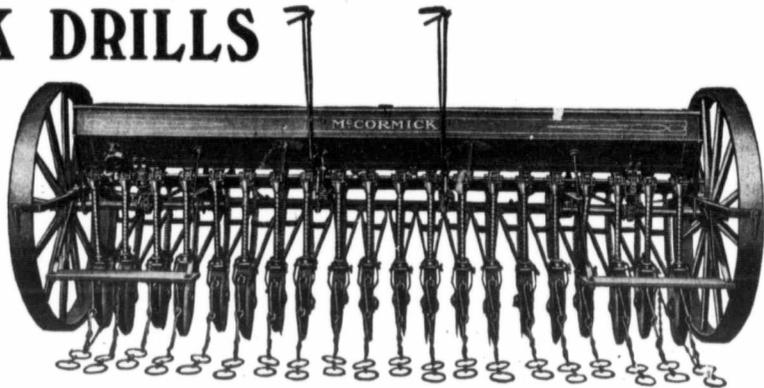
that used to be performed by hand that now will be done entirely by engine power. This is especially true of what we term "chores" on the farm. When the boy comes in from the field, tired and worn out, instead of doing everything by hand—Presto! The gasoline engine is at hand to do it, and in half the time. And it is the same in the house, where the girl works, especially on wash days.

Do the possibilities in this connection not broaden and loom up to wonderful dimensions? The gasoline engine surely has swept away at least one-half the objections of our boys and girls to farm life. Shall we not reasonably hope to overcome the remaining one-half, and thus bind them closer to the soil and the hearthstone of the old farm home?

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WITH crop prices at top figures and likely to stay there, it is a very important matter to handle your seed sowing and crop growing so as to get every dollar of profit. Nowadays every bushel added to your harvest yield counts!



That is why so many careful farmers put the seed in the soil with **McCormick** drills. Why? They know that seed deposited at even depth means grain all up, growing and ripe at the same time, no half-ripe, half-green fields, no shriveled kernels in the grain.

McCormick drills have all the modern conveniences—braced angle steel frames; front pressure springs that take the neckweight off the horses and leave the rear of

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East—Hamilton, Ont.; London, Ont.; Montreal, Que.; Ottawa, Ont.; Quebec, Que.; St. John, N.B.

REMOVING CARBON DEPOSITS

Kerosene, as is pretty well known, will loosen carbon deposits in a gas engine. The usual method is to fill the combustion space with kerosene after the engine has been stopped for the day and while it is still hot. It should then be left to stand over night or until the engine is needed again. The length of time will depend upon the amount of carbon in the engine, but ordinarily it should be left from 12 to 18 hours. In case of engines of more than one cylinder it is best to treat only those cylinders at a time in which the piston is in the inner position.

Denatured alcohol has also been quite widely recommended as a carbon remover. Some authorities recommend one and some another. Engine users can find out which is best by trying both of them.

Undoubtedly the quickest and most satisfactory way of removing carbon is to have it burned out with oxygen, and small outfits are now being put on the market at a fairly reasonable price for this sort of work and require but very little instruction or experience to do the work satisfactorily.

LEAKING GASOLINE TAPS

Few minor troubles are more irritating than a minute gasoline leakage, and when this occurs at the carburetor union many owners are inclined to leave it alone, knowing that it will not take place when the car is at rest. But if there is leakage at the main gasoline tap or at the point where the pipe joins the tank, it must be seen to at once, for even a continued dampness at these points means quite an appreciable loss of gasoline going on day and night. Such leakage is more common than it should be, and many cars are sent out with a union not really gasoline tight. The joint with the tank has first to be examined, and sometimes a fibre washer can be placed between the nut and the tank to stop the leak; but often the nut cannot be tightened up as the whole arrangement proves to be loose. Soldering is then the only remedy, and the tank has to come bodily out. Usually this means that the dash must be removed and the wiring, oil indicator, speedometer, etc., disconnected. After taking precautions that no gasoline vapor remains in the tank, the pipe can be soldered into place and the tap, if leaky, ground in with crocus powder. But by the time the tank is back in position and everything connected, one is not

feeling in a good humor with the makers, for a proper joint or tap in the first place will last a very long time without giving trouble, and there is no reason why the work should not have been done properly when new.

DETACHABLE CYLINDER HEADS

A detachable head to the cylinder casting has both good and bad features, and unless a certain amount of circumspection is employed in handling it and the gasket, which is the name given to the copper asbestos jointing washer, it is very likely that trouble will ensue. Having loosened all the holding-down studs, the first question is as to how the joint is to be broken. It is very ill-advised to attempt to do this with a hammer and cold chisel or screw-driver, for the washer is certain to be damaged. The studs should only be eased off a few threads, then the starting handle is revolved, and it will not require many turns before the pressure in the cylinders will lift up the head, the nuts preventing it from being blown right off. The gasket should then be removed and carefully cleaned and put aside until the decarbonizing has been completed. It is worth while to put wooden pegs, or discarded studs,

in the stud holes, to prevent any carbon getting into them. When all is ready for replacing the head, all the surfaces must be scrupulously cleaned, and then the gasket put in position absolutely in correct register. Then, finally, the studs must be tightened up, in turn, carefully maintaining an equal pressure. Unless more than the average care is shown in these operations, it is almost certain that the joint will leak, water may escape either internally or externally, compression will be bad, and the engine will possibly overheat and misfire in a mysterious fashion.

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The Prospects for Alcohol Fuel

ALCOHOL can be made from any material containing sugar or starch. The sugars are directly convertible into alcohol through fermentation. The starches have to be treated chemically to first turn them into sugar, after which they may be fermented. All vegetable products contain either starch or sugar in variable proportions and hence may be used as sources of alcohol. These include not only the grains and fruits but the woody stalks of plants such as corn stalks, straw and even the trunks of trees.

It does not follow by any means that because alcohol may be made from a certain material that it will prove profitable to do so. In fact, with the present high prices for all farm produce and the high cost of labor there is no substance that seems available, unless it might possibly be certain waste products like corn stalks, straw or certain unmarketable products like potato or fruit culls.

The difficulty with culls or any other waste material is the cost of collecting and transporting to some central point. Another thing, a distilling plant is expensive and it would not pay to erect one unless there was a certainty that the supply of waste material would be practically constant for a long term of years and that the cost of delivering it at the distillery would be constant. Since these are factors that cannot be controlled it does not seem probable that we shall ever be able to turn waste farm products into alcohol.

It is possible, nevertheless, that we may be able to raise special crops for the purpose as has been done for some years in Europe. In Germany more than one hundred million bushels of potatoes

were raised annually to be manufactured into alcohol and in France great quantities of sugar beets were raised for a similar purpose. These two crops were the only ones that it appeared were profitable to handle in that way.

Considerable work has been done in exploring the sources of alcohol by the United States Bureau of Chemistry, from which we have obtained the following figures: The yield of sugar beets per acre runs from five to forty tons with an average of perhaps ten tons. The sugar content is also variable and ranges from ten to twenty-five per cent. An average would be around fourteen per cent. Figuring that it requires 13.65 pounds of sugar to make a gallon of alcohol, and using the values just given, it appears that a ton of sugar beets should yield 22.1 gallons of 180 proof alcohol. At \$6.50 a ton, the present price of beets, the cost of the raw material would be 37.3 cents a gallon. At five dollars, which was the price per ton of beets before the war, the cost was 22.1 cents a gallon.

Sorghum cane has frequently been spoken of as a source of alcohol because it is rich in sugar. The yield of cane may be taken at an average of fifteen tons to the acre. Its sugar content is about 9.1 per cent. It should yield 13.4 gallons of alcohol per ton. If the cost of gathering the material and delivering the same to the mill is \$3.00 a ton, then the cost of the raw material will amount to 22.4 cents a gallon.

Sugar cane will yield about twenty-five tons an acre. It contains approximately 11.1 per cent sugar. If the cane costs \$3.25 a ton delivered, and it cannot be bought for that at present, then



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TRANSPORT OFFICER: "Are the mules all right?"

Big Ben

A Westclox Alarm



6 a.m.—

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BIG BEN at six a. m. for the big man of business—who knows the luxury of ample time—who's up before duty insists. Try Big Ben in the business of living. Set him a little ahead.

To get your salary up, a year of Big Ben get-ups is better than a pull

with the boss. You'll like Big Ben face to face. He's seven inches tall, spunky, neighborly—down-right good.

Big Ben is six times factory tested. At your dealer's, \$2.50 in the United States, \$1.50 in Canada. Sent prepaid on receipt of price if your dealer doesn't stock him.

Westclox folk build more than three million alarms a year—and build them well. All wheels are assembled by a special process—patented, of course. Result—accuracy, less friction, long life.

LaSalle, Ill., U. S. A. Western Clock Co. Makers of Westclox

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HOYT'S NICKEL GENUINE Babbitt is especially designed for heavy duty gas tractors.

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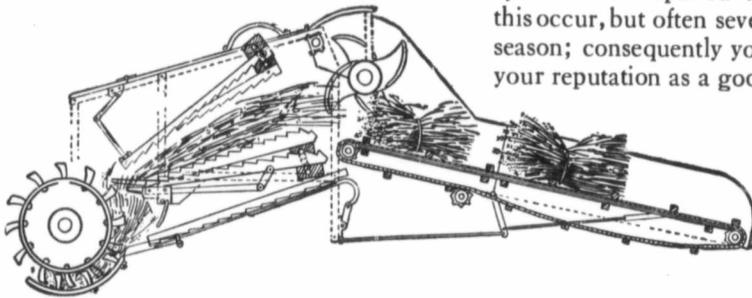
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Lowest Prices consistent with Best Workmanship.

ARE YOU THINKING about the trouble and delay caused by the out-of-date and worthless feeding device on the machine that you threshed with last fall?

The season was wet, the grain in bad condition and likely to get worse, the time for threshing short, and you were anxious to get the job done before winter set in; and, although the feeder was in good repair, as soon as you got started things began to happen; the chains broke, the web slipped, the knives clogged, the pitchers loaded the feeder full; it dumped the whole mass into the separator, plugged the cylinder, broke concaves or teeth, overloaded the sieves, clogged the blower, threw the belt, and stopped the rig. The gang of helpers stood around and smoked while you dug out the cylinder and repaired the broken parts. Not only did this occur, but often several times a day during the whole season; consequently you lost time and money as well as your reputation as a good thresherman.



Do you want to repeat the performance next fall. If not, send to-day for our free catalogue. It will tell you how to avoid all this trouble.

THE GARDEN CITY FEEDER CO. Ltd. - Regina, Sask.

the cost of the alcohol per gallon will amount to nineteen cents, not counting anything for the cost of manufacture. The yield of cane per ton is 16.7 gallons.

Beet molasses, which is a by-product of the sugar factories, is used to some extent as a source of alcohol. A ton of this molasses will yield between seventy-five and eighty gallons of alcohol. When it can be bought for \$15 a ton it makes the raw material for alcohol from nineteen to twenty cents a gallon.

Cane molasses, until it came into general use as a food for cattle, sold for two to three cents a gallon. At that price it was the cheapest material available. Now, however, the price has gone up to from twelve to fifteen cents a gallon. It yields from eighty to ninety gallons of alcohol per ton, and at twelve cents a gallon for the molasses the cost of the alcohol is twenty-two cents a gallon.

All of the various fruits contain considerable quantities of sugar, and if it were possible to gather all of the culls in one place or even in several places at little or no expense much alcohol might be made at very little expense. But there is always the cost of gathering and of transportation that makes the cost prohibitive. There are probably enough apple culls if they were available to

supply a considerable part of our requirements. Apples are rich in sugar containing about 12.2 per cent. A ton of apples would therefore produce 18.3 gallons of alcohol. A ton of grapes would produce 22.6 gallons; a ton of bananas, 20.7 gallons and a ton of watermelons 3.7 gallons.

Potatoes, which are the principal source of alcohol in Germany, contain an average of about 26.8 starch which may be transformed into sugar and thence into alcohol. A ton of potatoes will yield twenty-nine gallons of alcohol. The average yield in this country is about three tons to the acre. Sweet potatoes yield thirty-eight gallons of alcohol to the ton.

The grains at present prices are fully as expensive as vegetables. Take maize, for example: it contains about 65 per cent starch and yields about one hundred gallons of alcohol to the ton. But with corn selling at ninety cents a bushel it makes the price of the raw material thirty cents a gallon. Barley yields an equal amount of alcohol per ton and at sixty-five cents a bushel the cost of the raw material amounts to twenty-eight cents a gallon.

Apparently the only way we can ever build up a great alcohol industry for power purposes is to breed up potatoes or sugar beets with a higher percentage of starch

or sugar and then improve our farming to such an extent that we shall be able to raise much larger crops of these products than we are able to do at the present time.

Alcohol is the hope of the future for internal combustion engines without any question, but it does not seem possible that when the day comes when we shall have to use it generally that it can be sold as cheaply as petroleum products are sold to-day. One cannot get away from the feeling of certainty that the world to-day, and especially the United States, is enjoying cheaper fuel than the world will ever know again. Still for all that, the gas engine is so necessary and is so economical that even if we have to pay from thirty-five to fifty cents a gallon for fuel, and those will be the prices of the future, it will even then be the cheapest form of power.

GASOLINE GETTING CHEAPER

Oil men connected with the Standard Oil Company predict lower prices for gasoline in the near future. They are undoubtedly in an excellent position to know what they are talking about. The reasons given for their belief in lowering of price of gasoline is that the Standard Oil laboratories

have learned how to extract more gasoline from the crude oil and to the fact that the crude oil from the southwestern states shows higher proportions of gasoline than formerly. One reason given for the high price of gasoline is that there was an overproduction of by-products which had to be sold at a loss. The loss has to be made up somewhere and so it was tacked on to the price of gasoline.

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When you want a battery to light a lantern or run an engine, here's the name to remember—**"Columbia."**

Canadian National Carbon Co., Limited
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Fahnestock spring-clip binding posts, no extra charge.

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Oxy-Acetylene Welding in Garages and Repair Shops

By A. F. BRENNAN

WHEN oxygen and acetylene combined in a properly constructed blow-pipe, a flame is produced which has a temperature of about 6,300 degrees Fahrenheit. If properly applied, this flame will melt any of the commercial metals. The process of uniting two pieces of metal by means of this blow-pipe is known as oxy-acetylene or autogenous welding. Since the term "welding" causes the average repairman to think of the blacksmith's hammer and anvil, the term "fusion" would probably be a better one to apply to this class of work.

Several other welding processes are being used for special lines of work. These include the various forms of electric welding, as well as the Thermit process. Probably none are capable of as wide application as oxy-acetylene welding, although each has a broad field. The latter process, however, has the advantages of high flame temperature, portability, flexibility, simplicity and low cost of apparatus and comparative ease of application. Many garages and repair shops are already using it, and others are familiar with it by name.

Fusion welding is in no way similar to forge welding. In uniting two parts by the latter process, the ends are usually "scarfed," brought to the proper temperature in a forge or furnace, lapped and hammered. In using the former process, the ends to be welded are bevelled, butted together and fused by means of the blow-pipe flame, the channel formed by the bevels being filled at the same time with metal melted from a filling rod of the proper composition held by the operator. Obviously, forge welding can be applied to only a few special parts made of certain metals, while innumerable broken parts, made of almost any metal, can be repaired by the oxy-acetylene process.

One of the greatest drawbacks that oxy-acetylene welding has had in the past is that it appeared to be very easy to apply. The writer does not wish to convey the impression that it is an extremely difficult process to master. However, after watching a skilled workman make a weld of this kind, the average person will get the impression that it is mere child's play—any one could do it. Some skill in the manipulation of the flame is necessary, however, in order that the two pieces being welded

and the filling rod may all be fused at the same time. Any conscientious and capable mechanic should be able to master the essentials of the process in a short time, however, and the ability to handle complicated work will come with practice.

It has been claimed that one hundred per cent or even greater efficiency can be obtained in an oxy-acetylene weld, but in general such claims are insupportable. It may be well to add, however, that one hundred per cent efficiency is not necessary in ordinary repair work. In the design of metal parts, a safety factor of at least four is usually used—that is, the part is made four times as strong as necessary under ordinary working conditions. When a break occurs, it is due either to a flaw in the material or to some extraordinary condition of operation. In welding, the flaw will be removed, repaired or filled up, and the resulting part will be stronger than the original part which contained the flaw, and, owing to the use of the factor of safety, will be amply able to carry the load. If the fracture was due to a heavy overload, the cause of this can be determined and operating conditions so changed as to avoid it in the future.

If one portion of a metal part or structure is heated to the melting point while other portions remain comparatively cold, and the whole is then allowed to cool, a stress will be set up in material. In the case of sheet steel this usually results in a warping or deformation of the structure, while in the case of most cast metals, such as cast-iron or aluminum, it causes a crack or break, often-times in some other portion of the casting. If, however, the whole of the casting to be welded is brought to a comparatively high temperature in a furnace, the weld executed, and the whole allowed to cool slowly and uniformly, the stress referred to above will be largely overcome if not entirely eliminated. This is the main reason for preheating certain parts. It is true also that preheating saves considerable acetylene and oxygen, especially on heavy parts. Sometimes total preheating is unnecessary, local or partial heating being sufficient. If the operator will merely bear in mind that when metal is heated it expands and when it is cooled it contracts, the problem should not be a difficult one.

This preheating can be carried



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is the right plow for your light tractor because it is built to deliver the highest efficiency for the least engine effort. Do you realize that in selecting the right plow the life of your engine is at stake? Plowmen who have been able to compare the work of the P & O Little Genius with that of other plows, have unhesitatingly declared themselves in favor of the Little Genius. Please bear in mind that the Little Genius was built, every part of it, as a tractor plow. The bottoms are the best that material and human skill can produce, and when it's all said, the bottom is the business end of the plow. Quick, positive response to the action of the power lift device makes the Little Genius easy to operate. Simplicity, strength without surplus weight, perfect wheel bearings, correct hitch and splendid bottoms—give the P & O Little Genius that lightness of draft which makes it the right plow for use behind your light tractor.

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You can get them from any thresher company doing business in Canada. They cost a little more than other fabrics that are a big risk from the day they are used in any power transmission, but we guarantee our goods against all disappointments from slippage or breaking. They are the "guards" that will never betray their trust under any pressure—at threshing or at any time.

Gutta Percha and Rubber Limited, Not in Any Trust or Combine
Winnipeg Fort William Regina Saskatoon Calgary Edmonton

out in various ways. Illuminating gas used in conjunction with compressed air in a simple and easily constructed torch is a very convenient method when available. An oil burner using crude oil or kerosene probably offers a cheaper method however. Such burners are operated with compressed air, supplied from an air line or from a hand pump built into the fuel tank. For large castings, a charcoal fire is very good, especially when used in conjunction with one of the above mentioned torches. Small parts may be heated satisfactorily in a blacksmith's forge, if care is exercised that the heating be uniform.

The preheating operation should be carried out in a temporary furnace of firebrick covered with sheet iron or sheet asbestos, as this saves fuel, helps to produce the desired uniformity and protects the work from draughts. The part can be allowed to cool in the furnace or in a box of sand, lime, charcoal, or asbestos fiber.

The degree of heat will vary with different parts. Heavy cast iron or steel casings, where there is little or no danger of warping, may be heated to a good cherry red. Smaller parts which are likely to warp, such as automobile cylinders, should be brought to a very dull red. Aluminum crank

or gear cases should be heated until they will just melt half and half wire solder if it is rubbed on the surface.

The use of the proper filling rod and flux in all welding operations is essential. The manufacture of such material should be left in the hands of specialists who are equipped to carry out the research work necessary in their development and production. This is merely another case of where the best is always the cheapest. The cost of filling rod represents, at most, only a small percentage of the total cost of the welding operation and a few cents a pound more or less becomes an almost infinitesimal amount when the value of the parts being repaired or produced is considered.

If the metal being welded is more than one-eighth of an inch in thickness it should be bevelled along the line to be welded. If cracks are to be welded, this bevelling can be done conveniently with a cape or diamond point chisel. The metal should be free from dirt, rust or sand in the vicinity of the weld. Most repair men do not realize the importance of proper preparation and alignment of many parts being welded. A poor "set up" will spoil the best weld. It is, of course, impossible to give ex-

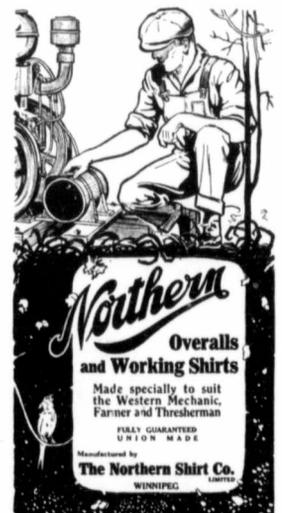
PLICIT directions for setting up all kinds of parts. If the workman is a good mechanic and will use common sense in attacking a job, he will need very little advice on this question. If parts are likely to warp when heat is applied they should be properly clamped. Fragile parts should be properly supported during welding, especially if the work is being done by a novice.

To be continued

GREASING LEAF SPRINGS

There is all the difference in the world between springs which have been neglected and allowed almost to rust up, and the same springs which have received proper attention in the matter of greasing. Once a year is often enough to do this work, with an average mileage and with driving under not too bad weather conditions. The work should then be performed with the weight of the car raised from the springs by means of a jack, and plenty of black lead or plumbago should be mixed with the grease. In one direction, however, a motorist can obtain very reasonable amelioration by attention to the lubrication of the shackle bolts and the tips of the leaf springs. The latter point is particularly important, for a glance at the composition of a leaf spring will make

it evident that it is the ends of the spring which make the greatest movement, and a few drops of oil run round the ends of the leaves before starting for a drive will make quite an appreciable difference. It is obvious that when so treated there will be a certain accumulation of dust, which is attracted by the oil, so the cleaning should be thorough.

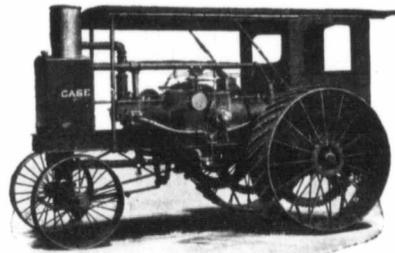
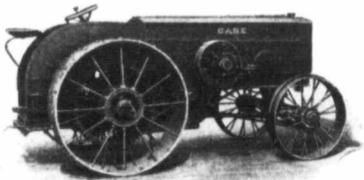


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Choose a CASE and Join the Host of Satisfied Users



THE CASE 12-25

THIS tractor was designed with a view to meet every condition on the farm, and every use and operation that a tractor in its class should be fitted for. Its appearance is indicative of its power and durability. It is eminently suited for plowing, harvesting, and other field work; hauling and road work, threshing and miscellaneous belt operations; in fact, work of every description within its capacity. It pulls a four-bottom plow, two or three binders in high speed, runs 26-inch separator with attachments, etc.

The material is the best obtainable for every part, and is distributed that every ounce is effective. The strength of every part is many times sufficient to withstand the strain imposed upon it in ordinary service.

The use of roller bearings has reduced the rolling resistance of this tractor to such an extent that one man can push it on the floor.

Most tractors do not possess these extraordinary qualities, but they add to the efficiency, economy, and durability of the machine, much more than the extra cost of the construction. The first few years the difference is revealed only in operating efficiency and economy, but after many year's service the tractor of lesser quality is useless, while this tractor continues to serve its purpose practically as well as the first few years.

J. I. CASE T. M. COMPANY, Inc.
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THE CASE 20-40

THE 20-40 tractor has been sold for many years in large numbers where this size tractor is desirable. In the Northwest hundreds of these machines have gone out every year on the large farms to plow and thresh.

This tractor is recommended for plowing and most field work. It is equally well suited for threshing and all belt work. It possesses every quality to make it a general purpose tractor. Everything that stands for simplicity, sturdiness, durability, economy, and practicability is embodied in this machine.

It is built for continuous service, and every year demonstrates its dependability and durability better and better, for the first of these tractors built is now in daily service. Years of hard usage have not affected the serviceability of these machines, and today they are apparently in as good a shape as the first year.

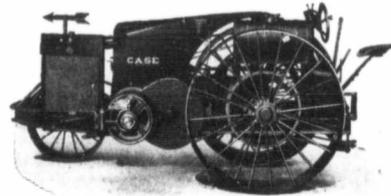
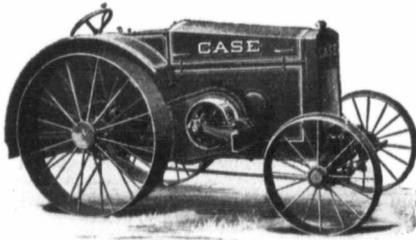
Case tractors are not experiments. The first tractor was made in 1892. They are made not merely to sell at an attractive price—the price is determined after machines have been developed and made. Only the best material, design, and construction are employed, regardless of cost. An extensive experimental department is maintained to perfect every detail, and every machine is thoroughly inspected and rigorously tested before it leaves the factory.

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CASE

Whatever Size Your Farm, CASE Has a Tractor to Fit Your Needs



THE CASE 9-18

THIS remarkable tractor recently added to the Case line possesses greater quality than any tractor on the market in its class. This tractor is designed and built as well as Case ingenuity and unsurpassed facilities can produce, regardless of cost. Nothing is slighted or sacrificed in view of making the price attractive.

It has abundance of power to pull two 14 inch plows, and runs a small separator. It has two speeds of $2\frac{1}{2}$ and $3\frac{1}{2}$ miles per hour. For discing, seeding, harvesting, hauling, ensilage cutting, etc., it is unexcelled. It is capable of developing 12-horsepower on the drawbar—33 $\frac{1}{3}$ percent over the drawbar rating—which means that it has plenty of reserve power for hills or unusual conditions.

The gears are all enclosed and run in oil. The gears are spur gears—no objectionable bevel gears. All working parts are completely housed, to protect them from dust and dirt. Roller bearings are used throughout, thereby increasing the efficiency to a maximum.

The weight of this tractor is little more than that of a team of horses which, together with its extreme flexibility and ease of operation, makes it an ideal power equipment on a small farm for all operations, both traction and belt requirements. This 9-18 proved a sensation at the 1916 tractor demonstrations. It was welcomed by farmers everywhere.

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THE CASE 10-20

THE 10-20 kerosene tractor, since it was placed on the market two years ago, has demonstrated to every owner its wonderful economy and reliability. It possesses the qualities of a thoroughbred, and it is intended practically for every use and operation on a farm.

It is rated at 10-horsepower on the drawbar, but it is capable of delivering 14.7-horsepower—47 percent in excess of its rated power. With this abundance of reserve power it does its work easily and has plenty of power for hard pulls.

It has two drivers: a bull wheel 22 inches wide and a 10-inch auxiliary clutched-in driver. This feature makes it especially fit for operating over soft places. It does not pack the soil. The weight is distributed so as to obtain the maximum traction efficiency and perfect balance of the machine.

It is splendidly adapted to belt work. The belt pulley is on the crank shaft, operated through a clutch, and no gears to drive same. It furnishes a most satisfactory power for small separators, ensilage cutters, feed grinders, hay balers, lime pulverizers, wood saws, etc. No other tractor of its size has such a wealth of practical features.

Our 1917 Catalog (75th Anniversary Number) is just out. Send for your copy of this 102 page beautifully illustrated book. It explains the details of all Case Products. Sent postpaid on request.

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CASE



SUCCULENTS FOR THE SUPPLEMENTARY FEEDING OF DAIRY CATTLE ON PASTURE
(Dominion Experimental Farms Note)

In view of the fact that this is the time to plan the farm work for 1917, this subject deserves attention. Many of our best dairymen in Eastern as well as in Western Canada have reached the conclusion that, especially on valuable and expensive land, it is unprofitable to follow the old practice of depending on pastures alone for the summer feeding of the dairy cows. The hot dry summers and consequent burnt-up grass, the hordes of flies, and the realization of the fact that much more feed can be grown from the same land if cultivated, have all been factors forcing the above conclusion. The question then is how to overcome these obstacles to the profitability of our dairy industry.

During the past two summers, the experimental dairy herd at the Central Experimental Farm, Ottawa, has been working to solve just such a problem. This herd is stabled during the entire summer, making it possible to carry on a fairly conclusive test of the comparative value of corn, ensilage, green clover and green peas and oats, for the purpose above mentioned. Ensilage 30 pounds and hay 6 pounds form the daily roughage ration for this herd at all times. For a period in 1915, ensilage and hay were replaced by 60 pounds of green peas and oats, and for one period in 1916 all the hay and part of the ensilage were replaced by 20 pounds of green alfalfa, while during a second period a repetition of the 1915 experiment was carried on. The results are given in the following table:

Year	1915		1916A		1916B	
	Ensilage and Hay	Green Feed (Peas and Oats)	Ensilage and Hay	Ensilage and Gr. Alfalfa	Ensilage and Hay	Green Feed (Peas and Oats)
Milk produced per cow per day . . . lb.	31.5	30.7	26.7	26.2	25.8	21.
Cost to produce 100 lb. milk c	67.8	68.2	63.3	67.4	69.9	103.8
Cost to produce 1 lb. of fat c	17.	17.3	16.2	17.1	17.8	25.3

The above figures serve to show that in almost every case the cost of production of milk and butterfat was considerably

higher when ensilage formed the sole ration. This is one point made in favor of ensilage. However, we have not taken into consideration the cost of putting these feeds before the cows. In the case of ensilage, the silo is filled the fall before at a comparatively low cost per ton and the matter of throwing out the day's feed and giving it to the cows is a small item. On the other hand, the preparation of a suitable rotation of green feed crops to ensure having such at all times and the cutting and hauling of the same to the barn or feeding paddock, take much valuable time at busy seasons of the year, making another point in favor of the ensilage. Still another point in its favor is that it is always uniform in quality whereas the quality of a green feed crop is uncertain, particularly in a season such as we have just experienced.

All the evidence then would seem to prove that the most profitable form of succulence to use to supplement the pastures for dairy cattle is corn ensilage of the previous year's growth. Now is the time, therefore, to begin to prepare by all the means at your disposal for a large crop of corn next year and either fill your present silo to its utmost capacity or build another small one especially for summer feeding.

FIELD PEAS AS A FARM CROP
(Dominion Experimental Farms Note)

Yields Obtained—Field peas have been grown on the Experimental Farm at Scott during the past five years. The average yield per acre when grown on summer fallow has amounted to 29.59 bushels. Wheat has been sown on the pea ground each year and the average yield per acre

(29.53 bushels) is almost equal to that obtained when wheat has been sown on summer fallow, whereas the average from the sec-

National Service



The Clean SKIMMER

in these times is no-where more effectively rendered than on the Canadian dairy farm. There may be "registration" but there will be no cow conscripts. Every creature has volunteered to give her last ounce of butter-fat if common-sense will handle it. Common-sense and the last achievement in human skill in dairy machinery will be found in the

"MAGNET" Cream Separator

The "MAGNET" is made in Canada by Canadian engineers who have first of all gained their experience on Canadian dairy farms in all essentials to a separating machine that fits in perfectly and economically to every requirement. The result is the "MAGNET"—a separator that more than fulfils the last promise made in its name.

We will easily prove what we say by showing you the "MAGNET" in your own dairy. The design and construction of the machine is what has compelled us to double the output of our factory this year.

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- Beefsteak Tomato (enormous size) Pkg. 10c, oz. 60c, 4 oz. \$2.00
- Sparkler Radish (round red white tip) Pkg. 5c, oz. 15c, 4 oz. 40c
- First and Best Cabbage Pkg. 10c, oz. 30c, 4 ozs. 90c
- Glory Enkhuizen Cabbage Pkg. 5c, oz. 30c, 4 ozs. \$1.00
- Prolific Golden Wax Butter Beans 4 ozs. 15c, lb. 50c
- XXX Solid Head Lettuce Pkg. 10c, oz. 25c, 4 ozs. 75c
- Giant Prizetaker Onion (blackseed) Pkg. 10c, oz. 25c, lb. \$2.10
- Extra Early Red Onion Pkg. 5c, oz. 25c, 4 ozs. 65c, lb. \$2.10
- Early Eclipse Beet (round blood) Pkg. 5c, oz. 15c, 4 oz. 40c
- Cardinal Globe Beet Pkg. 10c, oz. 20c, 4 ozs. 60c, lb. \$1.50
- Spinach Beet (for greens) Pkg. 10c, oz. 30c, 4 ozs. 90c
- Chantenay Carrot (for table use) Pkg. 5c, oz. 25c, 4 ozs. 65c
- Snowball Cauliflower (gilt edge) Pkg. 15c, 25c, 85c, oz. \$2.75
- Paris Golden Celery (very best) Pkg. 15c, 1/2 oz. 60c, oz. \$2.00
- Early Premium Gem Peas (dwarf) 4 ozs. 10c, lb. 35c, 5 lbs. \$1.50
- Select Yellow Onion Sets lb. 35c, 5 lbs. \$1.70
- London Long Green Cucumber Pkg. 5c, oz. 15c, 4 ozs. 40c
- Extra Early White Cory Corn (for table) Pkg. 10c, lb. 35c, 5 lbs. \$1.50
- Early Branching Asters, White, Pink, Crimson or Mixed Pkg. 10c
- Choice Spencer Sweet Peas (mixed colors) Pkg. 10c, oz. 30c, 4 ozs. 90c

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ond crop of wheat after summer fallow has only amounted to 22.73 bushels. In other words an increased yield has been secured of 6.80 bushels per acre by sowing wheat on pea land rather than on land that had previously grown a crop of wheat. Judging from the yield of wheat secured after peas, an additional year can be added to a rotation of crops by using peas in the rotation.

How Grown—Peas are usually sown about the same time as wheat with an ordinary grain drill on summer fallow land, at a rate of $2\frac{3}{4}$ bushels per acre. The variety used is a selection of the Arthur, made by the Dominion cerealist. It is a medium-sized, smooth, yellowish-white pea.

One of the difficulties put forward as a reason why peas are not more commonly grown is that of the difficulty of securing labor for harvesting. One farmer has overcome this difficulty in some degree by harvesting with an ordinary grain binder, when the peas are slightly damp. After he has removed as many of the peas as he can with the binder, he turns in his hogs to harvest the remainder of the crop.

In the Scott district wet weather prevailed during the past harvest and on the station the peas were left until late in the season, and then were pulled with an ordinary horse rake, two men following the rake and bunching as fast as the rake could pull them. The peas were left in bunches for a couple of days until dry and then were threshed with an ordinary threshing mill, the concave teeth having been removed. In previous years the mower was used to cut the peas and the peas lifted and bunched out of the way of the mower. This is a more expensive method of handling the crop.

The reason for some light crops that have been harvested is the absence of nitrifying bacteria. Old land that has been manured, or grown potatoes or roots, usually contains a higher percentage of suitable bacteria, than does new land. An experiment conducted this year, on new land in inoculating peas with a culture of the bacteria has resulted in an increased yield of 7.24 bushels per acre, over a part of the same field that had received no inoculation.

Value of Crop—Fed to milch cows, pea meal has been found to increase the milk flow. Fed to hogs and sheep they are excellent for fattening purposes.

Peas mixed with oats and cut green for hay make an excellent forage crop. The rate of yield on the station during the past two years has amounted to 3 tons 1800 pounds per acre. While the addition of peas has not increased the yield, it has added to the palati-

bility of the fodder. The usual rate of seeding has been one bushel of peas and two of oats per acre.

The importance of sowing peas on clean land cannot be too strongly emphasized, as peas lodge late in the season and this usually takes place in sufficient time for any weeds that are present to develop into strong and healthy specimens, producing a considerable quantity of seeds.

ILLUSTRATION STATIONS IN ALBERTA AND SASKATCHEWAN

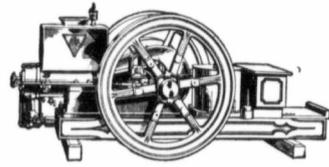
This being the second season during which the Dominion Government Illustration Stations have been in operation in the provinces of Alberta and Saskatchewan, results of the work carried on are now noticeable, particularly in the production of good seed.

The department undertakes, for the first year, to supply farmers operating the stations, with the best seed procurable.

The varieties of seed chosen are such as have been selected and tested on the Dominion Experimental Farms and proven most suitable to the climatic and soil conditions of each particular station. In 1915, choice seed wheat was sown on the illustration stations, each having $17\frac{1}{2}$ acres which gave an average of $39\frac{1}{2}$ bushels per acre. Each farmer also had 5 acres of Banner oats which gave an average yield of 73 bushels per acre.

The farmers operating the stations were expected to reserve a certain quantity for their own seeding, the balance of the good seed being sold to farmers of the neighborhood, at reasonable prices. In most districts farmers took advantage of this opportunity to secure well-graded seed. This year the advantage of using good, well-graded seed has been shown in several instances. The good seed, being all of one variety, and, having had a strong, vigorous growth, ripened earlier and more uniformly than the average crop, and gave a larger yield per acre than the poorly graded seed. Although the ripening season was generally late, in several instances the Marquis wheat grown on the illustration fields, and the crops grown from seed secured from the illustration stations were either ripe or far enough advanced to escape much injury from the early frosts. So noticeable has this been, that farmers, when passing, made inquiries as to the variety of the grain growing and in many instances gave orders for the seed.

There is no doubt that the majority of farmers do not pay sufficient attention to the selection of seeds, to the purchase of new and improved varieties and to the



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WITH this simple, strongly built engine you can saw wood, run a pump, cream separator, churn, washing machine, feed cutter or feed grinder, and save time and labor around your farm.

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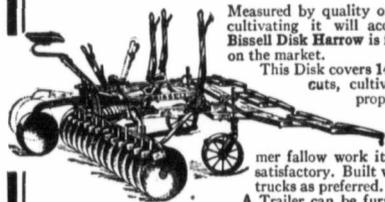
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This Disk covers 14 feet at one sweep—cuts, cultivates, pulverizes and properly turns the surface of the soil. It will penetrate as deep as required. For summer fallow work it is speedy and very satisfactory. Built with long poles or fore trucks as preferred.

A Trailer can be furnished for cutting out the centre strip when desired. The equipment is for six horses, and the draft is light for the first-class work it does. Gangs are in four sections and made flexible to conform to uneven ground.

DISK PLATES are the tried and proven special BISSELL shape. They reach well under, giving the soil a good turning over.

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**Eclectric
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Relieves all Pain
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cleaning and grading of their seed grain. The loss to themselves and to the country from this cause alone is very large. There are many farmers throughout the prairie provinces whose whole aim and ambition is to get in a large acreage of crops every year, losing sight of the importance of increasing the yield per acre through better cultivation and the selection of suitable varieties.

Another point to which special attention may be drawn is the cleaning and grading of seed grains. Results of experiments made with selected large, heavy seed, medium size, and with small seed, show that with oats the large, heavy seed gives a yield of 15 bushels per acre more than the small seed. There is also a similar difference in the yield per acre of wheat, barley and peas, in favor of selection and thorough grading of the seed. There is a noticeable difference as well in the growth of straw, which appears to be stronger and of better quality when the large, heavy seed is sown.

Selection of varieties of seed suitable to the soil and climate, with proper grading and cleaning, would give some very pleasing results.

THE RUST EPIDEMIC RESPONSIBLE FOR SCARCITY OF SEED GRAIN

In order to assure a heavy grain harvest for Canada in 1917, the Dominion Experimental Farms recommend that farmers exercise especial care in the selection of the right kind of seed grain for sowing the spring wheat crop.

It is expected that the grain rust epidemic of the past season in the West will be causing grave concern to many farmers as to where to turn to obtain superior seed.

Grain from a crop damaged by rust is frequently of poor quality and not fit for use as seed, unless special precautions are taken. This is not because there is much danger that this seed will again produce a rusted crop, but because the grain is shrunken and immature; such seed is known to yield poor and feeble crops.

The safest seed to use is the best grade procurable from rust-free crops, providing, of course, that the germination is normal. The use of this class of seed may not, however, be universally possible, since frost and hail caused considerable damage, where rust was not prevalent in the West, and very little seed remains over from the harvest of 1915.

Thus, perforce, Western farmers at least will have to sow much of the grain damaged by rust. Where such grain must be used, it should be carefully and thor-

oughly fanned and screened, until only the heaviest kernels remain. The use of seed prepared in this way is known to ensure a more promising yield than the indiscriminate use of unscreened grain. Experiments have shown that, where heavy seeds are used, gains to the extent of five bushels per acre may result.

Farmers should take these precautions to enable them to make up for the considerable losses of the past season. Early sowing, the use of early maturing varieties, and sowing rather more per acre, there are well-known precautions to be taken against damage from rust.

THE DRESSING PERCENTAGE

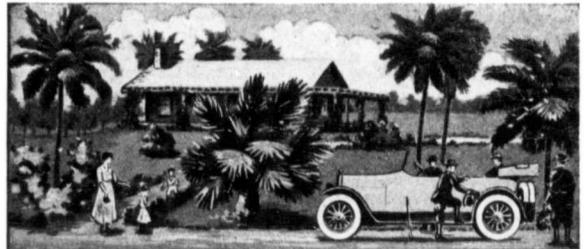
There is considerable difference in the dressing percentage of different classes of live stock. Some of this difference comes from the fact that a different basis is used in figuring for the different classes. In the case of the hog the hide is left on and also the head, while with sheep and cattle the hide and head and feet are removed. They also have proportionately more intestines than the hog and large paunches and are not as thick fleshed. The dressing percentage of hogs varies from 65 to 85 per cent with an average of 75 per cent. Cattle vary from 48 to 70 per cent with an average of 53 per cent. Sheep dress out 44 to 56 per cent with an average of 48 per cent.

The variation in the dressing percentage for the same kinds of live stock is due to the animal being fat or lean and to the amount of fill or the amount of feed and water in the intestines when butchered. In cattle and sheep the size of the head and legs and the thickness of hide are also factors.

MARKETING POTATOES (Experimental Farms Note)

From the consumers' side, the question of marketing potatoes is of the greatest importance, especially so in years when the prices for this commodity are advancing daily. The officers of the Experimental Farms recently had an opportunity of inspecting quantities of potatoes in the consumers' own cellars. The potatoes had been purchased in the ordinary way from small dealers. The condition of the potatoes was most unsatisfactory. In three cases the amount of rot came up to 75 per cent of the total quantity in storage. This rot was the common late blight rot, and was certainly present when the potatoes were dug, and before shipping.

The consumer is helpless in such cases, and rarely is there a way open to him for compensation. Nor is the small dealer to



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Los Indios is a short distance from New Orleans and Florida. The temperature is rarely above 90 or below 50. Soil fertile. Fruit and vegetables grow prolifically—grapefruit planters have netted up to \$800 per acre. Growers of avocados, peppers, egg plant, tomatoes, etc., have netted \$285 to \$335 per acre. Profitable markets easily reached by means of ocean liners from deep water harbor of Los Indios.

A little fruit or vegetable farm at Los Indios may some day prove the wisest "adversity insurance" you could ever have taken out. Our Free Book on 10, 20 and 40 acre fruit and vegetable farms will prove a revelation to you. Write for it to-day. Easy terms assured—titles guaranteed.

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Made in 8 sizes, 1 and 3 sections. We want every farmer to have our free catalog before buying a roller or packer. It will prove you can save your money and have the best machine. Contains full description and price direct to you, letters from many farmers proving its advantages over other makes, and much other valuable information. Send for it today. The Western Steel & Iron Co., Ltd., Implement Manufacturers, Winnipeg, Man.



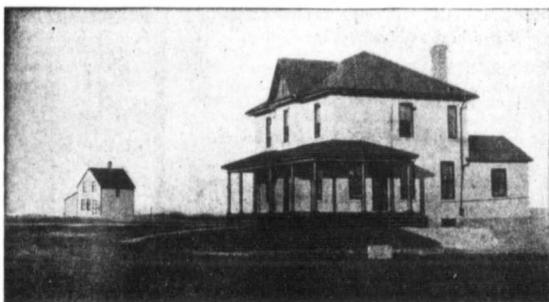
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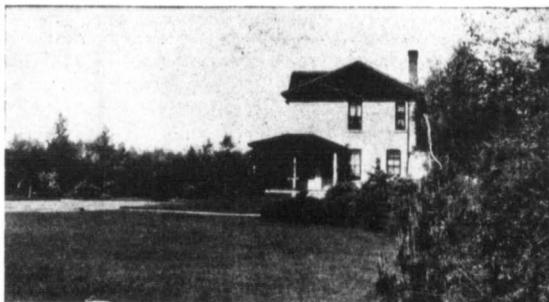
GOVERNMENT OF CANADA

Any Farmer living in Manitoba, Saskatchewan or Alberta can procure, **Free of Charge**, enough seedlings and cuttings of hardy forest trees to establish a good shelter-belt around his farm buildings and garden.

Over thirty thousand successful plantations have been established as a result of this distribution. Already over 31,000,000 trees have been given away free. About 5,000,000 will go out this spring. Increase the value of your farm and make it more homelike by planting trees.



Superintendent's Residence on Nursery Station at Indian Head, 1905



Same place in 1914

All Applications for trees to plant in 1918 must be received **before** March 1st, 1917.

A limited number of **Evergreens** is available for delivery this spring under special conditions. Evergreens grown in the Nursery have thriven well in all parts of the Canadian West in the past ten years, proving their suitability for prairie planting.

All applications and enquiries should be addressed to

NORMAN M. ROSS, Nursery Station
INDIAN HEAD, SASKATCHEWAN

Write for Bulletins on Tree Planting

blame. The blame rests entirely with the shipper and the grower. In order that such losses may be avoided and the consumer be in a position to secure for his good money, good potatoes that will keep over winter, it is necessary for the growers, on their part, to exercise more care in digging, sorting and handling potatoes. Late blight is a preventable disease; every farmer should know this fact, since the Experimental Farms system has made every effort to demonstrate on many farms in the country the effect of spraying, with the results showing the production of sound crops, and an increase in yield amounting to some 90 to 100 bushels per acre.

The sale of inferior potatoes is dishonest, if not illegal at the present moment. Farmers know from their own experience that storage rots cause great losses in their own cellars. It seems, however, the general practice to dispose of an infected crop immediately and shift the losses from rot from the farmer to the consumer. The latter, however, has to pay the price of good potatoes.

In some instances, no doubt, the consumer is to blame by storing potatoes (or other winter vegetables) in too warm cellars. Potatoes and similar vegetables

must be stored in a cool place. They cannot stand frost, which causes a sweetish taste in potatoes; but the temperature should never rise above 40 degrees F. Where such conditions are non-existent it is better not to lay in a winter's supply, as losses are sure to result.

Farmers are cautioned that the attitude of consumers will eventually result in demanding grading of potatoes just like apples;

and the farmer who does not control diseases in the field, will have all rotten or diseased potatoes thrown on his hands. Diseased potatoes, when boiled, still make good stock food, it should be remembered. A letter or postal card addressed to the publications branch of the Department of Agriculture will bring by return mail all the required information relating to the growing of crops of potatoes free from disease.

IMITATING BOSSIE AND FOOLING THE CALF

Requests are frequently received for information regarding milk substitutes for calves, and how to use them. The following calf meal mixture is one which is recommended by the Massachusetts Agricultural College: 22 lbs. ground rolled oats, 10 lbs. linseed meal, 5 lbs. flour middlings, 11 lbs. fine corn meal, 1 1/2 lbs. fine blood meal, 1/2 lb. salt. Total cost 3c lb.

Many of the proprietary calf meals are very good, but are a little more expensive than this home-made meal. The manufactured meals are usually accompanied by directions for feeding.

These meals are usually prepared by adding one-half pound of meal to two quarts of boiling water for each feed. At each feeding moisten the meal first with a little cold water to prevent it forming lumps, and then pour on the boiling water and stir well. When this is cooled down to the temperature of milk fresh drawn from the cow, it is ready to feed.

It is better to let the calf have whole milk for two or three days or a week, then gradually introduce a little of the milk substitute until within about ten days or two weeks, when you can cut out the milk entirely.



OFFICER: "How can you tell that the prisoner had been celebrating Christmas too freely?"
 CORPORAL: "Cause 'e was standin' outside 'is tent at twelve o'clock, argifyin' with the sergeant, sir."
 OFFICER: "That's no proof. Scotsmen always argue."
 CORPORAL: "But there weren't no sergeant there, sir!"

**SOME ELEMENTS TO
LEARN IN FARM ELECTRIC
LIGHTING**

Electric lighting for farm buildings is coming into use quite generally. The individual plant, in cases where connection cannot be made with a cross country power line, is proving very popular. Such a unit consists of a gas engine, dynamo, switch-board and a storage battery. The engine is usually specially designed with heavy fly-wheels for even running and the storage battery is for the purpose of storing energy, so that during the day time, for example, if the engine is run for other purposes, the battery may be charged.

A farmer, says Power Farming, does not have to be an electrician to manage such an outfit, but there are certain fundamental principles that should be learned. An electrical circuit is analogous to a water system. The dynamo can be likened to a pump and the storage battery to the tank. With water the measurement of pressure is pounds per square inch or feet head; with electricity this unit pressure is called the "volt." Now the pipe leading from a tank has a certain capacity in gallons per minute in delivery of water. This same thing applied electrically, or, in other words, the amount of electricity flowing is measured by the unit called "ampere." Now if we multiply volts by amperes the result is "watts," and it takes 746 watts to make a horse-power. It is best to figure 500 watts per horse-power to allow for friction and overloading. Electrical apparatus is rated in kilowatts, a kilowatt being 1,000 watts. The ordinary lamp consumes approximately 25 watts, and suppose one wishes to use 20 lights, the power required is figured thus:

Twenty-five watts times 20 lights equal 500 watts total, which, divided by 500, is one horse-power. Suppose now it is desired to have battery capacity enough to run these lights 10 hours; 500 watts divided by 30 volts equals 10.6 amperes, which multiplied by 10 hours equals 106 ampere hours, the battery capacity required. The proper sized batteries to run with the engine and dynamo required can best be found in bulletins issued by storage battery manufacturers. The system of using electricity for farm lighting is thus seen to be very simple.

**GAS ENGINE AS POWER
FOR PUMPING**

As the pumping power in connection with furnishing the water supply, the gasoline engine is not

to be compared with hand or even windmill power.

Hand power is too slow, laborious, and with large herds and flocks it is impracticable. There are periods when the windmill is an economical power for pumping water, but it is not as dependable as the gasoline engine, since there are many days when there is not sufficient wind to run the windmill; while the gasoline engine operates just as well on a calm day as a windy one.

Another most important point to be considered in this connection is the fact that, on windy days, the farmer makes good use of the windmill while he may, fitting up several large tanks and storing them full of water, to carry his stock through the period when there is no wind to turn the windmill. By this method, the stored water becomes stagnant, developing what is known as an "algean" growth inside the tank walls, thus rendering the water unfit for the stock to drink.

By installing a gasoline engine as the pumping power, all these drawbacks are avoided, as it furnishes the water fresh and cool, directly from the depth of the well in hot weather; while during the winter months, when so much damage is done the stock by giving them ice-cold water, the engine brings it from the well at about the proper temperature for best results—neither too warm nor too cool, but just right. This item alone, considered in connection with the handling of preg-

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Proceeds of this stock are for war purposes only.

A commission of one-quarter of one per cent will be allowed to recognized bond and stock brokers on allotments made in respect of applications for this stock which bear their stamp.

For application forms apply to the Deputy Minister of Finance, Ottawa.

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OCTOBER 7th, 1916.

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Manitoba Poultry Show

Brandon, March 5 to 9, 1917

The Premium List contains Classes for All Breeds of Horses, Beef Cattle, Sheep, Swine and Poultry.

\$12,000 In Premiums \$12,000. Live Stock Judging Competitions

Domestic Science and Home Economics will be one of the popular features of the Fair. An Educational Treat for the Ladies.

Boys' Fat Calf Competition. \$1,000 in Prizes offered for this event alone.

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Patent Ball Ranger Speed Changer Supplied on all Genuine Pickering Governors.

Will increase speed 50% or more.

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TRADE MARK

nant animals, is of great value, as these are in a condition so delicate that the effect of chilling their

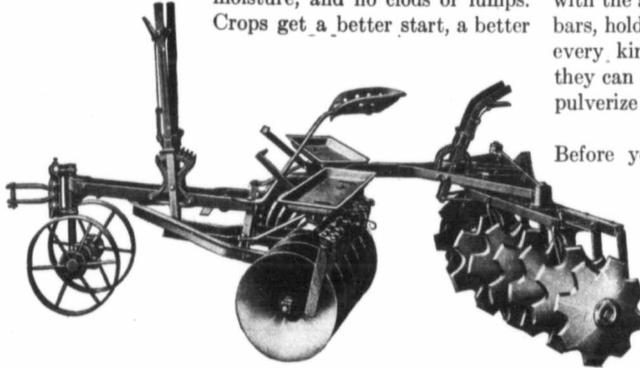
bodies with ice-cold water is much greater than with other stock.

Deering Tillage Tools Put Money in Your Pocket

THE disk harrow produces profits that no other tool can bring you. Properly used it is a valuable tool. It conserves moisture; its use often carries a crop through a drought that otherwise would be fatal. It helps in the preparation of an ideal seed bed, mellow and moist throughout, with no large air spaces to waste moisture, and no clods or lumps. Crops get a better start, a better

growth, and produce a better, surer harvest, when the disk harrow is properly used.

For such work as this there is no better harrow made than the **Deering** disk. It is a bumper type harrow with a rigid, one-piece steel main frame. The frame, with the adjustable snubbing blocks, and bowed set lever bars, holds the gangs level at every cutting angle and in every kind of soil. The disks cannot work loose, and they can be so set as to cut deep down into the soil or to pulverize the top two or three inches.



Before you buy a disk harrow, peg, or spring-tooth harrow, drill or cultivator this spring, see the **Deering line** that some local agent handles, or write us at any branch house address below for catalogues showing the complete line. It will be money in your pocket to know the **Deering** line of tillage tools.

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West—Brandon, Man.; Calgary, Alta.; Edmonton, Alta.; Estevan, Sask.; Lethbridge, Alta.; North Battleford, Sask.; Regina, Sask.; Saskatoon, Sask.; Winnipeg, Man.; Yorkton, Sask.
East—Hamilton, Ont.; London, Ont.; Montreal, Que.; Ottawa, Ont.; Quebec, Que.; St. John, N.B.

THE MOTOR IN THE TRACTOR

IN the general principle that it is not amiss to know all we can about the machinery we handle, there is some interesting information to be gained from the report of a recent meeting of the Detroit section of the Society of Automobile Engineers. At that meeting H. L. Horning, general manager of the Waukesha Motor Co., read a paper, and this paper and the discussions upon it brought out some interesting comparisons of motors for trucks and tractors and upon the subject of kerosene burning.

There are several important differences in the service of truck and tractor engines as pointed out by Mr. Horning. In the first place the truck engine has to meet large variations in speed and load and is stopped and started many times a day, while the tractor engine is almost always working at the governed speed, the load variation being from about 50 per cent to full load and overload. This very regularity of the load, however, operates toward longer life on the part of the tractor motor. While the governor on the tractor motor gives a constant engine speed; on the truck governor

a maximum, or combined maximum and constant speed governor is desirable to avoid racing the engine.

With the tractor, provision should be made to eliminate dust. Otherwise a couple of days' operation under certain conditions will accomplish the ruin of the engine.

Another distinction made is that the tractor engines have a flywheel with twice the capacity for storing up energy that is considered necessary with the truck engine. This is for the purpose of satisfactorily taking care of the sudden peak or high loads which occur in plowing, etc. In other words, "any old motor" will not give satisfactory service in tractor work. It should be designed for the conditions.

Several formulas are given in the paper, which, for the most part, are based on successful American and English practice. The tendency is toward smaller, higher speed engines for truck service, a tendency that many engineers anticipate will be followed up in tractor practice.

Since much the same condition may exist in tractor motors, although at possibly different speed ranges, it is well to note Mr. Horning's mention of the fact that, on a truck motor of certain

dimensions, the maximum horsepower is secured at 1,500 r.p.m., but the maximum fuel economy comes at 1,044 r.p.m. It would be ideal if all such points fell at the same speed, but this is impossible of attainment, and therefore the designer must work to make each condition proximate. Considering the economy figures, for the engine it was shown that there was a big difference between the one-half and the three-quarter load and this accounts for the poor fuel economy of trucks with over-sized engines. In other words, a tractor that had too large an engine might be a tremendous fuel user, because of the fact that the motor, under those conditions, was not being operated at an economical fuel-using speed.

Mr. Horning places particular emphasis on the design of the combustion chamber as affecting engine performance. He tells of a pleasure car engine in which the valve plug formed a hot spot. Under full load the engine pounded, the power was off 20 per cent, the water boiled, the exhaust was steamy and the fuel economy bad. By pouring water on this plug so as to cool it all of the bad conditions disappeared but returned directly the extra cooling was stopped.

Mr. Horning's conclusions on

engine temperature are stated as follows:

1. The maximum temperature of any spot in the cylinder must be kept below the pre-ignition point.
2. The maximum temperature of any spot in the cylinder must be kept below the cracking point of any part of the fuel.
3. Any one spot will determine the performance of the engine.
4. That one spot capable of cracking fuel or pre-ignition spreads over an area and causes so-called steam pockets in the circulation which further extends the disturbance in the performance.

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Accident
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Automobile
Plate Glass
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5. Economy of fuel consumption is established by a high average temperature of combustion chamber walls.

6. The limit of practical compression, hence power output economy and of fuel quality which can be successfully burned is established by a high average temperature of the combustion chamber and low maximum temperature of the hottest spot.

Difficulties of lubrication in tractor engines are second only to those of racing engines. Usually when oil fails to reach a bearing it goes out without sufficient notice to catch it in time, but Mr. Horning speaks of a system which supplies oil from the adjacent rods to an extent to allow a warning knock for two days before the actual failure of the bearing. Many pleasure cars use light oils, but truck engines require medium oil and tractor engines need heavy and extra heavy oils. When one grade works well in summer the next lighter should be used in winter. An engine often operates better on a heavier grade of oil when burning kerosene than when burning gasoline, and force feed systems can use heavier grades of oil than splash systems.

Lubricating oil is also much diluted by the gasoline and kerosene passing the piston rings. Gasoline will often evaporate off but kerosene remains and if the oil is not changed the power will fall off 20 per cent and more in hot weather. Frequent draining of the crank case is necessary and if any of the oil is to be saved the light constituents should be boiled off.

Mr. Horning has had a great deal of experience with the kerosene burning problem upon which he has the following to say:

Trucks can be made to operate on kerosene. One truck has operated one season in a pea harvest on 6.4 miles per gallon on a two-ton truck equipped with a 3 3/4 x 5 3/4 in. engine. On the same job with conditions as nearly identical as possible and in the same service, the truck made 7.75 miles per gallon on kerosene. On a run of 50 miles the same truck made 10 miles per gallon over city and country roads with gasoline, while on kerosene it made 15.25 miles, both figures being for truck running half the distance with pay load and return empty. These figures were made in an attempt to produce the best performance and all figures are given to encourage the hope of progress along this line. The design and applications which were responsible for this performance are being put in commercial shape.

The science and art of burning kerosene as indicated by experience and the results obtained in service are identical with the principles set forth in several papers by Prof. Lucke (several of which have been given in extract in this publication).

Experience shows that a kerosene engine does not carbon any more than gasoline; in fact, stays cleaner than gasoline engine if vaporization is only comparatively well done.

Where kerosene is well vaporized so that the mixture reaching the cylinder is in a dry state, a kerosene engine with a correctly designed combustion chamber will not heat as much as a gasoline engine.

Experience as to the function of various elements in burning any or all grades of fuel is expressed as follows:

The carburetor mixes and atomizes the fuel.

The manifold must vaporize the mixture.

The combustion chamber burns it.

It will save many inventors much disappointment to know that of all the things mentioned above the carburetor is the most perfect for the work they have to do.

The manifolds are next in efficiency.

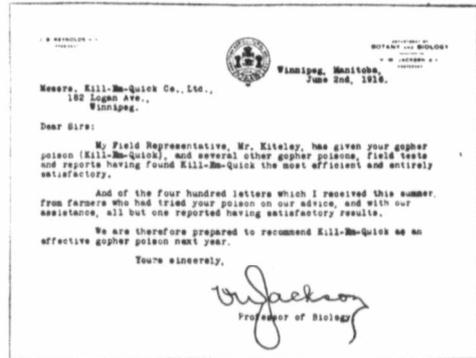


"399 of 400 Farmers Report Success"

—Prof. V. W. Jackson.

Kill-Em-Quick GOPHER POISON

The Time-Tested, Guaranteed Gopher Killer
Unbiased, Convincing Evidence



The claims we have made for Kill-Em-Quick Gopher Poison are facts. Here is authority that nobody can get around,—the word of a man whose business it is to know,—Professor Jackson of the Manitoba Agricultural College. **Read his letter again.**

This fact is proven—Kill-Em-Quick will save your grain. It will destroy gophers. In fact, the profits of over 6,000,000 acres of Canadian grain lands were saved by Kill-Em-Quick in 1916.

Which will you Raise—rain or Gophers?

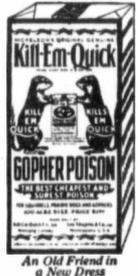
Grain is more profitable than gophers. Then raise grain!



One cent an acre spent for Kill-Em-Quick will convert your gopher losses, which amount to as much as the cost of your seed grain or more, into profits. Can you afford not to use it?

Get Kill-Em-Quick—your druggist can supply you. If he cannot we ship direct upon the receipt of the price. 40-acre size, 50c; 100-acre size, \$1.00. Guarantee printed on each package—money back if it fails. Send for Free Gopher Book.

Kill-Em-Quick Co., Ltd.
Dept C Winnipeg, Canada



A BETTER ATTACHMENT FOR HOOKS ON HORSE COLLAR PADS

Our new patented staple and felt reinforcing device

keeps hooks from pulling off easily, even when fabric is weakened by long use. It adds greatly to life of the pad. This form of attachment is

Found Only On Pads Made By Us

Ask your dealer for free Tapatco booklet. Shows pads in colors and contains valuable horse remedies. If he hasn't it, request him to write us direct.

The American Pad & Textile Co.

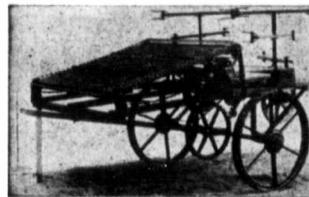
Chatham, Ontario
Main Office and Plant, Greenfield, O., U.S.A.



Patented in U.S. Dec. 1, 1914.

Patented in Canada April 6, 1915

Advance Straw Spreader



Patented in Canada

DON'T BURN STRAW

The "W" returns Blank & Iron Co., Ltd., Winnipeg, Canada. Send for booklet on why burn straw book. Name: _____ Address: _____

The engines in their present form are furthest from being able to perform their functions in attempting to burn kerosene.

The development of kerosene burning in engines of the prevalent types must start with the engine and end with the carburetor.

Mr. Horning said that injection of water was only to correct bad conditions and that it was not ne-

cessary with a dry kerosene and properly designed combustion chamber.

What She Needed

Salesman—Madam, I have here one of the best cream separators ever made.

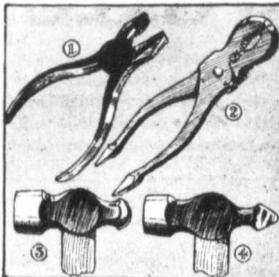
Mrs. Cornshuck—Well, if you've got a machine that'll separate the price from my husband I'll take it.

Familiar Tools and their Use

THESE are two kinds of pliers of all round usefulness: that is, with a pair of each kind almost all work for pliers can be done. The first is the cutting pliers (Fig. 1) and the second the gas pliers (Fig. 2). The cutting pliers cut wire and cable, and their flat jaws at the end serve to hold and twist things. These are the proper things for extracting split pins also. The amateur usually starts on this job the wrong way, and generally goes on the wrong way, until bitter experience of barked knuckles makes him think. He seizes the head of the split pin with the flat nose of the pliers and tries to pull it out. The pliers slip off, their jaws snap together, and back comes his funny bone against a lamp bracket. The proper way is ridiculously simple. Take the pliers in your hand, upside down, and grip the head of the split pin with the cutting part of the jaws, not the top. The top of the jaws is pressed against the engine, or whatever part the nut is on, and, using the top of the jaws as fulcrum, the pliers (steadily gripped to maintain the

hold of the split pin) are given a smart wrench back. This way one has about an eight to one leverage on the pin, and in nine cases out of ten out it comes as quickly as a tooth. Also, by holding the pliers upside down as directed, one has more power over them. The one point to bear in mind is not to grip the pliers more tightly than is necessary, or the head of the split pin may be cut off.

When isolated split pins are met with it is best to draw them



individually; but where there are a number together—as in the main bearings and big-ends of an engine that is being dismantled—it saves time to go about the job as follows: First close all the tails with a punch and light hammer, and with the hammer drive the pins out a little so that their heads project from the nut, then take the pliers and wrench them out.

Drastic Method With Split Pins
While on the subject of split pins it may be as well to speak of those that refuse to come out properly. The most heroic method is to shear them off by putting a spanner on the nut and undoing it by main force; but it is rarely possible with split pins over 1/4 in. in diameter. It mostly happens, however, that the pins which get set in by paint, or rusted up, are smaller than this—such, for example, as those on spring clips, and shackle bolts. It is worth while to try less drastic treatment first. For instance, the head of the split pin may be clipped off with the pliers, and the pin punched through with a fine-pointed punch. I have found it convenient to have in my tool kit two or three little punches mainly for this purpose, their business ends being small enough to follow the split pin a little way into the hole. Sometimes one can draw one-half of the split pin when the head has been cut off. Speaking generally, there is no job that shows up a man's experience better than removing split pins.

The use of the screwdriver is comparatively simple, the point to remember being that, where

Sold Direct from Factory to You



MADE IN WINNIPEG

The STERLING TRACTOR

The latest, most up-to-date, soundest and most scientifically constructed light-weight, one-man, all-purpose Farm Tractor in Western Canada. Thoroughly tried and tested in every detail of actual field work. Burns either Gasoline or Kerosene. Delivers 24 H.P. (guaranteed) at the belt and 12 H.P. (guaranteed) on the draw. Weighs 5400 lbs.

Price: \$1170.00 f.o.b. Winnipeg

Terms: \$600.00 Cash (\$100.00 with order, balance on delivery). \$570.00 on November 1st, 1917 (or 10% discount on deferred payment for cash).

SOLD DIRECT TO YOU—SAVES \$230.00

We aim to sell the Sterling Tractor direct from Factory to Farmer, cutting out all middle men's profits. Owing to continually increasing cost of production, it is the only way to keep down the selling price to the user. The Sterling is fully the equal of other tractors now on the market and selling from \$1400 to \$1600. Our direct to you sale will save at least \$230.00. **Come and investigate the Sterling Tractor for yourself.** In order to get our new selling plan well launched we will pay the expenses of every purchaser of a Sterling Tractor from his home town to Winnipeg and hotel expenses in Winnipeg for one week. That will give you time to see the Sterling Tractor made, tested and working,—to see every part that goes into it,—to judge its powers and merits and to receive a thorough instruction in its care and operation.

It is a Tractor proposition worth investigation. Visit us in Winnipeg or write for further particulars.

STERLING ENGINE WORKS LIMITED

DEPT. T

Foot of Water Street

WINN/PEG, MAN.

Breakages WELDED BY Oxy-Acetylene

impart a strength to the machine greater than it ever possessed, while the job is the most finished bit of work ever attained in repairing a fracture.

WE ARE THE PIONEERS OF THE PROCESS ARE EXPERTS IN EVERY DETAIL OF OXY-ACETYLENE

If anything breaks or is worn out on your threshing machine or traction engine, have it welded by the Oxy-Acetylene process.

YOUR BLACKSMITH OR REPAIR EXPERT CAN DO THIS WORK FOR YOU See him now about your broken castings. If he has not a welding plant write us, giving his name, and we will supply him with full particulars. It will save you time and money.

L'Air Liquide Society 328 WILLIAM AVENUE, WINNIPEG, MAN.

Largest Manufacturers of Oxygen and Welding Plants.

large screws are being withdrawn, or screws that have become tightly set (in bodywork, for example), one should press very heavily on the tool as one tries to turn the screw. Tight screws may often be eased by a few smart taps on the handle of the screwdriver. For some reason that has never been popularly explained, one gets more power with a long screwdriver than with a short one, so obstinate screws should be tackled with the longest driver available.

A whole book could be written on the use of the hammer, and by watching any amateur one can gain valuable hints how not to

use it. In the first place, the wrist should be loose, not tight, and the hammer should always be allowed to fall freely. The sensation is rather one of throwing—there is the same freedom of arm and hand. The beginner holds his wrist rigid, and works the hammer in the arc of a circle the center of which is his elbow joint, the upper arm, shoulder, and body also being held stiffly. The practiced man has every joint supple. For very light tapping only his wrist is brought into play, then the elbow joint, and then the shoulder muscles, until, for really heavy slogging, the whole body is swung. But in all cases the

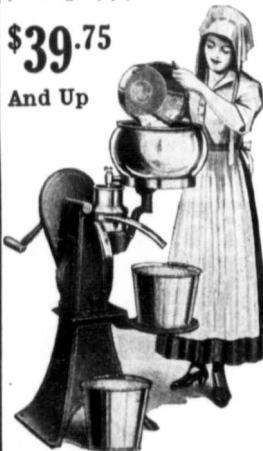
A Prize-Winning Thoroughbred

THE MAJESTIC WINGOLD

The kind of Cream Separator you have always wanted now offered at a price you will gladly pay

\$39.75

And Up



TEST IT FOR TEN WEEKS

Compare its operation and construction with Separators selling for \$100 and upwards. If you are not convinced it's the smoothest running Separator made, and unequalled for durability and results, return it at our expense and get back your purchase money, plus freight charges. Send your name and address for catalog. \$50 to \$75 easily saved.

WINGOLD CO. LIMITED WINNIPEG

wrist joint is perfectly free. Everyone clutches at things when they begin to learn any sport or trade—a tennis racket, golf club, or a hammer—and it is as well to direct conscious attention to the necessity for wrist freedom in using a hammer from the very beginning, or one may get into an awkward style.

Two Types of Hammers

Hammers, it is hardly necessary to say, are of all sorts and sizes. Those the amateur motor mechanic is likely to meet with are light and heavy hammers, either ball-pene (Fig. 3) or cross-pene (Fig. 4). The pene is the part remote from the head, and many beginners, while they realize the pene of the cross-pene hammer might be useful, imagine the ball on the ball-pene is merely ornamental.

Nothing could be further from the truth. The ball-pene, and the pene part of it, is the proper tool for riveting. When one hits soft metal with it one makes a cup-shaped depression, and the metal that lay toward the middle is squeezed out toward the sides. Hence, when one wants to spread metal—as one does in the case of a rivet—the ball-pene is the tool for the job. Used carefully, one can spread the rivet into nearly as neat a circular blob as the head of the rivet itself. Many people—some of them mechanics, who should know better—will tell you the cross-pene is the tool for riveting. The cross-pene spreads a rivet oval, and not round, as it should be spread.

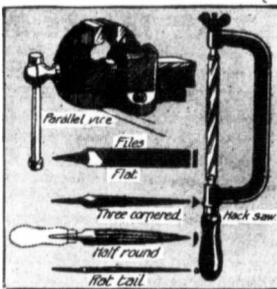
For some people the craftsmanship of bench work has a fascination in itself, for others it is a means to an end—the end of getting on the road again. Both classes often begin in the middle, thinking about the work, instead of at the beginning, with the bench itself. It is almost impossible to work well or quickly on most of the amateurs' benches one sees. Shaky, badly lighted, and with a most inadequate vise, one can neither see the work nor hold it.

Now, as every man who does odds and ends of his own work needs a bench, it is surely worth while to have a good one. It must be firm, and in the best available light, with an adequate vise properly fastened down. Vises less than 4 in. in width of jaw are of little good. The bench cannot be too solid, and should be of such a height that when the vise is mounted on it the top of the jaws is on a level with the worker's elbow joint. Beech, 2 in. in thickness, makes an ideal bench top, but is too expensive for the ordinary man. Usually some local builder has old planks and rough wood that can be made to do.

Use of a File

Filing is the work most asso-

ciated with the vise. It is difficult to do well, the human arms being ill-adapted for the horizontal stroke required, and much practice and attention must be given before it is learned. The first



thing for a beginner to remember is that a file cuts only on the forward stroke, like a saw, and that therefore the pressure on the return stroke must not be heavier than will just keep the file on the work. The working strokes should be steady and with an even pressure from tip to heel of the file. The man who merely

Ready!

The 1917 G.G.G. Catalog is bigger than the 1916. Behind every one of its hundred pages stand your farmers' pioneer company, organized, owned and operated by the farmers of Saskatchewan, Manitoba and Alberta—the company that co-operates with the farmer in making the buying and selling end of farming more profitable to him. Ever article listed in the



1917 G.G.G. Catalog

has been carefully selected for its high quality. Prices have been brought as low as buying in large quantities and selling direct to the farmer for cash can make them. You should have this catalog to be sure you are buying right. Tell your friends to write for Catalog "C." Mail in the coupon yourself to-day—unless you come under the "IF" below.

IF... The Grain Growers' Grain Co., Ltd.

Please send me a copy of the 1917 G.G.G. Catalog, as advertised in The Canadian Thresherman and Farmer.

Name

P.O. Prov.

The Grain Growers' Grain Co. Ltd.
 Winnipeg - Manitoba
 Agency at NEW WESTMINSTER British Columbia

we have your name on our lists now as a share holder, as a shipper of grain or as one who has enquired about implements or supplies, your copy is being mailed. **D O N'T WRITE FOR IT. But if you have any doubt about it, send in this coupon now.**

wants to get on the road again will say "Why bother about trying to file properly?" and the answer is that by taking a little interest he is able to do it quicker and better every time.

One need never grudge spending money on files. To have good and suitable files saves two valuable things—time and labor. The original cost is low, and the upkeep absurdly small. All files should be fitted with handles, and a man wants a couple of big flat files for heavy work (12 in. is a good size), a second cut (rather a rough file) for taking off a bulk of metal, and a smooth file for finishing. In addition to these several smaller ones are wanted: 6 or 8 in., round, square, etc., for different jobs, and it is a great advantage to have four or five quite small ones, 4 in. long, for more delicate jobs. It is a thankless task to ease some small brass fitting with a file meant for work on a 2 in. shaft. Although cheap, files pay for careful keeping; they should always be kept in a rack, and never in a drawer. No one

would keep saws all mixed up anyhow in a drawer, and the teeth of a file are more brittle and almost as easily chipped as those of a saw.

(To be continued)

BOB LONG
 UNION MADE
 GLOVES and OVERALLS

ASK YOUR DEALER

BOB LONG PATENTED WITH TRADE MARK

The Best is none too good for the Farmer

Known from Coast to Coast
R. G. LONG & CO. LIMITED
 TORONTO ONTARIO

Care of the Magneto

In addition to oiling the magneto absolutely and precisely as directed by the manufacturer, see that no conducting wires have frayed or shaken loose. There is no doubt whatever that better results can be obtained by giving regular care to the following details: Cleaning metal contact parts; filing carbon brushes employed in the collection and distribution of the current and giving attention to their springs; attention to the low-tension contact points and the equality of their break.

In the first case the metal segments of the distributor should be cleaned to remove carbon dust, grit, etc. This may be done with a clean cloth dampened with gasoline, and then wiping them with a clean dry cloth. Also the metal contact plate behind the contact breaker should receive the same treatment.

The high-tension collector ring should be cleaned with a piece of dry cloth placed over the end of a pencil. The high-tension brush and brush holder should be removed, and the pencil and cloth inserted so as to bear on the collector ring while a second person rotates the engine by means of the starting handle.

In the second case, all the carbon brushes and their respective springs should be removed, and the brushes refaced by rubbing on a fine file. This takes off the glaze which acts in a detrimental manner. Then rub them on a clean cloth to remove any loose carbon powder. The springs should be examined, together with their respective brushes, to make sure that they do not bind in the brush holders or sockets.

Now to the attention required by the platinum points. Cleanliness is important; dirt offers resistance to the passage of the current, which is only at a low voltage at the points, and by impeding its flow causes a diminished secondary spark. Pitting and burning of the points will also cause weak sparking and faulty ignition of the mixture.

A magneto that suffers from burning and pitting of the points in a short time, despite regular trimming and attention, should be examined to find out whether the condenser is functioning properly, the purpose of the latter being to arrest excessive sparking at the contact breaker points. But this is a matter for expert attention. There is some confusion regarding the exact distance that should separate the contact points when the circuit is broken by the con-

tact breaker cams. It should be, to be exact, about 18-thousandths of an inch or a little less than 2-hundredths of an inch. The contact points must be filed dead level, so that they make contact over all their area. If only partial contact be made the strength of the spark will be affected. The fibre brush on which the bell crank contact lever pivots may sometimes be affected by damp. It swells, causing the bell crank to stick, as indicated either by total cessation of ignition or violent misfiring at high speeds in particular.

If uneven firing should at any time appear, or two cylinders give off more power than the other two, examine the segments or cams which cause the points to separate. The cause of the trouble may be that one segment makes the points separate more than the other. If the segments be held on by screws, the one which gives the smaller width of gap to the contact points may be loosened and packed out with a fine piece of tissue paper. Test with the gauge till the gaps are found to be equal.

KEEP NUTS TIGHT

To keep nuts tight is one of the most important things in the care of the gas engine, especially in the case of tractors. Leaving locking devices out of the question one of the commonest causes of nuts coming loose is the fact that they have never been properly tightened in the first place. When a nut is put on the bolt it should always have oil on the thread and always on the face of the nut. If this is done, the pressure applied by the wrench tends slightly to lengthen the bolt and this puts a pressure on the nut. This is a great factor in preventing it from coming loose.

A nut should be tightened and slackened several times before it is pulled up finally, as this beds the thread of the bolt against that of the nut, and the face of the nut against its seat. It will prevent shock and vibration from causing the nut to come loose.

The ordinary wrench is usually too short so that it is impossible to apply the proper amount of leverage to a nut. This is especially true where nuts happen to be in positions where it is difficult for the operator to use his full strength. It has been found that a piece of gas pipe slipped over the handle of the wrench helps greatly in putting the final "nip" on a nut.

The Two Best Picklers on the Market—



The Automatic Grain Pickler

A Big Opportunity for the Dealer

This is the only machine of its kind in use. Handles grain at the rate of 135 bushels per hour. Light in weight. Perfect in action. Fully guaranteed. Substantially built. Thoroughly soaks, turns over and treats the grain. The only pickler with the turbine principle.

The Lincoln Smut Cleaner— a Perfect Pickling Machine

Made in Two Sizes:

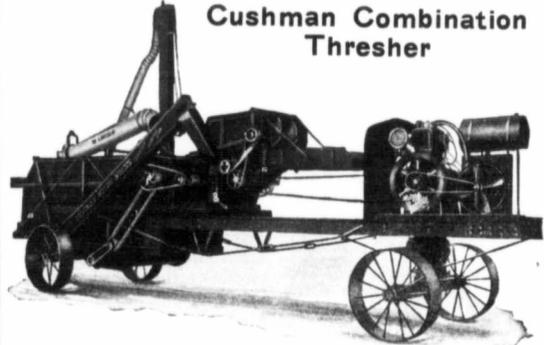
No. 3 machine handles 30-50 bushels per hour; No. 4, 50-75 bushels. Sold on a positive guarantee to prevent smut.

This machine separates smut balls, wild oats, king heads, and all light seeds from wheat, also wild oats and all light seed from barley. Grain is thoroughly pickled, dried and elevated to wagon box. Automatic skimmer is an exclusive feature. Strong, heavy construction. Rustless solution tanks of large capacity.



Write for Prices and Full Particulars

Cushman Combination Thresher



Equipped with the famous Cushman 2-Cylinder Engines.

8 H.P. with Straw Carrier and Hand Feeder.

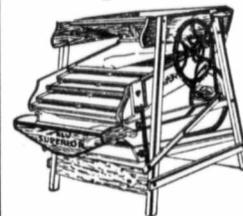
15 H.P. with Wind Stacker and Hand Feeder

20 H.P. with Wind Stacker and Self Feeder

Cushman 4-Cycle Engines are the All-purpose Farm Engines, built to run without trouble and to do things no other engines will do. They represent a great advantage over ordinary stationary engines, in vertical balanced design, material and workmanship. Highly efficient because of light weight, higher speed, reduced friction and lower operating cost.

The 4 H.P. Cushman is the Original and Successful Binder Engine. Its light weight and steady power permit it to be attached to rear of Binder.

King of Wild Oat Separators



Save dockage, clean your grain before marketing with The Lincoln "New Superior" Wild Oat Separator.

With our patented open and blank space sieves, it positively separates every wild oat seed, causing them to lie flat, and not up on end.

It is strong, well-built and bolted—not nailed.

Made in sizes 24, 32 and 42 inches wide, with or without bagger, and with power attachment for gasoline engine if desired.

Cushman Motor Works of Canada, Ltd.

Dept. A, Whyte Avenue and Vine Street, Winnipeg

Builders of Light Weight Engines for Farm and Binder use. Distributors of Reliable Power Driven Machines, such as Fanning Mills, Grinders, Saws, Power Washing Machines, etc. Also Barn Door Hangers and Mountaineer Neck Yoke Centers

Farm Structures

We quote the following random passages from an address on "Farm Structures," recently delivered at a national convention of lumbermen, held at Missouri university. While the address was intended to reach the farmers of the United States, its sentiments are, if possible, still more applicable to the men of Western Canada.

In prefacing his subject he said that the farmer was the greatest user of building material in the United States, the total value of all farm buildings being in excess of four billion dollars.

His argument in favor of the automobile as a farmers' plaything was:

"A prominent physician says that notwithstanding the supposed healthiness of farm life, a very large proportion of the farmers have altogether too high blood pressure, and are easily subject to diseases which men in a normal condition can resist. He says that this is due chiefly to the fact that the farmer's life has been all work and no play, and for this reason the advent of the automobile has been the greatest health producing factor in farm life. Since the plaything is rather an expensive one, it demands good care. An automobile should have a house of its own, and not simply be run into the barn wherever handy, or put under a shed. Garage construction is so simple that the farmer and his boys can build a garage themselves, if so disposed, and the total outlay need not be more than that required to purchase 2,000 or 3,000 feet of lumber and a few shingles.

"It has been well said that the great American implement shed consists of the blue sky. There is one and a half billion dollars invested in farm machinery in the United States. The life of farm machinery can easily be doubled and more by good care. An implement shed soon pays for itself and becomes the equivalent of a source of revenue thereafter.

"A corn crib and a granary, or a combination grain storage

building is a necessity on every farm.

"There are six hundred million dollars' worth of hogs on the farms of the United States. In number they exceed any other farm animals, and in value they are second only to cattle. There is no animal that needs better care and protection than the hog, and notwithstanding his supposition' liking for filth, it is highly essential that he be given clean living condition.

"A good barn is almost the first essential on the farm, and represents a most important factor in the farmer's income, particularly with the increase in dairy farming.

"There does not seem to be any such thing as a real farm architect. Like Topsy, most farm houses seem to have just 'grewed.'

"They should be substantially built because the same construction that gives warmth in winter, makes them cool in summer. They should look attractive. The farmer is rapidly becoming a modern business man and capitalist. If you doubt this, talk with country bankers, who will tell you that they prefer accounts from farmers to those with the business men in the small towns.

"Careful attention should be given to the selection of building material. A farmer should not buy a house without looking at it, any more than he should a horse or a cow. The wide range of kinds of grades of lumber affords a suitable material for every building purpose. The local dealer carries many of them in stock, and should himself be an expert capable of giving the best advice upon the grades and sizes to be used for every structure."

WONDERFUL KNOWLEDGE

The recent examination papers on file at the school house contain some queer information. Here are a few of the answers of pupils to questions:

The equator is a menagerie lion running around the earth.

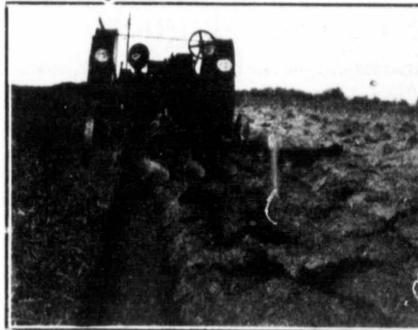
Typhoid fever may be prevented by fascination.

Parallel lines are the same all the way and do not meet unless you bend them.

An angle is a triangle with only two sides.

Gender shows whether a man is masculine, feminine or neuter.

One method of conversation of forests is by means of fish. If it were not for fish in the lakes the water would overflow and destroy the forest, for fish drink a great deal of water.

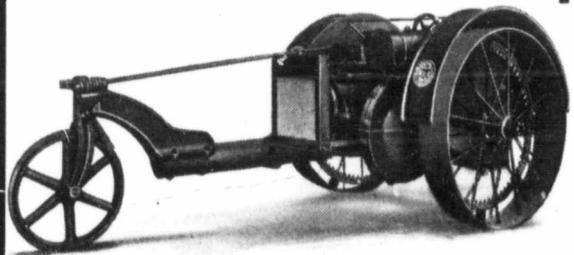


Showing the "HAPPY FARMER" Tractor pulling three 14-inch bottoms through brome grass sod 5 inches deep. Self-steering.

Owned by
JOE WOODS,
Elm Creek,
Manitoba

Plow on Time Plow Well This Spring

DON'T let a slow team hold up your crop or prevent you from doing your work well. Get a "HAPPY FARMER" TRACTOR and be ready with power that does not have to stop to rest—power that you can drive to the limit all day long, regardless of conditions, and repeat the same performance day after day until the work is done. You get a "HAPPY FARMER" TRACTOR for the price of two or three horses, and it does the work of six or eight in the field.



The Efficient Farmer's Choice

Low in first cost—low in upkeep. Built on simple, practical lines, with only 2/3 the parts used in other tractors. Now "making good" on the farms of owners everywhere. Model "A" 8-16 H.P. Light Weight Tractor, pulls two or three plows according to soil conditions. Look at the top photo and see what Joe Woods is doing with it. Read what efficient farmers say about it.

J. D. Adshead Co., Ltd., Winnipeg, Man.

Harrington, Man., January 9th, 1917.

Gentlemen:—Regarding your "Happy Farmer" Tractor purchased last year. I am pleased to state the "Happy Farmer" Tractor handled a three bottom 14-inch J. Case plow in stubble, plowing in first class shape. In thrashing the tractor handles a light 24-inch cylinder with 38-inch rear separator fully equipped to my entire satisfaction. The "Happy Farmer" Tractor is all you claim for it, and I can cheerfully recommend same to anyone requiring a good dependable light farm tractor. Wishing you continued success, I remain,
Yours very truly,
J. A. Vopni.

Hershel, Sask., November 18th, 1916.

Gentlemen:—Regarding that little "Happy Farmer" Tractor: I like it fine; it will develop the power, and is a mighty little fellow and is well built as I have had it all spart and find the gears and everything are O.K. I may be able to be the means of selling a couple of your tractors.

Very truly yours,
A. O. Routley.

There is a dealer near you for prompt and efficient service. Write for address of the nearest Demonstrator; also demonstrated at Saskatoon, Sask., 323 Ave. A South. Regina, Denton Motor School, 1725 Broad Street.
Send in coupon to-day for free literature.

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COUPON

J. D. Adshead Co., Limited,
Winnipeg, Man.

Please send me free literature describing the "Happy Farmer" Tractor.

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Address

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Live, Energetic Agents
for a new and progressive Life Assurance
Company whose policies are based on the

SCIENTIFIC SYSTEM

and are therefore easy to sell.
Let us tell you of our 16 powerful reasons
why our policies are superior to others.

Do YOU want a Profitable Agency?
Write us for particulars.

THE NORTHWESTERN LIFE ASSURANCE CO.

Canada's Only Scientific Life Company
Bank of Nova Scotia Building, Winnipeg

BUSINESS AND FINANCE

Conducted by MARK LANE

This column has been instituted for current financial news items and for the dissemination of information on business, financial and legal topics of general interest to our readers. Apart from any correspondence which may arise between readers and the writer, and in addition to notes on current topics, short articles will appear on the mortgage schemes of provincial governments, the functions of trust and loan companies, some safeguards and hints on fire and life insurance, real estate pitfalls and how to avoid them, and other kindred subjects. These articles are specially written for the "Canadian Thresherman and Farmer" by one who has spent a lifetime in the department of finance. He has had a world-wide experience, and will answer to the best of his ability any inquiries addressed to "Mark Lane," care of this magazine.—Ed.

Concerning Public Balance Sheets

Our papers are flooded these days with the annual statements of our public corporations but they are perused by very few. The expert may draw some general conclusions from the figures submitted, but even he cannot pass a judgment with any degree of certainty. These statements as a rule are condensed to the degree of absurdity; the profit and loss account itself is merely a bald amount shown as "net profit after providing for all expenses." Now, every shareholder is entitled to a clear statement showing how the gross profit has been earned and, in separate items, the amounts paid for salaries, directors' and auditors' fees, office and operating expenses, depreciation, provision for bad debts or investment

losses, war tax, etc. In a word, he should receive a copy of the detailed report of the auditors to the directors and not merely the condensed balance sheet. The shareholder could then check up one year's revenue and expense with another; he could follow the operations of the company intelligently and when the course of management called for comment, favorable or otherwise, he could take his place as an intelligent partner in the concern.

On the other hand, the addresses delivered at the annual meetings by our leading bankers, financiers, commercial men, and railroad chiefs are widely read, not only at home but in Great Britain and the States. They form, perhaps, the best financial barometer in Canada for, collectively, they give a very fair resume of past conditions and sound a warning of the problems looming ahead.

Personal Balance Sheets

The importance of preparing an annual statement of affairs by the smaller business man and the private individual is quite overlooked. No matter what a man's occupation may be, he should be able to produce a clear statement of his assets and liabilities and if the practice were continued over a period of years, a valuable and interesting comparison could be made. No business man can afford to let his business drift on from year to year, having only a hazy idea in his head as to its trend. If the profits are diminishing and assets disappearing, a statement honestly prepared will compel a sensible man to find out where the leak is and then to seek the remedy.

Yet it is astonishing how many business houses do not have their books properly balanced, bad debts written off, depreciation on plant and fixtures allowed for and a profit and loss account of the year's operations prepared. In the real estate boom days some men withdrew large sums from their business for speculative purposes—money that really be-

Money to Loan

on improved farm property

Lowest Current Rates

Apply through our representative in your district or direct to our nearest office.

National Trust Company Limited.

323 Main Street WINNIPEG

TORONTO MONTREAL
EDMONTON REGINA
SASKATOON

UNION BANK OF CANADA



LOANS FOR LIVESTOCK

THE UNION BANK OF CANADA is prepared to make loans to good farmers on reasonable terms, to purchase cattle for feeding or breeding purposes.

It is in the best interests of farmers to increase their herds. Consult the Local Manager for particulars.

PAID UP CAPITAL - - - \$5,000,000.00
TOTAL ASSETS EXCEED - \$109,000,000.00

Head Office: Winnipeg
Total Assets over \$109,000,000
Deposits over \$50,000,000

The Pioneer Bank of Western Canada

\$26.40 a Year

payable for twenty years only, will purchase a \$1000 Insurance Policy in The Great-West Life Assurance Company on the Limited Payment Life Plan, at age 21.

At the end of twenty years the Insurance will be paid for, and a paid-up Policy will be issued for \$1000. The profits earned under the Policy will then be payable, unless, as may be chosen if desired, these profits have been paid at the end of each five-year period.

During the twenty years the Policy carries liberal loan values; and at the end of the period, if the Policyholder so desires, the contract may be surrendered, and the total Cash Value obtained, showing an excellent return on the outlay—while the twenty years protection will have cost nothing.

Personal rates and full details will be furnished on request.

The Great-West Life Assurance Company

Dept. "U"

HEAD OFFICE - WINNIPEG

In requesting information ask for a Desk Calendar for 1917

MONEY TO LOAN

in moderate amounts on improved farm property occupied by the owner and situated not more than 10 miles from elevator and railroad.

Full particulars from our agent in your district, or

UNION TRUST COMPANY LIMITED

REGINA, SASK. WINNIPEG, MAN.

199

longed to their creditors whose accounts were allowed to accumulate—with the inevitable result that when the bubble burst the business followed suit. Legislation may be invoked to prevent a recurrence of such irregularities

and to require that proper books of account be kept by all business firms.

Here is a sample form of a balance sheet suitable for any farmer who may or may not keep a set of books.

Balance Sheet of John Smith, Farmer, Rush Lake, as at 31st Dec., 1916

ASSETS		LIABILITIES	
Real Estate (give legal description and price)	\$ 8,000.00	On Real Estate	\$ 3,325.00
Live stock (market value)	1,350.00	Mtge. to Trust and Loan Company	\$ 3,000.00
Farm implements (market value)	1,800.00	Accrued interest	240.00
Grain (at current prices)	1,450.00	Accrued taxes	85.00
Funds—			<u>\$3,325.00</u>
Union Bank, Rush Lake	350.00		
Life Insurance—		Notes and accounts payable (per list)	300.00
Great-West Life policy \$1,000, surrender value	150.00	Surplus	10,030.00
Accounts receivable (per list)	555.00		
	<u>\$13,655.00</u>		<u>\$13,655.00</u>

The advantages of the reader preparing such statements are (1) He will know exactly how he stands and can compare his position from year to year. (2) He could more readily obtain banking accommodation on production of a consecutive series of statements showing his progress. (3) On his death his relatives or executors would have this balance sheet as a record of his estate and thus curtail legal investigation costs.

Directors' Responsibilities

Whatever the upshot may be of the present rumpus in a certain group of financial concerns in Winnipeg, it is to be hoped the moral may not be lost upon directors of public companies in general. The laxity of directors did not begin and end with the ill-fated Dominion Trust Company, and men elected to such positions of public trust should be jealous of their rights and authority so that the permanent officials may not usurp the directing board's powers and privileges. In investment and insurance companies shareholders should see that an investment committee of special qualifications should go over each investment account each year with the clerk in charge; in commercial companies a similar inspection should be made of outstanding book accounts, unpaid purchase invoices and stock sheet inventories. Such action would negative the charge that some directors' names are more used by their companies than their actual services.

National Economy and Taxation

It must be confessed that the call for Dominion-wide economy sounded by the Minister of Finance has a hollow ring about it and it will continue to fall on deaf ears until the astounding waste in government administration is cut out and until we are taxed and taxed substantially (and directly) for our share of the cost of the war. One of the most disturbing features of our economic position in Canada to-day is that practically the whole cost of the war is being covered by loans and not by taxation. Our policy is radically different from that of the motherland, where taxation of incomes and non-essentials has been drastically increased, and, let it be said, to the credit of the British taxpayer, he is grumbling less to-day than in the happy days of peace and low taxation. Single taxers urge that non-productive land be heavily taxed, but our war expenditure at any rate cannot be charged against any particular class; rather it must be "the heavy burden to the broad back, but all must bear a share." Further, it has been established beyond peradventure that a properly graded income tax is at once

HELP! Neighbor!

What Did YOU Use?

I see your gophers all dead. I was completely fooled with a cheap imitation. Next time you bet I'll get Mickelson's real genuine "My Own Gopher Poison" and look for his photo on the package. I will not be deceived again.

Important Note

Mickelson uses no war formulas, substituting with cheap ingredients in "My Own Gopher Poison." He has not raised his prices as others are doing—neither has he reduced the size of the packages as others are doing. Positively insist on the package with Anton Mickelson's photo on, the only guarantee against imitations. If unobtainable, sent post paid upon receipt of price. 80c, 75c, or \$1.25 sizes.

ANTON MICKELSON, MGR.
Prairie Chemical Company
304 KEEWAYDEN BUILDING Winnipeg



equitable for the taxpayer and productive for the state.

War Loan Certificates

These certificates, purchasable at all banks and money order offices, should be largely taken up; indeed a regular campaign should be organized without delay to popularize this form of helping on the great task of the Empire. These loans will be repaid at the end of three years but the government will take them over before expiry, although in that event the yield of interest would not be so high. A \$25 certificate can be bought for \$21.50; a \$50 certificate can be bought for \$43; and a \$100 certificate can be bought for \$86.

The difference between the cost price and the face value is, of course, the interest computed (at about 5 1/2 per cent) for the three years. Our large establishments should provide facilities for employees depositing part of their weekly earnings towards the purchase of a bond. Savings deposit accounts should be converted into war loans, for, although the banks have already financed the government on the strength of these deposits, yet such arrangements are more of a temporary nature, while war bonds purchased by individuals

Cast Iron Breakages Welded

By the Oxy-Acetylene Process

WE ARE THE PIONEERS OF THIS PROCESS IN THE WEST

Our repairs are permanent and our welds absolutely guaranteed. Prices reasonable. All machinery parts welded. We operate a machine shop in connection with the welding department. Worn or scored engine cylinders rebored and fitted with oversize pistons and rings.

INQUIRIES CHEERFULLY ANSWERED

Manitoba Welding and Mfg. Co.

(Established in 1911)

58 PRINCESS STREET

WINNIPEG

on a large scale would fix the borrowings for three years and so curtail the inexpedient and more costly method of financing on temporary borrowings. But above all the greatest financial service which can be rendered to the state is to actually save by cutting down living expenses and to invest such additional savings in government bonds. A glaring instance of national extravagance is the annual amount paid to or borrowed from the States for the purchase of automobiles for pleas-

ure and if the war be prolonged it is quite evident that severe restrictions must be placed on such importations. The Imperial authorities have become fully seized of this vital factor (see their list of prohibited imports) and we must follow their lead.

Contrariwise

Mrs. Beat: "Tell the gentleman I'm not receiving to-day, Nora."

New Maid: "But he ain't deliverin', mum; he's collectin'!"

Insure Your Crop With a Packer That Packs

There isn't a single intelligent farmer in Western Canada who is not thoroughly alive to the value of a good soil packer. In intensive cultivation there is scarcely an implement now in use that can take second place to it when one keeps in view these objectives: Conserving the moisture and so guaranteeing a quick and even germination of the seed, the prevention of soil drifting, etc.

Below we reproduce details of one of the most effective packers, according to the testimony of a large number of experienced men who have handled it as well as pretty well every other type that



has found its way into Western Canada. This packer is made by the Western Steel & Iron Company, of Winnipeg, who have marketed quite a large number of them and hold a splendid record of the performances of these.

The construction of the packer discs are of the "V" shaped type, which forms a crease or trench in the ground, the side walls of which are packed as well as the bottom. These side walls flare upwardly and offer a resistance to the action of the wind.

Between these trenches, however, with the ordinary packer, a thin unpacked and loose strip of earth is left just in the best possible shape to be blown away. To overcome this, however, in the packer referred to, a mulcher is used between the packer discs which throw this loose strip over into the "V"-shaped trenches, where it has the protection of the packed walls and cannot blow away.

The construction and action of the mulcher disc is such as to give the same results from one machine as would be got from an ordinary harrow following an ordinary sub-surface packer, with the advantage that the walls of the trenches made by the discs of this packer are not broken down by the mulcher and their wind-resisting properties are not destroyed.

This packed sub-surface with a loose mulch on top is the ideal seed bed for inducing a quick and even germination of the seed and also for the prevention of drifting, two of the things necessary to enable the growing crops to withstand disease and prevent their destruction by either wind or frost.

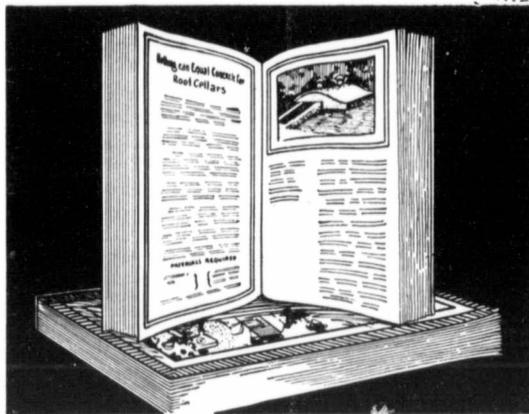
It will be observed from the above that these two results are gotten from one machine and by once over the land.

Better results at a less expenditure of time and money is something not to be overlooked.

The machine has been very largely sold in the northwestern States, where the soil and climatic conditions are very similar to what they are here and has given universal satisfaction. Users of it are enthusiastic in its praise and say that it has increased their crop yield from five to ten bushels per acre.

Change in Canadian Staff of Minneapolis Threshing Machine Company

Mr. T. H. Roney, who for the past five years has been the Regina manager of the Minneapolis Threshing Machine Co., is now to take charge of this company's Canadian head branch at Winnipeg. The Regina house will be continued as heretofore, with Mr. J. J. Roney assistant in charge. "J.J." has also been connected with the Regina business for the company in its Regina territory for some five years, and both gentlemen had been with the



"CONCRETE!"
What do you know about it?

The more you know about the uses of concrete, the more money you can make out of farming.

Here's a free book that tells all about it—in plain, non-technical language, illustrated with many photographs and working plans.

With it, you can quickly become expert in the use of concrete. You can build anything from a sidewalk to a silo—and everything you build of concrete adds permanent value to your farm property.

Check the coupon opposite the uses in which you are most interested, and send with your name and address to

Canada Cement Co. Limited
54 Herald Building, Montreal

SEND ME INFORMATION ON SUBJECTS MARKED X

FLOORS
CONCRETE BLOCKS
SILOS
GARAGES
TROUGHS AND TANKS
DAIRY HOUSES
BARNs
FENCE POSTS
ROOT CELLARS
ROADS
SIDEWALKS
FOUNDATIONS
WHAT THE FARMER CAN DO WITH CONCRETE



SAVE your JOINT ILL FROM FOALS

FOALINE given to the **PREGNANT MARE** for 60 days before foaling **WILL PREVENT NAVEL DISEASE and Joint Ill IN THE FOAL**

WRITE FOR BOOKLET

FOALINE LABORATORY WINNIPEG OF CANADA

Minneapolis Threshing Machine Co. in North Dakota for many years prior to their promotion to the Canadian territory.

Our friends are well known both to the threshermen and farmers of Western Canada and are thoroughly posted as to the special conditions and requirements of the Canadian trade.

A cordial invitation is extended to threshermen visiting either Regina or Winnipeg to make the offices of the Minneapolis Threshing Machine Co. their headquarters during their sojourn in the city.

Extra Precaution

A traveler in Indiana noticed that a farmer was having trouble with his horse. It would start, go slowly for a short distance, and then stop again. Thereupon, the farmer would have great difficulty in getting it started. Finally, the traveler approached and asked, solicitously:

"Is your horse sick?"

"Not as I know of."

"Is he balky?"

"No, but he is so danged 'fraid I'll say whoa and he won't hear me, that he stops every once in a while to listen."

Have You Tried WONDER OIL?
THE GREAT GASOLINE SAVER

A high grade lubricant for your Auto, Launch, Truck, Tractor, or any engine using gasoline or kerosene, that goes wherever the gasoline goes, oiling and keeping oiled the interior parts of your engine. It prevents and removes carbon troubles, gives smoother running, cuts down maintenance cost and is

Guaranteed to Give from 25 per Cent. to 50 per Cent. More Mileage per Gallon of Gasoline

It is absolutely pure OIL ONLY. You take no risk in ordering a tin. Sent prepaid on receipt of price \$2.50.

WONDER OIL COMPANY

1101 McARTHUR BUILDING

WINNIPEG

THE FEDERAL FRANCHISE

THERE has been some bitterness felt by women in Canada, who are not British born, but who have been and are giving of their best to the country of their adoption, at the suggestion that the suffragists would ask for the federal franchise for all British born women. Let me say here emphatically, that the suffragists of Manitoba have passed a resolution expressing very strongly their disapproval of any request for a limited franchise. They expressed themselves in favor of the federal franchise for all women in Provinces where they have obtained the provincial franchise, which is the way the men now obtain the federal franchise.

At the Grain Growers' Convention in Brandon, the first part of January, the resolutions framed by the Canadian Council of Agriculture and brought in and approved by the Grain Growers of Manitoba, contained one in regard to the federal franchise for women. It stated that in the opinion of that body, the federal franchise should be given to all women who had the provincial franchise. This resolution was read and adopted by the whole convention in which both men and women took a part.

There are, of course, men and women in the West who would like to limit the federal franchise, because they are the people who can never trust the other fellow. They are the people who opposed the franchise in the first place, and now that it is here would make it as ineffective as possible. Fortunately the great body of women workers, who had the heat and toil of the day in the suffrage campaign always stood for the franchise for all Canadian women, and they still stand for that. It is their belief that if a woman has left her own country and brought her family to Canada and is doing her part to make Canada a decent home for them and to make them good citizens in Canada who place of her birth is of no consequence. The accident of birth-place is as great as the accident of sex, and against the franchise being given because of sex, women have long protested. The women in Manitoba, who are not British born, are making a great contribution to the country, some much greater than many British born, and many have worked for the franchise for long years, and it would be the gravest injustice to exclude them.

Mrs. McClung asked Premier Borden to give the federal franchise to all British born women. In making this request, Mrs. McClung thought only that it would be easier to secure that measure of the franchise, than the full franchise and she thought that it would be better to have some women voting than none. But when it was pointed out to her that any such request would divide the women of Canada into two camps, that it would cause bitterness and injustice, Mrs. McClung agreed to withdraw her request, and stand for all the women of Canada. She said that she

A Woman's Talk to Women

By LILIAN BEYNON THOMAS

would not fight for a method, when there were so many principles for which one must fight.

It gives me great pleasure to make this statement, for Mrs. McClung has always stood for the widest interpretation of the word democracy, and her interest in all the women of Canada has been unflinching. She has worked as no other woman has worked for the freedom of women politically, and it would have been desperately hard for the women for whom she has worked if they had to oppose her. But that will not be necessary, for on this issue the women are united, and Mrs. McClung will ask for the full federal franchise for all Canadian women when the opportunity comes.



Mrs. SMITH WOOD, Oakville, Man. Pres. of the Women Grain Growers of Manitoba

Women Municipal Voters

At the present time, no woman who has not property, or is not a renter, can vote in municipal elections. This leaves out most of the women in the Province. It means that if women are not satisfied with their school board, or municipal council they simply have to put up with it. They have no say.

In order to right this wrong, the Women Grain Growers in convention in Brandon, passed a resolution asking the Political Educational League to bring in an amendment, giving to the wife of every municipal voter the right to the municipal vote. If this amendment is passed, it will mean

that the wife of every man in the Province of Manitoba who has a vote for school trustees and councilmen and reeve, will also have a vote. This is a recognition of the fact that the wives of municipal voters have a claim on the home.

The Political Educational League is bringing in a resolution, asking that the daughters of municipal voters, on coming of age, be entitled to the municipal franchise the same as the sons, who now have the municipal franchise on coming of age.

These are amendments that should be passed, for it is decidedly unjust that a boy of twenty-one can vote on the home property, but his mother and his sisters cannot. It is also necessary, in the interests of the country, that the women who are helping to build up the province, should have a voice in the government of the local affairs of that province.

Women School Trustees

The Women Grain Growers of Manitoba also expressed themselves very strongly as to the advisability of having women on the school boards of the rural schools. The women pointed out, that the woman's viewpoint not being expressed, many of the school houses are dirty, poorly ventilated, poorly equipped, and the teacher, often becomes discouraged, not feeling that she has the interest of the parents behind her.

There was some discussion as to whether the teacher could be held responsible for a dirty school. The majority of the women were of the opinion that it was not the business of the teacher to look after that work, while others thought the teacher could do a great deal. However, the general opinion was that if there was a woman on the school board, she would see that the school house needed regular cleaning, and would have it done, and not leave it to the teacher.

It also appeared to be the opinion of the women, that a woman should not expect to be put on the school board without a contest. A hotly contested election would educate the women and it could be carried on without any hard feeling. But the feeling of the convention was, that women should get on the school boards, at least one on every school board in the province, however they got there, be it by acclamation or election. A resolution to this effect was passed.

Twilight Sleep

One of the first discussions at the Women Grain Growers' Convention in Brandon was about Twilight Sleep. A number of women had been reading about this method of making childbirth easier, and one woman reported that the doctor in one district gave it, and the results were excellent. Others said that the doctors opposed it, while some of the women held to the

opinion that pain in childbirth is part of the curse of Eve. However, the general feeling of the convention was that this branch of medicine had been neglected, and would continue to be neglected until the women demanded whatever relief drugs might bring, so long as it did not injure either mother or child. Many women who have used Twilight Sleep, according to reports, say that not only does it not injure them, but it leaves them strong and well, and also benefits the child.

It was finally decided to appoint a committee to investigate, and next year bring a report of what had been done with Twilight Sleep, and how it could be used, and advise the women as to what steps they should take to bring this relief to the women of the province.

Mrs. McGregor, of Arden, was appointed to make the investigation.

Medical Inspection of Schools

Another resolution, that all the Women Grain Growers favored, was medical inspection for rural schools. This was not a new idea with women, for last spring the Homemakers' Convention at the University, Saskatoon, passed a similar resolution.

Country women feel very strongly that the country children need the same attention as city children, and perhaps more attention, for they are much farther from nurse or doctor if they suddenly become ill, and medical inspection in the schools would keep the parents informed as to the general condition of health of their children. This inspection is often more preventive than curative and that is the tendency of all medical practice. If trouble can be averted, it is much better than waiting until it has taken hold of the constitution.

A point in connection with this, that the whole province should consider, is supplying the medically inspected children with what the doctors prescribe. Now, in the Winnipeg schools, there are two doctors and a number of nurses—but when a doctor tells a child it should have spectacles, it does no good if the parents of that child are not able to buy the spectacles. If a man and woman have barely enough for their children to eat, they are likely to buy food instead of spectacles, and the eyes of the child are neglected, often making that child less efficient as a man or woman.

Another thing found in the city schools is that when the medical inspector tells a child it should have its teeth attended to, too often nothing is done. The parents are sometimes too poor, to have the work done, and sometimes too careless.

It seems more than probable, that if there was medical inspection of country schools, the same things would occur. Children would be advised to get spectacles and have their teeth attended to—and nothing would be done. It would appear that the only way to have these things done is for the government to pay for the spectacles and for the dentist.

If children are the greatest asset of the country, if they are more than money or land or houses or goods, and this war has shown as never before that they are, then their future efficiency should not be impaired by neglect of their eyes or their teeth, or anything else. There should be an eye specialist and a dentist to visit every school at least once a year, and see that the children are properly attended to in these particulars.

In the long run it will doubtless lead to doctors and dentists being engaged by the government to attend to children and adults—in fact, free medical service for all is what is coming, and the sooner it comes the better.

Scottish Women's Hospitals

It is simply marvelous the work women have done since the war, and special mention has been made over and over again of the splendid organization work done by the suffragists. It has been said that their knowledge of organization, gained in the suffrage fight, has enabled them to do wonderful work in hospital organization since the war. The National Union of Women's Suffrage Societies has sent out the following account of the work being done in Scottish Women's hospitals:

Rouvaumont

Four hundred beds are in working order, and a fleet of motor ambulances and an X-Ray car, laboratory and a splendidly equipped X-Ray department. The Hospital has been specially successful with

Continued on page 55

Give the "Kiddies" All They Want of CROWN BRAND CORN SYRUP

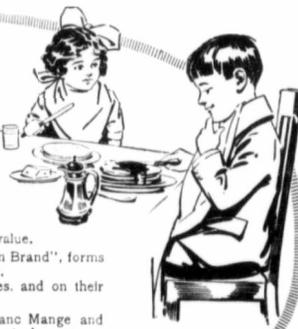
It is one of the delicious "good things" that has a real food value. A slice of your good homemade bread, spread with "Crown Brand", forms a perfectly balanced food, that is practically all nourishment.

So—let them have it on biscuits and pancakes, and on their porridge if they want it. You'll like it, too, on Griddle Cakes—on Blanc Mange and Baked Apples. And you'll find it the most economical sweetener you can use, for Cakes, Cookies, Gingerbread and Pies. Have your husband get a tin, the next time he is in town—a 5, 10 or 20 pound tin.



THE CANADA STARCH CO. LIMITED MONTREAL, CARDINAL, BRANTFORD, FORT WILLIAM.

Our new recipe book, "Desserts and Candies", will show you how to make a lot of really delicious dishes with "Crown Brand". Write for a copy to our Montreal Office.



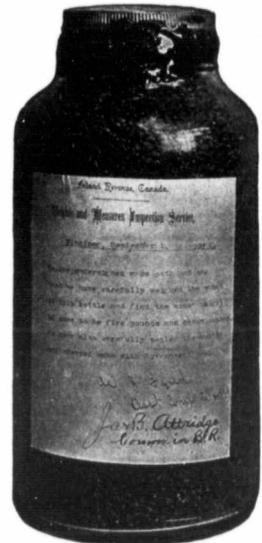
\$1590.00 TO THE WINNERS ON APRIL FIRST

FOR ESTIMATING THE CORRECT OR NEAREST CORRECT NUMBER OF KERNELS IN THIS BOTTLE

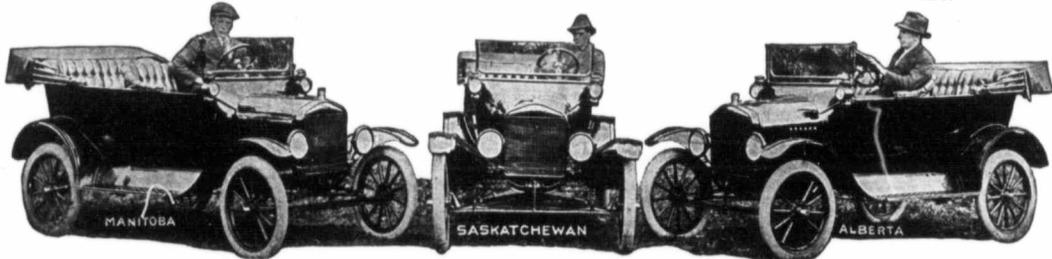
NOW IS THE TIME TO GET BUSY if you want to win one of the handsome Cars we are giving away **FREE**. It matters not whether you are a man or woman, young or old, if you live on a farm in Manitoba, Saskatchewan or Alberta and send your subscription, new or renewal, into this office now, together with your estimates, you have an excellent opportunity to win a splendid 1917 Model Ford Touring Car.

HOW TO WIN A CAR

We will present a handsome **FORD TOURING CAR** (1917 model) to the first reader of *The Canadian Thresherman and Farmer*, in each of the three prairie provinces—Manitoba, Saskatchewan and Alberta—who estimates nearest to the number of whole kernels in **5 POUNDS AND 7 OUNCES OF NO. 1 NORTHERN WHEAT, BETWEEN THE 15th OF SEPTEMBER, 1916, AND 1st APRIL, 1917.** The wheat is a fair clean sample of No. 1 Northern, grown in Saskatchewan, and weighs 64 pounds to the bushel. It was obtained from the Dominion Grain Inspector at Winnipeg. The wheat and bottle were taken to the Dominion Weights and Measures office, and exactly 5 pounds and 7 ounces were weighed out and poured into same. The bottle was then immediately sealed up in the presence of two witnesses, photographed, and deposited with the Union Trust Company of Winnipeg. It will remain in their vaults until the contest closes, 1st April, 1917, when it will be taken out and counted by a board of three judges, none of whom are in any way connected with *The Canadian Thresherman and Farmer*.



THIS BOTTLE CONTAINS FIVE POUNDS AND SEVEN OUNCES OF NO. 1 NORTHERN MARQUIS WHEAT



These Three Splendid Cars go to the Winners---FREE

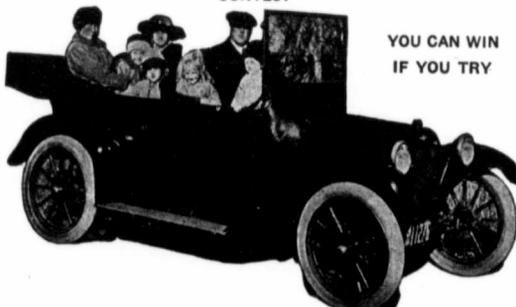
POINTS TO REMEMBER

- (1) The bottle contains 5 pounds and 7 ounces of No. 1 Northern Wheat.
- (2) It is Marquis Wheat grown in Saskatchewan weighing 64 pounds to the bushel.
- (3) The wheat is drawn from exactly the same sample as was used in our last contest.
- (4) The contest positively closes on 1st April, 1917.

A HINT TO CONTESTANTS

Frank B. Snyder, of Elkhorn, Manitoba, headed the last competition with an estimate of 47,038 kernels—the actual number of whole grains in the bottle being 47,037. The bottle on that occasion contained three and one-quarter pounds of No. 1 Northern Wheat, which weighed 64 pounds to the bushel. The grain in the present contest also runs 64 pounds to the bushel, the only difference being the amount of wheat used, which is five pounds and seven ounces in place of three and one-quarter pounds.

HERE IS THE WINNER OF OUR LAST BIG AUTOMOBILE CONTEST



YOU CAN WIN IF YOU TRY

FRANK B. SNYDER of Elkhorn, Man., with his wife and family in the handsome car he won in our last competition

HOW TO SEND YOUR ESTIMATES

Everyone who sends us a subscription direct to this office between the dates mentioned, for *The Canadian Thresherman and Farmer*, either new or renewal, is entitled to estimates as explained below. These estimates may be credited in whatever way you desire, and you may send in as many estimates as you wish in accordance with the schedule below. Remember every additional estimate increases your chance to win a car. Estimate now and increase your chance of winning, because it is the first one in each province who estimates nearest to the number of whole kernels that wins an automobile. Estimates will be accepted as follows:—

- 1 year's subscription at \$1.00 gives you 3 estimates
- 2 years' subscription at \$1.50 gives you 7 estimates
- 3 years' subscription at \$2.00 gives you 11 estimates
- 4 years' subscription at \$2.50 gives you 15 estimates
- 5 years' subscription at \$3.00 gives you 19 estimates
- 6 years' subscription at \$3.50 gives you 23 estimates
- 7 years' subscription at \$4.00 gives you 27 estimates
- 8 years' subscription at \$4.50 gives you 31 estimates
- 9 years' subscription at \$5.00 gives you 35 estimates
- 10 years' subscription at \$5.50 gives you 40 estimates

Why not increase your chance of winning a car, by sending in more estimates? All you have to do is to donate—say five subscriptions to five of your friends, using the additional estimates obtained in this manner yourself. You may not wish to donate five, however—well, donate three, two or one if you wish, but send them all in to us in one envelope.

COUPON

E. H. HEATH CO. LIMITED, Winnipeg.

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

Address Prov. My estimates as to the number of whole kernels in 5 lbs. 7 ozs. of No. 1 Northern Wheat are

If more space is required for names and estimates, use a blank sheet and attach securely to this coupon.

OUR YOUNG FOLK CONDUCTED BY Cousin Doris.

OUR HEROIC SONS

By Donald MacVicar

The banner of Empire is flying,
From the Nore to the ends of the world,
And the shores of the dimmest oceans,
See its folds to the winds unfurled,
For over the world in armour,
Is marching a countless throng,
With the blood of the brave in their bosom,
And in their hearts a song.

These are the sons of Britain,
Yellow and black and white,
Yearning to don their armour,
To strike for God and the right,
Boer and Burmee and Anzac,
Canuck and Bengalee,
All ready to die for Britain,
As they rush from the ends of the sea.

The Indian has given his tribute,
In treasures, and countless braves;
The Boers have left their corn-brakes
To cross the dividing waves,—
All proud to die for Britain,
The Motherland of the Free,
Who has cast her beneficent aegis,
O'er the dimmest isles of the sea.

Side by side they now are marching,
Red and yellow and white,
Pauper and peer and peasant,
Coster and belted knight,
All as one for Britain,
All for the love of the right,
Shoulder to shoulder marching,
Afire with heroic might.

This is the holiest crusade,
That this earth of God's has seen,
'Tis not a storied sepulchre,
That lures our sons, I ween,
But the love that knows no measure,
For all that men hold dear,
That our babes and helpless women,
May not weep brave Belgian's tear.

Weep not for the brave who have fallen,
Though bloodstained be their bed,
The angels of God are keeping
A love-watch over their head,
Till the hour of the great reunion
Shall fold them again to our breast,
In "Tir Nan Ogg," the blessed,
Where our beloved rest.

*Land of perpetual youth—Gaelic.



Donald MacVicar, F.E.I.S.
Portage la Prairie

Mr. MacVicar (the author of "Our Heroic Sons") is one of our older and most respected farmers of the Portage Plains. A fervid Scotchman, with a heart that takes in the whole family of mankind, he has given two of his heroic sons to the service of the Empire and, therefore, knows what he is writing about. One of these "Sandy" of the Highland Light Infantry was among the first to clear the parapet on that historic first day of July. He died of wounds the following day. We hope to give our boys a story of this brave son of the Empire in our next issue. Peter, his brother, is now serving with the Royal Navy somewhere on the trackless ocean, but his whereabouts are known to those who are entitled to know in these times when the price of success is eternal vigilance.

Girl's Cosy Corner

LESSON OF THE LEAVES

How do the leaves glow
In spring upon their stem?
The sap swells up with a drop for all,
And that is life to them.

What do the leaves do
Through the long summer hours?
They make a home for the singing birds,
A shelter for the flowers.



FREE Grand 34-Piece Scholar's Outfit and a Dandy \$5.00 Camera

BOYS AND GIRLS—This is the chance of your life to get the finest Scholar's Outfit that was ever offered. Just read what it contains: One high-grade large size English school bag, one fine fountain pen with three extra gold finished nibs, one combination safety pen and pencil, a big complete printing outfit with three rows of type, one dozen (12) high-grade lead pencils, a fine pencil box with lock and key, a microscope or magnifying glass, a dandy new pencil sharpener, a fine sanitary pocket drinking cup, one box of six school blotters, and last but not least, a fine camera. It is a wonderful outfit for you.

You'll want a package or two at once. Just one little "Fairy Berry" will purify the mouth, sweeten and perfume the breath, and they are irresistibly delicious. Everybody loves them. You'll sell them all in an hour. "Fairy Berries" sell like wildfire. Then return our \$1.20 and we will at once send you this grand complete 34-piece scholar's outfit exactly as represented; and a beautiful full size Folding Film Camera (value \$5.00) will also be sent to you for showing your grand Scholar's Outfit to your friends and getting only four of them to sell our goods and earn our fine premiums, as you did. We arrange to stand payment of all transportation charges on your outfit. Write today—right now while you think of it. Address

THE FAIRY BERRY COMPANY DEPT. S. 36 TORONTO, ONTARIO, 4A

How do the leaves fade
Beneath the autumn blast?
Oh, fairer they grow before they die,
Their brightest is their last.

How are we like leaves?
O children weak and small,
God knows each leaf of the forest shade,
He knows you each and all.

Never a leaf falls
Until its part is done,
God gives us grace like sap and dew,
Some work to every one.

Dear Cosy Corner Girls:—
Cousin Doris wants all of the girls to write a nice letter to this corner. Tell the other girls what you have done this winter. A description of a little girl's home in Alberta will be very interesting to the girl in Manitoba, and the Alberta girls would like to see letters from the Manitoba and Saskatchewan members. Now I want every one of our girl readers to write a description of her home, so we shall have a good time next month visiting every one in her home.

Now I want to tell you about a dear little girl that I admire very much. One day when her mother was sick, Frances came home with a black eye and she composed it in play one evening in about ten minutes. Her purpose was beautiful. She composed it so her mother would think it did not hurt her. She did not want her mother to worry. I am sure every little—and big girl, too—will admire and love Frances. I told my own little girl about it and it helped her. The next time she was inclined to be naughty she thought of Frances and began to compose a little verse.

Here is the poem Frances composed, just as she saw it to me. Would it not be lovely for every girl who enjoys it to write to her? Her address is:

Frances Whitehead,
Silton, Sask.

One Sore Eye

Home you come, with laugh or sigh,
Home you come with one sore eye,
"What's the matter, Molly Jane,
Another ache or sore or pain."

"Yes, a beautiful sore eye!"
Then you laugh, then start to cry,
"Well, well, well, another stumble,
Or a hit or fall or tumble."

"O, a hit, the worst of all,
But did not hurt me like the ball
It went right flat upon the ground
Where a big crowd gathered 'round.

What a shame we've lost our ball—
But never looked at me at all,
So up I got and made for home
Where I found Olive all alone.

Then up she sprang and away did hop
Down the street to the butcher shop,
To get some steak, then back in a minute
To fix that eye with the soreness in it.

Then all your friends from far and near,
Come, when the starting news they hear,
Then you laugh, then start to cry
All about that one sore eye.

And when I go to eat my supper,
You never saw a chap look tougher,
Ups and downs with one eye sore
Is worse than sleeping on the floor.

That happened me with one sore eye.
If you think you'd like it, have a try!
Go to school—get in the game—
Then come home with an eye the same.

Don't go home and scare your mother,
Don't go home and blame another
You must fight your battles bolder,
If you be a brave good soldier."
—Frances Eleanor Whitehead.

"NOW" and "WAI'AWHILE"

Little Jimmie Waitawhile and little
Johnnie Now
Grew up in homes just side by side; and
that, you see, is how
I came to know them both so well, for
almost every day
I used to watch them at their work and
also at their play.

Little Jimmie Waitawhile was bright, and
sturdy, too,
But never ready to perform what he was
asked to do:

Boys! Girls! A Stewart Phonograph Free!

A WONDERFUL chance for every boy and girl to own a phonograph. All your friends will envy you. You can easily earn one of these real phonographs and have your choice of one of these watches besides, for one hour's work.

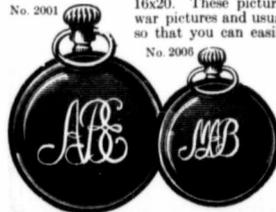
The watches are the new thin models, with guaranteed Swiss movements and satin finished cases. They are stylish and keep perfect time. Your monogram will be engraved free.

You want these two grand prizes?—then write to-day for 24 of our fast selling pictures 16x20. These pictures are reproductions of famous paintings and war pictures and usually sell for 50c. You sell them for 15c. each, so that you can easily sell them in one hour to your friends.

When you have sold our pictures, return us our money—\$3.60—and we will immediately send you your choice of watches—give number.



Plays
Any
Record



Colonial Art Company
Dept. T.G. Toronto, Ont.

"Wait just a minute," he would say, "I'll do it pretty soon."
And things he should have done at morn were never done till noon.

He put off studying until his boyhood days were gone;
He put off getting him a home till age came stealing on;
He put off everything, and so his life was not a joy,

And all because he waited "just a minute" while a boy.

But little Johnnie Now would say, when he had work to do,
"There's no time like the present time, and gaily put it through.
And when his time for play arrived he so enjoyed the fun;
His mind was not distressed with thoughts of duties left undone.

In boyhood he was studious and laid him out a plan
Of action to be followed when he grew to be a man;
And life was as he willed it, all because he'd not allow
His tasks to be neglected, but would always do them now.

And so in every neighborhood are scores of little boys,
Who by-and-by must work with tools when they have done with toys.
And know you one of them, I guess, because I see you smile;
And is he little Johnnie Now or Jimmie Waitawhile?
—Nixon Waterman, in St. Nicholas

A REAL BRITISH SAILOR-MAN



Signal Boatswain H. R. MASON D.S.M., of the British Navy

This is the picture of a typical British seaman—the kind that fear nothing, stick at nothing and have hearts as soft as any mother's when the foe is at their mercy. Our friend is Signal Boatswain Horace Richard Mason, of H.M.S. "Parker," at present plowing her way somewhere in the world's waste of waters. His sister lives in Winnipeg and his brother-in-law has a great deal to do with the printing of this magazine. Horace joined the signalling service of the navy as a boy of 14. Some years ago, under Rear Admiral Craddock, he and a few of his mates were decorated by the King for their conspicuous bravery in saving the lives of the Princess Royal, with her husband (late Duke of Fyfe) and Princess Alexandra and Princess Maud, when the S.S. "Delhi" (on whom they were passengers) was wrecked off Cape Spartel on the Morocco Coast. Later our friend "did his bit" in the now historic naval engagement of Horns Reef and for his conduct on that occasion was again honored by his King—this time with the D.S.M.

The black squads in the gloom below,
The boys in blue above,
Vied in their eagerness to show
The Navy's loyal love.
They fed the fires, and primed the guns
Which thundered—"Tis by these,
Her noble ships, and gallant sons,
Britannia rules the seas."
O, glorious were the brave deeds done
By each courageous crew!
But one stands by itself alone
To show what boys can do.
"Here, boy! Stand here," the master said.
"Aye, aye, sir," he replied,
And wounded stood, while long hours sped,
And those around him died.
He stood that young courageous soul
Amid the carnage there,
And watched the tide of battle roll,
With—God knows what despair.
Seeing the gallant gunners fall,
The decks grow red with blood,
Keeping his lonely watch through all
The grim strife on the flood.
He saw his friends in combat close,
Saw beaten foeman fly,
Saw the great ships in deathful throes,
And learnt how brave men die.
The dead men on the Chester's decks
Lay stark—their guns beside,
And past her drifted flaming wrecks
Upon the blazing tide.
And still the boy stood at his post,
Forgotten and alone,
Not dreaming that his land would boast
Of ought that he had done.
Wounded, forgotten, and alone
He kept the post assigned,
And leaves the courage nobly shown
To stimulate mankind.
—Annie Isabel Curwen.

Canadian Boy's Camp

BOY CORNWELL: BATTLE OF JUTLAND

"They Also Serve Who Only Stand and Wait"

The Huns were out—the Kaiser's Fleet
Ready to meet their foe,
The message ran like music sweet
From Jack to Jellicoe.

Already had the gallant Hood
With Von Scheer come to grips,
When racing o'er the dark'ning flood
Came Jellicoe's great ships.

O loudly roared the cannon then!
And fearsome was the sight,
As noble ships and nobler men
Sank in that awful fight.



GIVEN TO GIRLS

"This beautiful stylish muff will keep you lovely and warm this winter and it is so handsome and dainty that you will be the envy of all your friends. It is the very newest pillow shape—extra large in size—lined with fine quality black satinet, and well finished throughout. It is warm and dainty, will give you years of wear and satisfaction and is surely just what you want."
With your muff we will give you this beautiful silver finished imported Mesh Bag with fine chain and finger ring. It is exceedingly fashionable and just the most convenient bag to carry with a muff. Mesh bags like this sell at a very high price in the best jewelry stores.
We are prepared to give away 1000 of these handsome muffs and an equal quantity of these beautiful bags, to quickly introduce "Fairy Berries", the delightful new Cream Candy Coated Breath Perfume that every one just loves. Send your name and address and we'll send you Free a big sample package, and just 35 big handsome tin packages to introduce among your friends. Open your sample package and ask all your friends to try a "Fairy Berry." They'll like them so much you'll soon sell them in an hour. Just two or three Fairy Berries will perfume the breath, purify the mouth, and leave a delicious fragrance. They are irresistible.
Return our \$3.50 when the breathlets are sold and we'll promptly forward both muff and mesh bag, all charges paid. Satisfaction guaranteed. Write to-day to
The Fairy Berry Co., Dept. M 25 Toronto, 2a

You Can Help to Bring Immigrants to Manitoba

EVERY new settler taking up a farm in Manitoba is a benefit to the Province at large and to every individual farmer in the Province.

Manitoba wants more farmers

More farmers mean more production, more business, more prosperity, more individuals to share the cost of roads, bridges, drainage, schools, telephone lines and all other utilities for which the community at large has to pay.

You can co-operate

by sending at once the names of your friends and acquaintances in the United States or Eastern Canada who might be induced to come to settle in Manitoba if they were told all about this Province.

The Government does the rest

by sending to the people whose names you supply, descriptive pamphlets, maps, circulars and personal letters telling them all about Manitoba and its opportunities.

Help yourself and your neighbors by co-operating with the Government in this way

SEND YOUR LIST TO

Superintendent of Immigration and Colonization

Province of Manitoba

439 MAIN ST. - - WINNIPEG

OUR WOMEN FOLK

CONDUCTED BY
PEARL RICHMOND HAMILTON

WISDOM OF THE AGES

Blessed is the nation whose God is the Lord, the people whom he hath chosen for his own inheritance.—Psa. 33: 12.

No man, I maintain, is a good Christian who is not a good citizen, and no man can neglect the imperial questions of the state at large, nor affect to despise the pressing questions of local politics, without in reality neglecting and despising a higher stewardship.—John Hunter.

Father in Heaven who lovest all,
Oh, help Thy children when they call;
That they may build from age to age
An undefiled heritage!

Teach us to look in all our ends
On Thee for judge and not our friends;
That we with Thee may walk uncewed
By fear, or favor of the crowd.

Teach us the Strength that cannot seek
By deed or thought to hurt the weak;
That under Thee we may possess
Man's strength to comfort man's distress.

Teach us Delight in simple things,
And Mirth that has no bitter springs;
Forgiveness free of evil done,
And Love to all men 'neath the sun!

Land of our Birth, our Faith, our Pride,
For whose dear sake our fathers died;
O Motherland, we pledge to thee
Head, heart, and hand through years to be!
—Rudyard Kipling, *abr.*

The true public treasure is the popular conscience, is the public spirit, the result of many traditions and of the education of character.—Charles Wagoner.

I have lived, sir, a long time; and the longer I live the more convincing proofs I see that God governs in the affairs of men. If a sparrow cannot fall to the ground without His notice, is it probable that an empire can rise without His aid? Without His concurring aid we shall succeed in this political building no better than the building of Babel.—Benjamin Franklin.

THE WAR OF SELF-CONTROL

(P. R. H.)

This is a day of conflict. We feel it in our lives every day. The very atmosphere is charged with it, and a woman is brave indeed if she can remain calm and strong through it all. It is so easy to lose one's self-control.

Every truly great woman in history was successful first in managing herself—and according to the measure of faith she had in Heavenly Guidance did she become usefully influential in big affairs of the state or the advancement of reform.

We cannot accomplish great things unless we have strength greater than ourselves, for in order to become strong we must endure trials and we are not strong enough to bear our trials alone.

Florence Nightingale said: "Are we not to see God in everything—to find Him out in everything?" She was a frail woman. Was it not her wonderful faith in the Higher Power that enabled her to leave a comfortable home and with a little group of nurses go to the hospitals in the Crimean War and begin the Red Cross work?

Why did the Secretary of War—Sir Sidney Herbert say he knew of but one woman who could bring comfort and order to those faraway hospitals where 18,000 out of 45,000 men were sick, and that woman was Florence Nightingale?

Why did men say of her: "Before she entered the ward there was cussin' and

sweatin' but after she left the place was like a church".

Ah—there is power in a woman whose personality is charged with spirituality.

Florence Nightingale had made herself ready for a great work and a great work was ready for her. It is the joy of service that has filled the hospitals in this war with nurses—and every life that sacrifices must be charged with spirituality. The world will be fragrant for all time to come with memories of women who are sacrificing to-day.

I like to study biography of women, for the problems they solved help me, and their recognition of the High Power guiding their lives convinces me of my greatest need.

Clara Barton once wanted to go to Mexico. She learned afterward that such a move would have cost her, her life. In

women and were fatal in their influence also, and in proportion to the power for good which they have abandoned."

Gladstone was blessed with a beautiful influence for sixty years—the influence of his wife, who never missed an opportunity to be with him with her sweet gentle tender inspiration. Our very greatest men are home men. It is men on the fringe of things who traffic with home sacredness.

The home should be the place of Peace. In a recent publication is an article entitled "Why Married Men Are More Successful in Business Than Bachelors". The last paragraph I quote: "Marriage has in it more of safety than the single life. It hath not more ease, but less danger; it is more merry and more sad; it is fuller of sorrows and fuller of joys; it lies under more burdens, but is supported by all the

larger percentage of divorce? What does this indicate?

We are obliged to exercise self-control in everything worth while and most of all in the home.

Control of mind and muscle is absolutely necessary. When we control our thoughts, our tempers, our tongues and our senses—the result is a happy disposition and a peaceful personality.

"He that ruleth himself is greater than he that taketh a city."

"He that would govern others must first be master of himself."

"Real glory springs from conquest of ourselves."

Success is impossible without the control of one's self.

Louisa M. Alcott said:

"A little kingdom I possess
Where thoughts and feelings dwell,
And very hard the task I find
Of governing it well.

I do not ask for any crown,
But that which all may win;

Nor try to conquer any world,
Except the one within."

"There is a Power inside of you, which, if you could discover and use, would make of you everything you ever dreamed or imagined you could become."

"You cannot dream yourself into a character: you must hammer and forge yourself one."

Charles Dickens truthfully said: "There are victories gained every day in struggling hearts to which the fields of battle are as nothing."

"He that is slow to anger is better than the mighty, and he that ruleth his spirit than he that taketh a city." "It is a wise man that can keep his temper, for any fool can lose it."

"Keep your head cool and your heart warm. The one who lets his head get hot and his heart cold is in a bad way."

"To be alive in such an age!
With every year a lightning page
Turned in the world's great wonder-book,
Whereon the leaning nations look,
When men speak strong for brotherhood,
For peace and universal good,
When miracles are everywhere
And every inch of common air
Troths a tremendous prophecy
Of greater marvels yet to be,
Give thanks with all thy flaming heart
Crave but to have in it a part.
Give thanks and clasp thy heritage—
To be alive in such an age."

Mother's Corner

"In ourselves the sunshine dwells,
In ourselves the music swells;
Everywhere the heart awake
Finds what pleasure it can make;
Everywhere the light and shade
By the gazer's eye is made."

"And if in thy life on earth,
In the chamber or by the hearth,
'Mid the crowded city's tide,
Or high on the lone hillside,
Thou canst cause a thought of peace,
Or an aching thought to cease,
Or a gleam of joy to burst
On a soul in sadness nursed;
Spare not thy hand, my child,
Though the gladdened should never know,
The well-spring amid the wild,
Whence the waters of blessing flow."

A song in the heart makes all hard things easier, all heavy burdens lighter all bitter sorrows less bitter. The inner life not only rules the outer, but it creates a new world, makes all things new. If we would but sing at our work, we should not grow weary.



The Mother Instinct has its own thoughts

referring to it she said: "I can never understand why I failed to go. A greater power and a wiser mind guided me." What did Joan of Arc say in answer to the questions of learned men? "I am Joan, the maid sent by God—to save France."

The Methodist Church is the answer to Susannah Wesley's prayers.

History is rich in records of spiritual women who have had a large influence in moulding history.

"It is the type of an eternal truth, that the soul's armor is never well set to the heart unless a woman's hand has braced it; and it is only when she braces it loosely that the honor of manhood fails.

"Ah, wasteful woman! She who may
On her sweet self set her own price,
Knowing he cannot choose but pay—
How has she cheapened Paradise!"

"How given for nought her priceless gift,
How spoil'd the bread and spill'd the wine,
Which, spent with due respective thrift,
Had made brutes men, and men divine!"

Feminine sentiments do sway men's public acts, both consciously and unconsciously. Ruskin says: "Among all the principal figures in Shakespeare's plays there is only one weak woman—Ophelia; and it is because she fails Hamlet at the critical moment, and is not a guide to him when he needs her most, that all the bitter catastrophe follows. Of course Lady Macbeth, Regan and Goneril were wicked

strengths of love and charity; and those burdens are delightful. Marriage is the mother of the world, and preserves kingdoms, and fills cities and churches and heaven itself."

Perhaps I am old-fashioned, but I really wonder sometimes what the price of politics is going to cost woman.

"The purifying, spiritualizing, humanizing influence on husband, father, son and brother is neither more and more far-reaching than anything which statesmanship can produce," says one writer.

Woman may understand all knowledge and have strength to remove all public grievances—yet what is she, if she has lost her charm of femininity? Charm lies in what a woman is, not in what she does. Queen or drudge—which? The woman herself answers.

Ida M. Tarbell, in an introduction to "The Book of Woman's Power," says: "Woman must not stand a sorry neglected figure, the puppet and the handmaid of man, but a figure of force and light as high as that of her nation and her time. She is no longer asked to prove her equality by doing in his way the things he does. She proves it by doing the things for which she is fitted and which the world needs from her. Life is not saved by politics but by principles, and principles are not taught by votes and by legislation but by precept and by practice."

We continually read accounts of women in the States filling offices and taking political jobs equally with men—but what of the home life? Where can you find a

"For the heart that sings,
Hours fly on swift wings,
Of mystical rhyme and rhythm,
And carry the tunes
Of a year of Junes,
And the heart of the toiler with them."

"My crown is in my heart, not on my head,
Not decked with diamonds and Indian
stones;
Not to be seen; my crown is called content;
A crown it is that seldom kings enjoy."

"If sin be in the heart,
The fairest sky is foul and sad the
summer weather;
The eve no longer sees the lambs at
the dull ear
cannot hear the birds that
sing so sweetly,
And all the joy of God's good earth is
gone completely;
If sin be in the heart."

Dear Mothers:—Do not allow your daughters to come to the city unless you are sure they are coming to a safe place. Girls' institutions seem to be full this winter. I have heard recently of young girls from the country being turned away from institutions when they applied for lodging. One young girl of fifteen was turned away because she had no money. Then be very careful of men or women from the city who offer them good positions—and be careful of advertisements offering girls good positions—please do—there are so many craps in the city for your daughters. If your daughter is coming to the city, my advice is to write to the church pastor of your denomination. I believe that is the best way to place your daughter in a safe environment. Sincerely.—P.R.H.

It is difficult to plan amusement for children sometimes. Here are a few experiences from mothers that will be both instructive and fascinating:

I bought soft sheeting and cut blocks ten inches square, then stamped a plain design on each (mostly animals) as these interest the children of ten, seven and five. They outline them with red working cotton. They enjoy it so much and will work on these when they get tired of everything else.—Mrs. E. A. S.

What pretty bits those would make for little brother or sister, if the cloth were cut in the right shape and bound or edged with lace. The whole modern theory of the early training of children rests on the foundation that every piece of "work" shall have some purpose. These squares could be fringed when finished and serve as bureau doilies; they could be pieced together so that all the children could put their work into a quilt for mother. The squares could be cut smaller to make dolly's crib a quilt. Suggest some use for the work the children do and you will lay the foundation stone of a valued trait in their characters—industry.

Little Things My Children Can Make

One material required is birch bark, but in case children could not easily obtain that, cardboard or even thick paper would do very well for the most of the work.

If the younger children could not do all of the work, an older child or the mother could help them just a little.

They took the bark from a birch tree and peeled it off so that it would be thin enough to bend easily. They cut it into the shape of canoes, from two to six inches long, sewed the ends together nicely, and filled some with cotton or excelsior and covered the top with a scrap of cloth, binding it around the edge with seam binding. These were pin cushions. Some were made with a handle of string or cord or ribbon tied in a bow and fastened at each end.

If there is an artist in the group these things will all be decorated in some way; bolly leaves and berries, Santa Claus in a sleigh drawn by reindeer or fire-place with stockings hanging above. It is easier to decorate card board than birch bark, and it may be done with crayons.

Some canoes they left without filling and put braided raffia handles on them and they were spectacle cases, match holders, etc.

They cut out bell-shaped pieces and cut leaves of woolen cloth to match and fastened the tops together for pen wipers and needle-books.

They cut sand paper in pretty shapes or in squares and glued them to a flat piece of the bark, tied a hang-up to the top of it, decorated it or printed a few

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BREADS TO THE PEOPLE



appropriate words and there was a match scratcher.

I bought them some little paste-on calendars at a cent to five cents each. They cut out a piece of cardboard or bark, pasted the calendar on, and those who could not draw cut out pictures of pretty little heads or scenes and pasted them on above the calendar.

All these things cost almost nothing, yet furnished occupation for the little ones for some time.—Mrs. H. T. N.

Ideal sand tables for indoor use may be purchased from manufacturers of educational playthings, as these are rather

expensive the following letters from parents who have made sand tables will be suggestive:

Collecting pebbles, small sticks and shells or acorns to arrange in the sand table on a rainy day gives interest to an otherwise objectless walk.

The sand table can have a slope toward the front, if a mother wishes to sit behind and build a Sunday school lesson in it, or illustrate any story while the children watch, but a mere box on castors half filled with sand will answer very well, and if it is low and tiny chairs go with it so much the better.

Parks, towns, railway lines and stations, or favorite stories can be illustrated with home-made materials the children have collected on their walks and will be especially suitable for several children in co-operative play.—G. MacC.

We use a large bread pan for a sand table and play "homemakers." We build a house with a small box by cutting doors and windows, or use blocks; we make walks with tiny smooth pebbles or shells round side up, from the seashore. The shells can be stuck in for side walks, and larger ones used for springs, as they will hold water.

We use twigs for an orchard and small green things for garden, etc. This is our general plan, varied by changing to different seasons. For winter, trees may be bare and artificial snow used. Tiny penny garden tools may be purchased. To form a stream of water, place in bottom of pan pieces of glass or old bits of mirrors in a line and put sand on either side like a bank. Cut out poultry or small images may be used. The child imagination will supply much.

We have no "Juvenile Movies" in our small town and I cannot allow the children to see the usual pictures shown. As a substitute we fitted up a corner with a sawed-off table for a stage and hung a curtain across. At all times of day we can hear the Mother Goose rhymes recited, songs being sung, and the clapping of the appreciative audience.

A naturally extremely shy little daughter is being greatly benefited by this spontaneous means of expression. The total outlay of expense was ten cents for rings and hooks to stretch wire from side to side of the little stage.—Mrs. F. B.

Below I have given you a number of ways to decorate your sand table. Build a farm. Use autumn foliage in



HOW THE BOYS ARE TAKING IT
"Bit o' luck we weren't sent to Egypt. I 'ear it's as 'ot as 'ell—wiv snakes and things."

profusion. Mold animals and fowls from clay, or cut from farm catalogs. Have everything possible pertaining to farm life.

Build a real Indian village. Have wigwams, canoes, camp fires, dolls dressed in Indian fashion, fir trees, papooses and a lake. The lake can be made by placing a piece of glass over some plain blue paper. Remember grass, seed, corn and beans will grow in the sand. This adds to the attractiveness, and children love to watch them grow.

Get the child's book of "Hiawatha" and read it with your children, or read the portion of the poem entitled "The Childhood of Hiawatha."

Build a pilgrim village. Have church, bare trees, dolls dressed in Pilgrim fashion going to church. Use some of the Indians used before. In one corner have a Pilgrim home showing Baby Peregrine's cradle, the old-fashioned fireplace and all kinds of Colonial furniture that the child can make from cardboard.

Cover the sand table with cotton and sprinkle with powdered snow. Over the lake make a tiny wooden bridge. Have houses and church; also evergreens, one of them being decorated as a Christmas tree. Have old Santa Claus creeping down one of the chimneys.

Build an Eskimo village. Have snow, fur clad Eskimos, their houses made from rolls of cotton, dogs, sleds, etc.

Read the book "Little Eskimo," by Laura R. Smith.

Read stories of Japan and fix the sand table like a gaily decorated Japanese village. Make the Japanese tea room, the bamboo fences with your crayons or water colors.

Read the pleasant story of "Kit and Kat" and then fix the table in a Holland scene. Use dikes, windmills, and Dutch kiddies. Paint tulips and make stiff conventional flower beds.

Such delightful little caves can be made in the sand, so read "Ab, the Cave Man," by William Nida, and fix up a real cave man's home. There are many other interesting ways to decorate the table, for instance, make a park with borders of flowers, walks, fences, etc. Again, they can make a baseball diamond and have paper dolls in real positions as if playing a real game.—Reba Anderson Johnson.

Recipes

Spiced Fruit Cake

Take one cupful of lard, two cupfuls of sugar, two beaten eggs, one-half teaspoonful of salt, two cupfuls of sour milk, two cupfuls of currants or seeded raisins, one teaspoonful of powdered cinnamon, one teaspoonful of powdered ginger, two teaspoonfuls of powdered cloves, two teaspoonfuls of lemon extract, two teaspoonfuls of baking soda, one teaspoonful of baking powder, one-fourth cupful of hot water and one quart of flour. Cream the butter and sugar together, add the eggs, milk, soda dissolved in the hot water, flour sifted with the baking powder, spices, extract and fruit. Mix and divide into two buttered and floured cake tins and bake till ready in a slow oven.

Bread Fruit Cake

Two cupfuls of bread sponge, two cupfuls of brown sugar, one cupful of butter, two eggs, one and one-half packages of seeded raisins and one teaspoonful each of baking soda, powdered cinnamon, allspice, cloves and grated nutmeg. Cream the butter and sugar together, add the sponge, the eggs well beaten and cream again. Dissolve the soda in three teaspoonfuls of hot water and add the spices and enough flour to make a batter of the usual consistency. Pick the raisins to pieces, lightly flour them and mix them carefully through the cake batter. Turn into a well-greased dripping pan and bake in a moderate oven until ready.

Orange Puffs

Cream one-third cupful of butter, and add gradually one cupful of sugar and two eggs well beaten. Mix and sift one and three-fourths cupfuls flour, three teaspoonfuls of baking powder, and one-half teaspoonful salt, and add alternately with one-half cupful of milk to first

mixture, and beat well. Bake in buttered and floured individual tins and serve immediately with orange sauce.

Orange Sauce

Beat whites of three eggs until stiff, continue beating, while adding gradually one cupful of powdered sugar and the rind and juice of two oranges and juice of one lemon.

Fruit Doughnuts

Cream together two tablespoonfuls of butter and one-fourth cupful of sugar. Dissolve one-half of a compressed yeast cake in one cupful of milk that has been scalded and cooled. Add one-half teaspoonful of salt to the milk and yeast, combine mixtures and work in two cupfuls of flour. Allow to rise until it is double in bulk. Now mix together a pinch of powdered cinnamon, a little grated nutmeg, a pinch of powdered allspice, one-half cupful of sugar, one-half cupful of cleaned currants, cleaned and seeded raisins, and chopped citron, mixed, and a scant two cupfuls of sifted flour. Add this to the mixture, and, last of all, one egg, well beaten. Knead thoroughly and let rise until very light. Cut or tear off pieces of dough the size of an egg, drop into smoking hot fat and fry as you do ordinary doughnuts. Drain on brown paper and sprinkle with granulated sugar.

Home Economics

This is the month of the H. E. S. Convention. Greater preparation is being made to give the H. E. S. a pleasant and profitable time. We expect great results from this gathering. The editor asks the pardon of the following societies for the late publication of the following reports. We hope to print the reports this year the month following their receipt.

VALLEY RIVER HOME ECONOMICS SOCIETY

The August meeting of this society was held at the home of Mrs. Sorenson on the second Wednesday in the month, as the Dauphin fair took place on our regular day.

After the usual opening hymn and the reading of the minutes, it was proposed by Mrs. Jones, seconded by Mrs. Grant, and carried, that the members of our society (Mrs. Kilty, Mrs. J. W. McQuay, Mrs. McDonald and Mrs. Ben Borylen) who were instrumental in getting the rural mail delivery established in this district should be congratulated on their success. The advisability of having some

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Shareholders received 7 per cent.—5 per cent. went to reserve account to produce further earnings and increase the value of the stock.

The Western Homes Limited, incorporated in 1914—in business the past 14 years as Investment Agents, well known and well thought of—loans money on first mortgages—one of the safest forms of investment known—buys mortgages and agreements for sale at advantageous discounts, and builds homes for clients, accepting mortgages thereon as security.

The officers and directors are men of sterling integrity—men you may know personally or have heard of.

Shares in this perfectly reliable corporation are still for sale at par (\$100 per share), although over half the capital stock of \$500,000 has already been eagerly subscribed for. Five-year terms given, no interest; but no more than 50 shares will be allotted to one subscriber. It was voted at the last shareholders' meeting that no Company shares would be sold after this year for less than \$110.

Investigate this splendid investment opportunity at once. Full information willingly given. Write, or if in Winnipeg, make a personal call at our offices.

Western Homes Limited
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M. WILLIS ARGUE
President and Manager

kind of shelter erected at the railway station for the protection of the cream cans, waiting to be shipped to the creamery, was discussed and the secretary was

authorized to write to the railway authorities on the subject. A very useful and instructive article on "How to Use your Brain," was read by Miss Alice Grant.

There was only a small attendance, but we spent a pleasant afternoon, which was brought to a conclusion by our hostess and her daughter providing us with an enjoyable lunch.

The Prairie Rose Homemakers have been meeting every second Thursday since the July meeting making preparations for a bazaar and fowl supper, which will be held at the Othorpe schoolhouse on the evening of November 10, and the proceeds are to go toward the Red Cross fund.

The last regular meeting was held at Mrs. Holmes', and a very busy afternoon was spent at Mrs. Fabey's, eight members and four visitors being present.—M.B., club-reporter.

Othorpe schoolhouse, always famous for its social events, lost nothing of its reputation at the fowl supper and bazaar, held on November 10th, under the auspices of the Prairie Rose Homemakers' Club, which netted the neat sum of \$73.75 for the Red Cross work. The class of work exhibited was exceptionally fine and went like hot cakes, while the supper certainly did credit to the cooks of the community. A short programme was given after supper, at the close of which a few hours were spent in dancing.

The Prairie Rose Homemakers have been indefatigable workers for the Red Cross and are working now at an elaborate autograph quilt, the sale of which will be announced at a later date.—M. B., club-reporter.

WHITE HEATHER HOMEMAKERS

The club's regular meeting for November took the form of a social evening held on Wednesday, Nov. 8, at the new home of Mrs. C. A. Puffer. The event proved most enjoyable, a large crowd being present, twenty-four of whom were club members. These answered the roll call by quotations on 'The Home'. Business was dispensed with as soon as possible leaving more time for the social part of the evening. Members were reminded of the importance of the election on December 11, also of the one-day convention at Nohomis, on November 17, and of our sale of cooking on Saturday, November 11. The following programme was then given:

- Music—Mr. and Mrs. D. E. Currie.
- Reading—Mrs. F. A. Phillips.
- Piano Solo—Mrs. W. R. Fansher.
- Solo—Miss A. L. Lamb.
- Paper—"The World's Greatest Painting" by Mrs. A. J. Currie.

In this paper the following eight pictures were studied and illustrated with a copy of each: "The Madonna of the Chair" and "Sistine Madonna," by Raphael; "The Man with the Glove," by Titian; "The Concert," by Giorgione; "The Aurora," by Guido Reni; "The Last Supper" and "Mona Lisa" by Leonardo Da Vinci; "The Creation of the Sun and Moon," by Michael Angelo. Other famous artists were mentioned and small prints of their pictures shown.

After the programme, a guessing contest caused much amusement. Lunch was then served, the club's new dishes in green and white being used for the first time, and much admired. The collection amounted to \$16.75. The sale of home products in the Co-operative Store, on Saturday, November 11, was very successful, \$49.00 being realized. These sums are to be used for Red Cross and Belgian Relief Funds. The annual meeting takes place on Dec. 6 at the home of Mrs. W. King—Isabel Currie, Sec.-Treas., Govan.

Shoal Lake H. E. S.

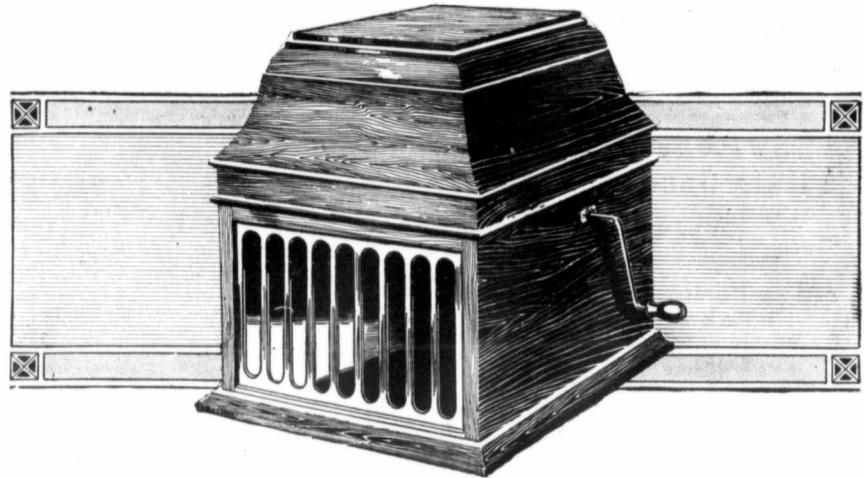
The May meeting was held in our Rest-room as usual. After the business of the month was over, Miss Kuntz gave a splendid paper on "Giving and Getting the Best of Life," and Miss Ruby Morgan, an M.A. C. student, gave a paper on "Summer Conveniences in the Home."

June's programme was a talk on "Pioneer Life," by Mrs. R. C. Macdonald—an interesting tale of her first few years in Manitoba, which all enjoyed.

In July the H. E. S. had a lunch counter at the G. G. Picnic and made enough to be able to send fifty dollars to our prisoners of war in Germany and ten dollars to our Cottage Hospital.

We had no July meeting on account of the great heat.

In August we had a large number out to



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JUST OUT—The perfected musical wonder of the age. And shipped on a stupendous special offer direct from us. Write *today* for our new Edison Catalog—the catalog that tells you all about the wonderful new model Edison with Mr. Edison's new diamond point reproducer. It will also tell you about our **new Edison offer!** Now read:

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Among all his wonderful inventions is his phonograph. He worked for years striving to produce the most perfect phonograph. At last he has produced this new model Think of it: over 35 years of work on all these epoch-making inventions—then his pet and hobby perfected!

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REMEMBER, not a penny down—no deposit—no guarantee—no C. O. D. to us—no obligation to buy—a full free trial in your own home—direct from us—direct to you. Returnable at our expense or payable (if you want to keep it) at the actual rock-bottom price direct from us.

The Reason: Why should we make such an ultra-liberal offer? Well, we'll tell you—we are tremendously proud of this magnificent new instrument. When you get in your town we know everybody will say that nothing like it has ever been heard—so wonderful, so grand, so beautiful, such a king of entertainers—so we are pretty sure that at least some, if not you, then somebody else, will want to buy one of these new style Edison especially as they are being offered now at the most astounding rock-bottom price and on easy terms as low as a few dollars a month.

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our meeting and all seemed glad to start again.

Two interesting papers were given: "Systematized Housekeeping," by Mrs. Frank Dobbs; "Potatoes, Their Uses in the Home," by Mrs. D. Moffatt; and a reading by Miss Margaret Simpson, from Mrs. McClung's book, "In Times Like These." Everyone listened with interest and thoroughly enjoyed the lessons and pleasures contained therein.

Our weekly teas are to be commenced again on September 2nd, as we had discontinued them during July and August.—H. E. Sykes, Secretary-Treasurer.

HERE'S A NEW WAY OF CLEANING SILVER

For the benefit of those who have the

care of silver, the office of Home Economics at Washington has made a thorough study of the electrolytic method of cleaning and has published the results of their work in United States Department of Agriculture Bulletin No. 449.

After discussing several types of commercial cleaners and giving the results of various analyses, they suggest the following method as being cheap and satisfactory.

"An enamel or agateware dish should be partly filled with a cleaning solution of one teaspoonful of either washing or baking soda and one teaspoonful of common table salt to each quart of water and placed directly on the stove to boil. A sheet of aluminum or clean

zinc should then be dropped into the dish and the tarnished silver placed in contact with this metal. It is best that the silver be entirely covered with the cleaning solution and that the solution remain at the boiling temperature. As soon as the tarnish has been removed the silver should be removed, rinsed in clean water, and wiped with a soft cloth. Zinc may be used in place of aluminum, but it becomes corroded and inactive in a much shorter time."

The electrolytic method cleans plated or sterling silverware without loss of metal, giving, however, a satin finish rather than a burnished appearance, and has the additional advantages of being both clean and labor-saving.—Clara Glidden, Colorado Agricultural College.

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 We make them up into switches at 50c per ounce

Switches Hair Goods

We will add new hair as desired to combings at from \$2.00 upwards.

Satisfaction Guaranteed

Elite Hairdressing Parlors
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 WINNIPEG

Nearly half the population of France was engaged in farming before the war.

Three men require six months to make a cashmere shawl, which is worked from ten goats' fleeces.

It is believed to be no rare occurrence for a condor to soar to a height of four miles.

Alligator's eggs are eaten by natives in the West Indies and Western Africa. They are similar to a hen's egg in shape and taste, but larger.

The ants of South America are wonderfully industrious. They have been known to construct a tunnel no less than three miles in length.

Selfishness produces selfishness; indolence increases with every hour of indulgence; and what is left undone because it is difficult to-day will be doubly difficult to-morrow.

One feature of life in Bermuda which always impresses the stranger is the apparent prosperity of the natives, white and colored alike. Distressing poverty is unknown, and even the poorest families can boast of a stone house and a garden.

Biblical mention is made of nineteen different precious stones, six metals, one hundred and four trees and plants, thirty-five animals, thirty-nine birds, six fishes, eleven reptiles, twenty insects and other smaller creatures.

When seals are born they are snow-white, which makes them invisible on the ice on which they are born. Their eyes and noses are, however, black, and when the little ones are suddenly alarmed they close their eyes, bury their noses, and lie quite still. It is only when they grow and begin to seek their own food that they become dark and sleek.



The facetious one: "Bravo, Don Quixote! What's Sancho Panza been up to?"

THE ART OF LISTENING

"Lisa listens more eloquently than most people talk," was the comment of a teacher on one of her pupils.

It brought to mind the fact that listening is almost a forgotten art; it has gone, like the lamented art of letter writing and the stately, gracious courtesy of a generation ago, into the sum of things "old-fashioned." When two girls meet, each one is usually in such haste to give her own news, that neither can wait for the other to speak. The habit of the day is to chatter.

Suppose some of our thoughtful girls set themselves to win back this fine art. If Lisa listened "eloquently" in the school-room, we may be sure that she was also a good listener in the company of others; it was a habit of life with her. Most girls find it difficult to sit with folded hands, not toying with ribbons or laces adjusting stray locks of hair, or fidgeting about. But if they form the habit of active listening, they will soon acquire poise, too. One of the embarrassing consequences of not listening is to find that we have made an irrelevant reply to some one whose respect or admiration we perhaps especially care to gain, or to one whose feelings we would not wound for the world. It is small comfort to realize that the slips were entirely due to the careless habit of pretending to listen while we allowed our thoughts to wander astray. It is extremely unpleasant to try to talk with a person whose manner is abstracted, and whose mind is absorbed.

A young girl can pay no more graceful courtesy to an older person than to listen "eloquently" while he speaks. A good listener will be a good student, as Lisa was, and if high scholarship is to be desired, not less desirable are habits of life that will later produce a more gracious and charming womanhood.

JUST FUN

"When I proposed to Kitty she asked me if I was a new recruit." "What did she mean?" "She wanted to know if I had ever participated in an engagement before!"

Teacher: "It is a well-known natural phenomenon that heat expands and cold contracts. Give me an instance." Pupil: "Please, sir, the holidays! In summer they last six weeks, in winter only two!"

An Englishman and a Scotsman were having a discussion on the relative merits of Shakespeare and Burns. "Ye think a fine lot of Shakespeare?" said the Scotsman. "I do," was the reply. "An' ye think he was mair clever than Rabbie Burns?" "Why, there's no comparison between them!" "Maybe, no; but ye tell us it was Shakespeare who wrote, 'Uneasy lies the head that wears a crown.' Now, Rabbie would never hae written sich nonsense as that!" "Nonsense, do you say?" ejaculated the other. "Ay, just nonsense! Rabbie would hae kent fine that a king, or queen either, disna gang to bed wi' the croon on their head. He'd have kent they hang it over the back o' a chair!"

Close Friendship

A visitor to the Highlands went to hire a carriage to take his family for a drive. He looked at the vehicle suggested and inquired how many it would hold. The ostler scratched his head thoughtfully and replied, "It hauda four generally, but six if they're weel aquaint!"

Personal Knowledge

A lady lecturer called on the editor of a provincial paper which had contained a long report of her last address. "I naa told," she said angrily, displaying a copy of the paper, "that you wrote this notice of my lecture on 'The Demon—Drink?'" "That's so!" was the reply. "Then perhaps you would be good enough to tell me what you mean by saying, 'The lecturer was evidently full of her subject?'"

"Do you think doctor's medicine ever does any good?" "Not unless you follow the directions." "What directions?" "Keep the bottle tightly corked!"

THE GIRL BEHIND THE MAN BEHIND THE GUN

There's a harder game than fighting there's a deeper wound by far Than the bayonet or the bullet ever tore. And a patient little woman wears upon her heart a scar, Which the lonesome years will keep for evermore. There are bands and bugles crying, and the horses madly ride, And in passion are the trenches lost and won; But SHE battles in the silence, with no comrade at her side, Does the girl behind the man behind the gun.

You have cheered the line of khaki swinging grandly down the street; But you quite forget to cheer another line. They are plodding sadly homeward, with no music for their feet, To a far more lonely river than the Rhine. Ah! the battle field is wider than the cannon's sullen roar; And the women weep o'er battles lost or won. For the man a cross of honor; but the crepe upon the door For the girl behind the man behind the gun.

When the heroes are returning and the world with flags is red; When they show the tattered trophies of the war; When your cheers are for the living and your tears are for the dead, Which the foeman in the battle trampled o'er; When you fling your reddest roses at the horsemen in array, With their helmets flaming proudly in the sun, I would bid you wear the favor of an apple blossom spray, For the girl behind the man behind the gun.

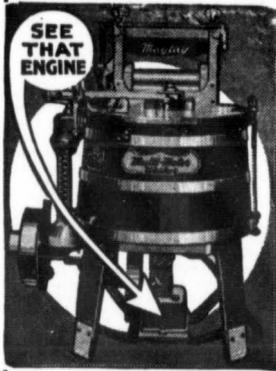
The Department of Immigration Wants Your Help

A real business-like step is being taken by the superintendent of the Manitoba Department of Immigration in advertising for the co-operation of every interested Manitoba citizen who has friends in the States, Eastern Canada or elsewhere who might be induced to come and take part with their friends in developing (to their own profit) the wonderful resources of this province.

It is certainly the case that quite a number of readers of this magazine who have "made good" and are enjoying themselves in their prairie homes have distant correspondents who would be

Man! Have a HEART

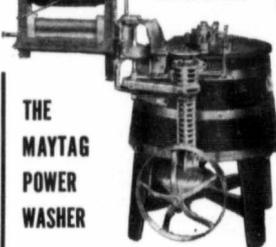
Maytag
Multi-Motor Washer



What the Maytag Multi-Motor Washer Will Do

It operates the washer and wringer. It will operate the sewing machine, churn, cream separator or any other small machine that does not require more than 1/2 H.P. Wash-Day, and that is Work-Day, changed into Play-Day. Good-bye backache, headache, nerve wreck! No woman need bend over the wash tub, as her grandmother did, nor turn the old-style washer, as her

mother did, if she has a Maytag Multi-Motor.



in general construction is the same as the Multi-Motor. It has a pulley so it can be driven by a separate engine. The above "cut" shows the wringer in a position to be used while the second batch is being washed.

There is a Maytag Washer of every type—Hand, Power-Driven, Electric—all built to the enviable Maytag standard.

Drop us a card and we will mail you a copy of *The Maytag Laundry Manual* (48 pages). Even if you do not buy a washer, it will be a great help to you, as it contains many valuable formulas and recipes that can be used to advantage in any home. It is Free.

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 Limited
 WINNIPEG, MAN.

If you live in Alberta, write direct to The Merchants' Hardware Specialties, Ltd., Calgary.



Digests Unconsciously

Rich with your favorite filling, good pie crowns the meal it graces. Housewives who excel in pastry will tell you that pie is at its very best only when wrapped in a FIVE ROSES crust. So hard will the children find it to catch up with their appetites, that never again will you be satisfied with a lesser flour than

Five Roses^{*} FLOUR for Breads-Cakes Puddings-Pastries

Why Does Puff Paste Puff?

Every time you fold and butter a pastry dough every time you roll it, you add an extra flake. When the heat expands the cold air between the buttered flakes, each layer puffs and springs happily in the oven. The colder the dough, the more it puffs. Because FIVE ROSES has elasticity to spare, you can fold and roll your pastry much thinner without snapping. Because FIVE ROSES resists fat absorption, your pastry is seldom soggy; nor do the layers stick together—the shortening acts as an impenetrable coating between the flakes. Because FIVE ROSES is ground to uniform fineness, your pastry puffs evenly in the oven, and you get that even flakiness of texture so much desired—thin as silken paper.

Insist on
FIVE
ROSES



Over 27 years' experience attests its value in Pie Crust, Puff Paste, and so-called *difficult* things. To the well-raised crust it gives a clear, dainty appearance, a golden creamy bloom.

Its presence is readily perceived in the lively, close-grained flakiness that melts away on the tongue tip. And the witching flavor lingering on the soft palate is Nature's toothsome contribution to this pastry treat.

You who have so successfully used FIVE ROSES in other foods, try it now in pies and pastry. Let your folks enjoy the flower of the pie family, a truly succulent, tasty article that retains till eaten its crisp freshness.

FIVE ROSES brings more, it brings flour economy. With the same amount of shortening and water, simply because of uncommon strength, you use at least *one-fifth less flour*.

Packed in bags or barrels of popular sizes, your dealer will gladly supply you.

Do YOU Want This Book?

Indispensable to the housewife eager to excel—
The famous FIVE ROSES COOK BOOK strips Pastry Baking of its mystery. It is the beginner's insurance against disappointment. Gives complete, understandable information on pastry, tarts, puffs, patties, pages of pie recipes, etc. Brings you the FIVE ROSES experience of over a quarter century, plus the best selected recipes of thousands of successful FIVE ROSES users. Full of notes, pointers, useful wrinkles. So essential to good housekeeping that already over 200,000 women have written for this 144 page manual. Sent for 10-2c. stamps Address Dept. P.



LAKE OF THE WOODS MILLING CO., LIMITED,
WINNIPEG.

★ Guaranteed
NOT BLEACHED—NOT BLENDED.

WHEN YOU THINK OF PASTRY—THINK OF FIVE ROSES.

glad to join their old-time friends and relatives in Manitoba. All they are waiting for is some reliable information and reasonable guarantee from an authoritative source that would guide them to an idea of just what they might expect in making the change.

The Manitoba Government will provide this in a way that will disarm all criticism. The superintendent of Immigration and Colonization will spare no pains to provide everything in information and guarantee that it is possible for his government to give

and can do this from his office in Winnipeg in a way and to an extent that the private correspondent has not the means to overtake. Mr. Kon who has charge of this department has earned not only the warmest appreciation of his government but the gratitude of many settlers whom he has guided and never lost touch with from the moment their case reached his office.

The humblest applicant receives the same personal consideration as the man of substance who has no anxiety in the matter

of capitalizing his new venture. This office throws the whole weight of an unusual zeal and painstaking care into the business of advising and directing the prospective settler, and we would strongly urge upon our friends to get in touch with it at once and at least give the address of some acquaintance who is likely to be interested in what Manitoba is really doing in the march of progress.

We refer our readers to the government's detailed request on page 49.

A WOMAN'S TALK TO WOMEN

Continued from page 46

Senegalese lately, patients who are popularly supposed to be very difficult.

Macedonia

Dr. Bennett with the 3rd Serbian Army in Macedonia has been exceedingly busy. The Unit has been sent up nearer the firing line than any other Hospital in the district. The most difficult part of the work is getting all the most serious cases from the dressing stations, sometimes 5,000 feet high, down to the Hospital. This is done by the Ambulances and with the aid of Units of Mrs. Harley's Column, and these two bodies are the only transport columns for this section of the Army. The Hospital has been full to overflowing and now contains 250 beds.

Salonika

Dr. McIlroy's Unit is under canvas with

accommodation for 300 beds. There are a number of ambulances and there is a first-rate X-ray Department.

Corsika

This Unit is responsible for all the medical organization of Corsika, and in particular for the 2,000 Serbian refugees. There is a main Hospital at Ajaccio, and there are several outlying dispensaries. At an inspection by a French General lately, many compliments were paid to Dr. Mary Phillips on the Hospital organization.

GRAIN GROWERS ISSUE NEW CATALOG

Within the new few days tens of thousands of farmers in Saskatchewan, Manitoba and Alberta will be reading The Grain Growers' Grain Co.'s catalog for 1917—a hundred pages of farm machinery, implements and supplies—which has just come from the press. This catalog is larger and fuller in description than number two and number one, issued by the company last year and the year before.

A splendid feature of this year's catalog is the method of pricing. Nearly every article listed shows three prices—F.O.B. Winnipeg, F.O.B. Regina, and F.O.B. Calgary, and also five pages are devoted to freight rates, making it very easy for a farmer to tell the exact price of an article laid down at his own station.

This catalog starts out with plows—a dozen pages of them—giving practically every style used in Western Canada. Then comes harrows, then drills, and so on down the line through cultivators, haying machinery, threshing machinery, grinders, fanning mills, gas engines, oils and greases, wagons, buggies, cutters, sleighs, harness, pumps, cream separators, washing machines, sewing machines, wire fencing, binder twine—in fact nearly everything that a farmer has need of.

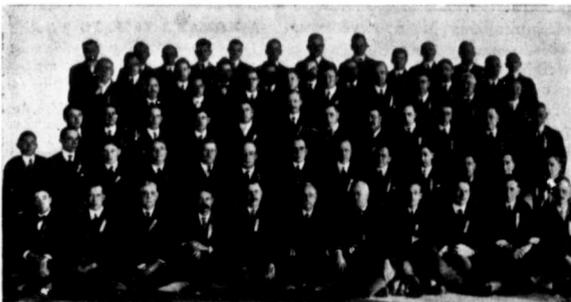
The machinery and supply department of the company has been brought to a much higher point of efficiency than was possible in previous years. With warehouses in Winnipeg, Regina and Calgary, they are in a position to anticipate the needs of the farmers month in advance, and have the goods (and the necessary parts) in stock long before the time comes to use them.

The present conditions make the guaranteeing of immediate shipments on all machinery a hard proposition, but so far as is humanly possible, the company is able to look after its customers' interests in fine shape, and they are looking for a good year in this department. A request for a copy of the General Catalog C will bring it to you at once. Write for your copy to-day.

The lumber department of the company has also issued a special catalog for the benefit of those intending to build. It contains building plans, lumber, building material and builders' hardware, as well as equipment for schools, barns, etc. In your request for a copy please ask for Lumber Catalog C.

The Story of a Washing Machine

While the farm journals, colleges and schools of domestic science have been preaching the gospel of humanity to the woman of the farm homes, they have not been able to do much in the way of a practical contribution to those things which really ease her burden and make



Travellers and Branch House Managers of the Maytag Company

Seeds Trees Shrubs Plants

From tested and proved acclimatized stock—guaranteed as far as the best known seeds and plant stock can be warranted

COLLECTION No. 1
Contains 22 varieties of our Reliable Vegetable Seeds in packets and ozs. 24 lbs. of seed for \$1.25 prepaid.

COLLECTION No. 2
15 packets of Reliable Flower Seeds for 25 cents prepaid.

FARMERS' COLLECTION No. 3
Contains 1 lb. Mangel, 1 lb. Sugar Beet, 1 lb. Swede, 1/2 lb. Carrot, 1/2 lb. Kale and 4 lbs. Rape—8 lbs. seed for \$2.50 prepaid.

FROM OUR OWN NURSERIES
500,000 Caragana, 1 to 3 ft. high.
255,000 Native Maple, 1 to 3 ft. high.
6,000 Ontario Maple, 2 to 6 ft. high.
12,000 Native Ash, 1 to 8 ft. high.
100,000 Russian and other Poplar in all sizes.
50,000 Lilac, 1 to 3 ft. high.
5,000 Russian Golden Willow in all sizes.
70,000 Russian Laurel in all sizes.
5,000 Crab Apple and Plum Trees, and a large stock of all hardy fruits, ornamental shrubs, plants, etc.

SCHOOL COLLECTIONS
for school gardens. 55 packets Reliable Vegetable and Flower Seeds for \$1.00

OLD FASHIONED GARDEN COLLECTION
Hardy varieties which live through our winter and flower from year to year. 20 large packets of old favorites for 75c

Write To-day for
Our 1917 Catalogue

in which we list all the hardest and best varieties of Vegetables and Flower Seeds, Fruits, Trees and Shrubs, Grasses and Fodders. We offer 6,000 bushels best varieties Seed Potatoes.

Profusely Illustrated and Cultural Directions

PATMORE
NURSERY CO., LTD.
BRANDON and SASKATOON

Unfailing Under Reasonable Care

For \$10 Cash with Order we will send prepaid to any address—

50 Currant and Gooseberry Bushes of best varieties.
100 Raspberry Plants, best varieties.
12 Plum and Fruit Trees, young and thrifty, 2 to 3 feet high, and 12 Rhubarb Roots.

All of above for \$10.00

Special Agents For
Sutton & Sons
Of Reading, Eng.
We list in our Catalogue the hardest varieties of their world-famed seeds in sealed packets at
10 Cents PER PACKET

Patmore Nursery Co. Ltd., Brandon—

Please send me Collection No.
as advertised in Canadian Thresherman and Farmer, for which I enclose \$

Name.....
Address

the daily round something more than a treadmill experience.

This has necessarily been left to private enterprise, but that has by no means panned out to the disadvantage of our women folks. On the contrary, the keen contest of mechanical skill has brought within the reach of every housewife some of the most wonderful and still simple and inexpensive devices for the lessening of labor.

Probably nothing has so deservedly and so completely won the gratitude of the toiling wife and mother as the power washing machine called the "Maytag," which is now almost as well known the world over as the "Singer" sewing machine, or the "McCormick" binder.

Since so many both of the hand and power Maytag washers are now in the homes of Canada, a few particulars as to its history and the personnel of the men who make it might not be unacceptable to our readers.

It derives its name from Senator F. L. Maytag, of Newton, Iowa, who is the president of the Maytag Company Limited, a manufacturing house that dates back to 1883, when it was known as the Parsons Band Cutter and Self-Feeder

"SECOND to NONE"

of any flour milled from the
very choicest of Manitoba Hard is

"Gold Drop"

This world-famed wheat product is of the very highest quality that experience and perfect machinery can deliver. It is based on



Quality First

but is sold at the same price at which many inferior brands are offered. Our spot-cash method of doing business allows us to offer this dependable flour at a reasonable profit.

YOU CANNOT BUY A BETTER FLOUR AT ANY PRICE—YOU CANNOT BUY SO GOOD A FLOUR AT LESS PRICE.

Ask for "Gold Drop," the flour that is Always good.

MANUFACTURED BY

THE ECHO MILLING CO. Gladstone, Man.

**A NEW
FORD CAR
FOR
ONE
DOLLAR!**

Turn to Page 47

CLASSIFIED
SPECIAL CLEARING SALE—Single Comb White Leghorns, utility and show birds. Ask for bargains. Mating list free. J. J. Funk, Winkler, Man., Canada.

PATENTS: CANADIAN, FOREIGN—Egerton R. Case, Patent Solicitor, Temple Building, Toronto. Valuable booklets free.

FOR SALE—A 12-24 h.p. Tractor and 3-furrow plow. Price \$950. Apply Box 31, Donavon, Sask.

BRED SOWS—DUROC JERSEY, registered, also males and females unrelated, from prize winning stock; will give you better returns. Write for particulars. J. W. Bailey & Son, Metaskwin, Alta.

PURE BRED BARRED PLYMOUTH ROCKS—Eggs (guaranteed) for sale at \$2.00 per sitting. Mrs. Dumbrell, Charleswood, Man.

FREE FOR SIX MONTHS—My special offer to introduce my magazine, "Investing for Profit." It is worth \$10 a copy to anyone who has not acquired sufficient money to provide necessities and comforts for self and loved ones. It shows how to become richer quickly and honestly. Investing for Profit is the only progressive financial journal and has the largest circulation in America. It shows how \$100 grows to \$2,200; write now and I'll send it six months free. H. L. Barber, 406, 20 W. Jackson Boulevard, Chicago.



**The
Happy Baby**

The air of perfect happiness and contentment of babies brought up on Savory & Moore's Food is constantly a subject of remark. This is simply because it is so easily digested, so nourishing and satisfying, in fact an ideal food for babies in every way.

Get a tin of Savory & Moore's Food to-day from your Stores, and note how eagerly baby will take it, and what marked improvement and steady progress will follow its use.

MOTHER'S GUIDE FREE
Savory & Moore's little Book "The Baby," is full of useful and reliable information on Infant Management. It is just what a young mother requires, and will prove invaluable in the home. A Free Copy may be obtained on application to Savory & Moore, P.O. Box 1601, Montreal.

**SAVORY & MOORE'S
FOOD**
Of all Druggists and Stores

SILK
All Fancy Colors—just what you need for making Cray Quills, Cushions, etc.; large packet 10c, or 3 for 25c.
SEWING EMBROIDERY SILK—Large packet of best quality in assorted colors 10c, or 3 for 25c. We pay postage. Order now and receive our catalog free.
**UNITED SALES CO., Dept. 9,
Station B, Winnipeg, Man.**

Company, catering solely to users of threshing machinery.

But wonderful things have happened in the interval and to-day, while Maytag is still known as the threshermen's friend from the celebrated "Ruth" and "White Wings" feeders that are known in every agricultural centre and outpost, something like 400 people, besides office and sales staff are engaged in the manufacture of the Maytag washing machine, and a small two-cycle engine called the "Multi" motor.

The "Multi" motor has been designed to supply power for the washer, as well as a great variety of other domestic and agricultural purposes. It burns gasoline or natural gas and is to be had in sizes of one horse or half-horse power.

Over 20,000 of these little machines are now in use although it is little more than "yesterday" since they were introduced, and the factory finds it a difficult problem to take care of the constantly increasing sales. The factory has rapidly extended its borders from a few temporary frame buildings to some sixteen modern brick structures covering fifteen acres of ground, and in the one department devoted to the washing machines, over two hundred are turned out per day, and the company is still behind with its orders.

Especially is this the case with the Canadian trade. Mr. E. E. Lyday is Secretary and General Manager for the Dominion of Canada, with headquarters at Winnipeg. He is daily in receipt of letters from his Western agents which speak in almost extravagant terms of the popularity of the Maytag washing outfit, and in many cases doubling their prospective sales for 1917.

Encouraged by the extraordinary demand West of Winnipeg, it is in contemplation to establish a branch of the Canadian Company in Eastern Canada. A good thing cannot be buried or forgotten, neither can it be written into popularity by slick advertising. The women folks may be fooled once, but they are rarely caught a second time.

The Maytag washer has proved its metal in such a way that everything in the Company's extensive and most striking advertising matter might well be withdrawn or confined to a modest publicity campaign. What will "advertise" a thing so well as a satisfied and delighted woman? What will more effectively send a thing to oblivion than the displeasure of a thrifty woman who takes a whole-hearted interest in her domestic affairs? The "Maytag" washer holds its place in the confidence of the people by nothing else than the fine habit it has developed of living up to its promises.

You can't beat
Old Dutch

for taking rust and stains off knives



MAGIC BAKING POWDER

Magic Baking Powder costs no more than the ordinary kinds. For economy, buy the one pound tins.

MADE IN CANADA

E.W. GILLETT COMPANY LIMITED
WINNIPEG TORONTO GALT MONTREAL

REFUSE SUBSTITUTES

Most of the great battles which were fought long ago were over in a day. The famous engagements—Waterloo, six hours; Sedan, twelve and a half hours; Gravelotte, nine hours; Mars la Tour, ten hours; Koniggratz, eight hours; Alma, three and a half hours; Leipzig, three days; Gettysberg, three days.

**MAKE YOUR DOLLARS
FIGHT
AT THE FRONT.
BUY
DOMINION OF CANADA
THREE-YEAR
WAR SAVINGS CERTIFICATES**

\$ 25.00	FOR	\$21.50
50.00	"	43.00
100.00	"	86.00

INDIVIDUAL PURCHASES LIMITED TO \$150.

FOR FULL PARTICULARS APPLY AT ANY BANK OR ANY MONEY ORDER POST OFFICE

JAN. 9, 1917

FINANCE DEPARTMENT
OTTAWA

A PROGRESSIVE INSTITUTION

The 1917 catalog of A. E. McKenzie Co. Ltd., Brandon and Calgary, is by far the best that has ever been put out by this enterprising institution and every one interested in the farm or garden should secure an early copy.

One of the chief points which characterizes this book is its cover. The taste and judgment exhibited in the choice of it marks a distinct advance in seedsmen's catalogs which has undoubtedly set a standard for simplicity of design.

The interior is entirely in accord with the exterior; its pages being well grouped, suggestive, full of valuable information covering all phases of agricultural and gardening subjects and well illustrated with nearly 250 half-tone engravings, many of which are reproduced from actual photographs of the products of McKenzie seeds.

There is a special supplement on seed grains which, in view of the acute shortage of seed wheat and oats, will appeal to every farmer.

This book demonstrates beyond a doubt that the Canadian West is served by a seed house which has carefully studied the needs of the agricultural community, giving them undisputed claim to their happy phrase, the "Best for the West."

A postal will bring the free catalog. Please mention this paper when writing.

It is stated that among the latest treasures to be added to Princess Mary's collection of war souvenirs is an Austrian officer's "beauty case," with mirror, rouge, brillantines, and manicure-powder.

THE C.P.R. GIVES YOU TWENTY YEARS TO PAY

An immense area of the most fertile land in Western Canada for sale at low prices and easy terms ranging from \$11 to \$30 for farm lands with ample rainfall—irrigated lands up to \$50. One-tenth down, balance if you wish within twenty years. In certain areas, land for sale without settlement conditions. In irrigation districts, loan for farm buildings, etc. up to \$2,000, also repayable in twenty years—interest only 6 per cent. Here is your opportunity to increase your farm holdings by getting adjoining land, or to secure your friends as neighbors. For literature and particulars, apply to Allan Cameron, General Superintendent of Lands, Department of Natural Resources, 912 First Street East, Calgary, Alta.



SYNOPSIS OF CANADIAN NORTHWEST LAND REGULATIONS.

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. Applicant must appear in person at the Dominion Lands Agency or Sub-Agency for the District. Entry by proxy may be made at any Dominion Lands Agency (but not Sub-Agency), on certain conditions.

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, on certain conditions. A habitable house is required except when residence is performed in the vicinity.

In certain districts a homesteader in good standing may pre-empt a quarter-section alongside his homestead. Price \$3.00 per acre.

Duties—Six months residence in each of three years after earning homestead patent; also 80 acres extra cultivation. Pre-emption patent may be obtained as soon as homestead patent, on certain conditions.

A settler who has exhausted his homestead right may take a purchased homestead in certain districts. Price \$3.00 per acre. **Duties**—Must reside six months in each of three years, cultivate 80 acres and erect a house worth \$300.

The area of cultivation is subject to reduction in case of rough, scrubby or stony land. Live stock may be substituted for cultivation under certain conditions.

W. W. CORY, C.M.G., Deputy of the Minister of the Interior.
N.B.—Unauthorized publication of this advertisement will not be paid for.—4488A.

Ideal Country Homes

Compact, Convenient and Inexpensive designs for the Farmers of Western Canada

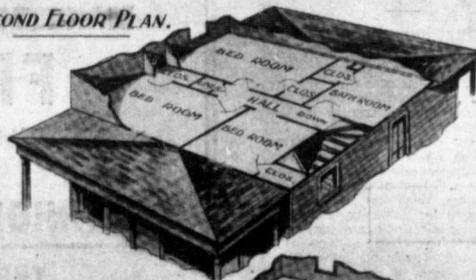
Beginning with the present issue, it is our intention to publish from month to month a series of entirely new ideas in Country homes. The drawings of these have been specially prepared to give an impression of the complete structure that the average reader cannot obtain from the ordinary blue print drawing or architectural sketches. The first of the series herewith reproduced is an example, showing exterior as well as the two floors all looked at from same angle.

An attractive book of plans specially suited to Western Canada will be supplied on request.

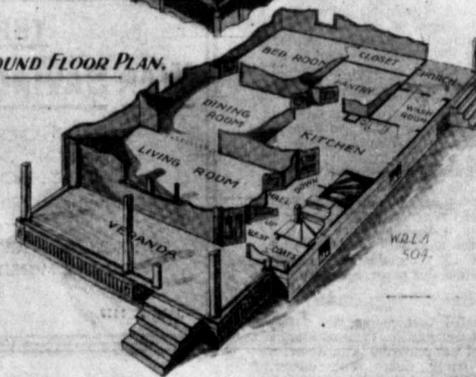
Address: Building Editor,
Canadian Thresherman and Farmer



SECOND FLOOR PLAN.



GROUND FLOOR PLAN.



CHALLENGE COLLARS
WATERPROOF ECONOMICAL ALWAYS DRESSY NO EXPENSE FOR LAUNDRY BILLS DULL FINISH JUST LIKE BEST LINEN AT YOUR DEALER'S, OR DIRECT, for 25c
MADE IN CANADA
THE ARLINGTON CO. OF CANADA LIMITED
54 56 FRASER AVE. TORONTO

BOOK ON DOG DISEASES And How to Feed
Mailed free to any address by the Author
H. CLAY GLOVER CO., Inc.
118 West 31st Street, New York

Myers Cog Gear Pumps
OPERATE EASIER LAST LONGER
Pumping is made easy by using Myers Cog Gear Pumps for they save one-third of the operating power. The line includes hundreds of styles and sizes of hand, windmill and power pumps, well, cistern and tank pumps, spray pumps, etc.
Other Myers features are the long jet length, adjustable base, reversible spout and handle, non-corrosive glass valve seat, anti-freezing construction etc. Illustrative catalog sent upon request.
F. E. MYERS & BRO.
ASHLAND, OHIO
Ashland Pump and Hay Tool Works

Well Drills
For Drilling WELLS or BLAST-HOLES
Built to stand up under heavy work. Most economical and rapid drills made. Styles and sizes for all purposes, with or without power.
Write for Circular
WILLIAMS BROS.
428 West State Street, Ithaca, N.Y.

There's a Reason
We would be glad to send you our booklets, prices and particulars of any of the undermentioned goods, if you will kindly place an X against any you are interested in. We know we can sell you these Articles at a less price and give you better quality, and at the same time give you more money for your HIDES and FURS than any house in Canada.

- Harness, Halters and Leather
- Ladies' Hudson Seal and Muskrat Coats
- Tanning Hides and Furs for Robes, Coats, Rugs, or Lace Leather
- Mounting all kinds of Game Heads and Birds
- Prices of Hides and Raw Furs

Wheat City Tannery
Tanners and Manufacturers
BRANDON, MAN.

PATENTS TRADE MARKS AND DESIGNS
Write for booklet, circulars, terms, etc.
FETHERSTONHAUGH & CO.
FRED. B. FETHERSTONHAUGH, F. C. M. E.
GERALD S. ROXBURGH, F. A. S. C.
36-37 Canada Life Bldg. WINNIPEG

Got Gophers? Kill-Em-Quick
For further information see the Kill-Em-Quick Gopher Poison Advertisement on Page 38

RAW FURS
We Pay Highest Values
Write for Price List and Shipping Tags
Sierce Fur Co. Ltd.
King and Alexander, WINNIPEG, Canada

Save All The Grain For Your Customers

All Manufacturers of Threshing Machinery
in the Dominion of Canada and the United
States are authorized to build and furnish to
their customers the

Sharpe Grain Saving Wind Stacker

It stacks the straw and saves the grain the
threshing machine wastes.

Obtain catalogue from any threshing machine
manufacturer, illustrating and explaining how
it puts the grain in the sack and not in the
stack with the

Grain Saving Wind Stacker

The Indiana Manufacturing Company
Indianapolis, Indiana, U.S.A.

A TRACTOR YOU'VE BEEN WAITING FOR

CASE 9-18

Combining All That is Latest and Best in Gas Tractor Construction

Here is a tractor for the farmer with 100 acres or less, built by Case, your guarantee of the best in gas tractor construction. In it are combined the merits of all small tractors on the market. Back of it is 26 years of gas tractor experience. It is a triumph to Case engineering principles.

You must investigate and learn all about this Case 9-18. You should know all about its four cylinder valve-in-head Case motor, which is specially designed for tractor work. Then when you investigate closer you will note particularly its accessibility. All parts are easy to get at. When you want to replace or adjust a certain part there is no delay caused by having to dismantle your machine. All gearing enclosed in dust proof housings and operates in oil.

But there are many other details and features that we should like you to know about. And on your request we shall be glad to send you literature giving point by point the qualities and superiorities that only Case tractors possess. A post card is all that's necessary.

J. I. CASE T. M. COMPANY, Inc.

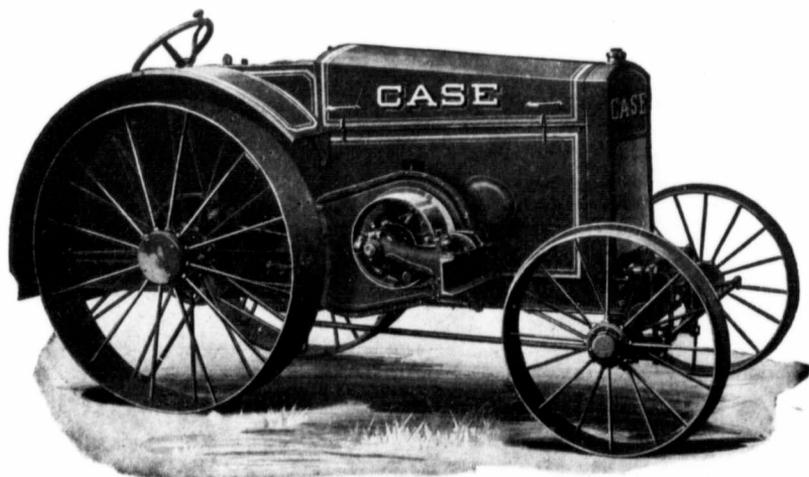
807 Liberty St.

RACINE, WIS.

Canadian Branches: Winnipeg, Regina, Calgary and Saskatoon.



The Sign of Mechanical Excellence the World Over



The Sign of Mechanical Excellence the World Over

CASE 9-18 TRACTOR